

FINAL

# Soil Management Plan Addendum No. 3 - Industrial Phase 1B Area

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Former Philadelphia Energy Solutions Refinery  
3144 West Passyunk Avenue, Philadelphia, PA

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## Acronyms and Abbreviations

Act 2	Land Recycling and Environmental Remediation Standards Act
AST	aboveground storage tank
Evergreen	Evergreen Resources Group LLC
ft	feet or foot
HRP	Hilco Redevelopment Partners
mg/kg	milligram per kilogram
MSC	Medium Specific Concentrations
PADEP	Pennsylvania Department of Environmental Protection
PESRM	Philadelphia Energy Solutions Refining and Marketing LLC
<i>Plan</i>	<i>Soil Management Plan</i>
<i>Plan Addendum</i>	<i>Soil Management Plan Addendum No. 3</i>
Site	3144 West Passyunk Avenue, Philadelphia, PA
SHS	Statewide Health Standard
SMP	Soil Management Plan
SSS	Site-specific standard
SVOC	semivolatile organic compound(s)
TMB	trimethylbenzene
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound(s)
yd <sup>3</sup>	cubic yards



# 1 Introduction

This *Soil Management Plan Addendum No. 3 (Plan Addendum)* has been prepared on behalf of Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) for the Pennsylvania Department of Environmental Protection (PADEP). This *Plan Addendum* presents the results of soil sampling performed in the Industrial Phase 1B area of the planned redevelopment of the former Philadelphia Energy Solutions Refinery located at 3144 West Passyunk Avenue, Philadelphia, PA (Site; **Figures 1.1 and 1.2**). As shown on **Figure 1.2**, the Industrial Phase 1B area is located in the central portion of the Site south of Passyunk Avenue between the Schuylkill River and South 26<sup>th</sup> Street. The sampling was performed in accordance with the June 15, 2020 *Soil Management Plan (Plan)* prepared by HRP Philadelphia Holdings, LLC and approved by PADEP.

This *Plan Addendum* presents the results of soil sampling conducted to establish where soil can be placed at the Site as part of the bulk movement of soil during redevelopment activities being conducted within the Industrial Phase 1B area (**Figure 1.2**). It is being shared with Evergreen Resources Group LLC (Evergreen)<sup>1</sup> and PADEP. The soil sampling completed in the Industrial Phase 1A area between January 2022 and June 2022 is documented in the *Soil Management Plan Addendum No. 2* (Terraphase 2022).

Additional phases of sampling will be conducted from other areas of the Site as redevelopment planning and preparations proceed. At least 30 days prior to the start of soil disturbance, excavation or grading activities in a given area, PESRM will submit to Evergreen and PADEP a Plan Addendum for that area presenting the results of pre-excavation characterization sampling, updated redevelopment plans, and figures showing pre-excavation characterization sampling locations and soil categorization that are consistent with the approach described in the 2020 *Plan*.

## 1.1 Purpose and Objective

A key element of the redevelopment plan involves raising the ground surface elevations on the portion of the Site east of the Schuylkill River above base flood elevations. Some of the ground surface elevations at the Site are currently below base flood elevations while other areas are above base flood elevations. As such, PESRM intends to move soil from locations with higher ground surface elevations to areas with lower ground surface elevations so that the final grades for areas of the Site east of the Schuylkill River achieve the design standard of being above the base flood elevation as established by the Federal Emergency Management Agency.

None of the soil that is moved as part of the regrading process will be placed in areas below the groundwater table. Key objectives of the Soil Management Plan (SMP) are:

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



1. To retain all soil that is excavated or disturbed by PESRM at the Site to balance grades and achieve elevations necessary for redevelopment.
2. To facilitate movement of soil during mass grading and construction.
3. To establish requirements for PESRM's sample collection and analysis for determining the way excavated soil will be placed and reused on-site while ensuring that sufficient data for future work under the Land Recycling and Environmental Remediation Standards Act (Act 2) is available to substantially limit the need for additional sampling by Evergreen (e.g., for site characterization, risk assessment(s), cleanup plan(s)).

Decommissioning, demolition, soil grading, and redevelopment will occur in phases across the Site. This *Plan Addendum* presents the results of soil sampling performed and the associated categorization of soil to be cut in the Industrial Phase 1B area, located in the central portion of the former refinery (**Figure 1.2**). The soil categorizations will be used to support decisions regarding how soil that will be cut during grading activities is managed and reused on-site. Consistent with the approach described in the October 2021 *Soil Management Plan Addendum No. 1* and the August 2022 *Soil Management Plan Addendum No. 2*, samples were collected from soil that will be cut and re-located as part of grading activities during development. However, this *Plan Addendum* does not include an investigation of the underlying soil. PESRM intends to characterize the top two feet of underlying soil (as required by the Soil Management Plan) after grading activities have commenced and the cut soil has been relocated.

## 1.2 Background

PESRM is performing pre-excavation characterization, soil grading, and soil reuse activities during redevelopment of the Site. The Site, which is shown on **Figure 1.1**, contains approximately 1,300 acres of land that is being redeveloped into a state-of-the-art, multimodal industrial park and life sciences campus with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. The Phase 1B area encompasses 177 acres of the Site and includes Lots 9, 11, and 14, and Outlot 3. As explained in the 2020 *Plan*, soil on-site is being sampled prior to grading, relocation, and disturbance. The 2020 *Plan* detailed how sampling would be performed and how decisions will be made as to where such soil can be placed at the Site as part of the bulk movement of soil during redevelopment activities. While more details are provided in the 2020 *Plan*, the following sections provide a summary of the approach and objectives of the SMP.

### 1.2.1 Coordination with Evergreen's Remedial Activities

The soil sampling and evaluation of the results obtained from the sampling being conducted under the SMP take into consideration Evergreen's site-wide remediation activities. PESRM understands that Evergreen intends to use a combination of the Statewide health standards (SHS) and Site-specific standards (SSS) under Act 2 to demonstrate that chemical concentrations remaining at the Site do not pose an unacceptable risk to human health or the environment.

In developing the master plan for redevelopment, PESRM is aware of the known soil and groundwater impacts at the Site that are associated with the Site's historical use for petroleum refining. As noted above, the anticipated use of the Site is non-residential, and use restrictions will be documented in one



or more environmental covenants. Many of the anticipated development components (e.g., building slabs, drive aisles, parking lots, new roadways, and other paved areas described in cleanup plans to be submitted to PADEP by Evergreen) will serve as barriers to exposure and infiltration, and can be used to achieve the SHS or SSS under Act 2 for soil at the Site. **Table 1.1** lists examples of anticipated development components and the functions that they will serve to achieve the SHS or SSS under Act 2 for soil at the Site.

## 1.2.2 Redevelopment Elements and Soil Reuse Decisions

PESRM understands that Evergreen’s anticipated cleanup approach for the Site may rely on the assumption that certain impacted soil would remain at depths where it would not be accessible to current or future receptors and/or would be subject to different cleanup standards under Act 2 (i.e., soil at depths of greater than 2-feet [ft] below ground surface). To ensure that the SMP aligns with Evergreen’s anticipated cleanup approach, if such impacted soil is relocated to achieve necessary redevelopment elevations, the soil will be placed in accordance with the reuse options specified in **Table 1.2**.

Based on the planned redevelopment, most soil at the Site will ultimately be located beneath a development element that will serve as an exposure barrier (e.g., placed under building pads, drive aisles, parking lots, roadways or other features that will function as exposure barriers). Accessible surface soil will only be in limited areas of the Site (e.g., landscape areas). Surface soil in these accessible areas will consist of either (1) imported material or (2) soil from the Site that has been identified as appropriate for this use in accordance with the reuse options noted in **Table 1.2**. Imported soil used as surface soil will be either clean fill or regulated fill under PADEP’s *Management of Fill Policy* (PADEP 2021), as appropriate, and soil from the Site will only be considered appropriate for use as surface soil if it meets applicable SHS or a risk assessment demonstrates attainment of the SSS. To the extent that soil is transported off-site for disposal, such soil will be managed in accordance with applicable legal requirements. Finally, PESRM’s anticipated cut and fill plan will be designed to leave a minimum 2-ft buffer between the bottom of cut areas and the top of known light-non-aqueous phase liquid plumes.

## 1.2.3 Site-Specific List of Substances and Applicable Screening Levels

As part of Evergreen’s work under Act 2 and the One Cleanup Program, Evergreen, USEPA and PADEP have developed a specific target list of regulated substances that is being used during characterization and will be considered during remedial decision-making. **Table 1.3** provides the list of these site-specific substances. Soil sampled under the SMP was characterized for these substances. This table also provides the applicable screening levels used to evaluate and categorize soil that will be managed under the SMP in accordance with the categories detailed in Section 1.2.4.

## 1.2.4 Soil Management Categories

The pre-excavation (i.e., before grading) characterization data generated via the SMP is used to divide soil into categories based on how the material can be reused during the cut and fill activities. The specific categories to which soil is designated depends upon a comparison of the measured chemical-



specific soil concentrations to the applicable screening levels. These categories are presented on **Table 1.2**.

## 1.3 Plan Addendum Organization

Section 1 provides a brief introduction and provides background on the SMP, its purpose, and objectives. Section 2 describes the samples that have been collected and analyzed in support of the SMP for the Industrial Phase 1B area of the Site (shown on **Figure 1.2**). Section 3 presents the results of the sampling performed, a comparison of the results to applicable screening levels, and the resulting categories assigned to different soil volumes based on the SMP. Section 4 describes how soil management will be observed and documented during earthwork. Section 5 summarizes the conclusions from this sampling. Finally, Section 6 provides the references considered in the development of this *Plan Addendum*.

# 2 Sample Collection and Analysis

This section discusses the methods used to identify, collect, and analyze soil samples from the anticipated cut areas in the Industrial Phase 1B area of the Site. Section 2.1 explains how the cut volume was discretized and how sampling locations were determined. Section 2.2 details the sample collection methods used during the field activity. Finally, Section 2.3 explains the analytical methods used.

## 2.1 Soil Volumes and Sample Locations

As described in the *2020 Plan*, a significant volume of soil will be moved from higher portions of the Site (cut areas) to raise elevations in lower portions of the Site (fill areas) above floodplain elevations. The objective of the sampling program is to characterize soil from cut areas to determine where and how the soil can be placed in planned fill areas such that it will not pose an unacceptable risk to human health or the environment. The current development plan includes multiple phases to be completed over the next several years with each phase representing a different portion of the Site. Soil sampling is anticipated to be conducted for each phase as the development plans are finalized and as the areas become accessible after demolition of existing infrastructure.

From August 4, 2022 to October 20, 2022, soil sampling was conducted to characterize the concentrations of site-specific substances in soil that is expected to be cut from the Industrial Phase 1B area of the former refinery (**Figure 1.2**). The anticipated cut volume for this area is 880,600 cubic yards (yd<sup>3</sup>). Soil to be cut from this area was divided into cells with one composite<sup>2</sup> sample to be collected from each cell layer. As described in the *2020 Plan*, the intent of the program was to collect samples at a frequency of approximately one sample per 2,000 yd<sup>3</sup> and have these samples analyzed for the site-specific list of substances.

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<sup>2</sup> Samples for analysis of metals and SVOCs were collected as composite samples. Samples for analysis of VOCs were collected as discrete samples.





Overall, the Industrial Phase 1B area of the former refinery was discretized into 132 two-dimensional cell areas. Depending on the depth of the planned cut at each cell, the cell was vertically divided into one or more layers each corresponding to an approximate volume of cut of 2,000 yd<sup>3</sup>. Each layer was assigned the suffix “C1” to “C5” (where C1 corresponds to the shallowest layer). Given the planned total cut volume - 880,600 yd<sup>3</sup> - this resulted in 473 cells (~1,900 yd<sup>3</sup> per cell on average). Overall, in total, 473 soil samples were collected within the Industrial Phase 1B area.

Four soil borings were completed in each cell to generate the soil for each composite soil sample. As shown on **Figure 2.1**, 528 soil borings were installed across the area<sup>3</sup>. Each boring was assigned a target depth interval for sampling based on the depth of cut at that location. The cells which were used to discretize the development area were identified by region number (e.g., 301) and cell letter/number (e.g., AA01). The two-dimensional cell boundaries for the cut soil samples are shown on **Figures 2.2A** through **2.2C**.

## 2.2 Sample Collection Methods

Ransom Consulting was retained by PESRM to collect the soil samples. Using a direct push drill rig, four soil borings (designated -a, -b, -c, and -d) were advanced in each cell to a depth specific to the approximate depth of cut at each boring.

To characterize the chemical concentrations in each 2,000 yd<sup>3</sup> volume, a discrete, grab sample was collected for volatile organic compound (VOC) analysis from the soil boring (boring a, b, c, or d) where field observations (e.g., field screening) indicated the greatest evidence of potential VOC contamination. A 4-point composite sample (composed of soil from all four borings) was collected for semivolatile organic compounds (SVOCs) and lead analyses.

## 2.3 Sample Analyses

Samples collected were submitted to Alpha Analytical of Westborough, Massachusetts, a Pennsylvania-certified laboratory. The soil samples collected during the field activities were placed directly into laboratory-provided glassware and stored on ice in a cooler under appropriate chain-of-custody protocol. Laboratory deliverables are provided in **Appendix A**. As noted on **Table 1.3**, VOCs were analyzed via United States Environmental Protection Agency (USEPA) Method 8260, SVOCs via USEPA Method 8270<sup>4</sup>, and lead via USEPA Method 6010/6020.

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<sup>3</sup> One composite soil sample and one discrete soil sample was collected for each set of four soil borings in a cell resulting in a lower number of samples than the total number of borings. Additionally, in areas with deep cuts, the same set of soil borings was used to characterize multiple cells by collecting separate composites from different depth intervals. Thus, the total number of samples (473) is less than the total number of borings (528) but greater than one fourth of the total number of borings (528 / 4 = 132).

<sup>4</sup> Naphthalene was analyzed via USEPA Method 8270 in accordance with Table 1 of the 2020 *Plan*.



## 3 Sampling Results

This section presents and discusses the results of the soil sampling and how chemical concentrations in soil within the cut soil zones compare to the Act 2 soil cleanup standards identified in the approved 2020 *Plan*.

### 3.1 Results and Soil Categorization

The analytical results for samples collected from the Industrial Phase 1B portion of the former refinery are presented in **Tables 3.1 and 3.2** and discussed below.

#### 3.1.1 Analytical Results

The results of the discrete (VOC) and composite (SVOC and lead) soil samples are presented on **Tables 3.1 and 3.2**, respectively. Overall, 473 discrete and 473 composite soil samples were collected from the cut cells in Phase 1B and analyzed for VOCs and SVOCs/lead, respectively. Lead was the only chemical detected at concentrations above the Non-Residential Direct Contact Medium Specific Concentrations (MSC) for soil in these cut samples.

- Lead was detected in 473 of the 473 samples at concentrations ranging from 0.46 to 9,700 milligram per kilogram (mg/kg). The average detected concentration was 150 mg/kg. Of the 473 samples with detected concentrations of lead, as shown on **Table 3.2**, 10 exhibited concentrations greater than the Non-Residential Direct Contact MSC of 1,000 mg/kg.
- Overall, 10 samples (2 percent) exhibited concentrations greater than the Non-Residential Direct Contact MSCs.

Within these cut cells, eight VOCs (i.e., benzene, ethyl benzene, methyl tert-butyl ether [MTBE], toluene, 1,2,4-trimethylbenzene [1,2,4-TMB], 1,3,5-trimethylbenzene [1,3,5-TMB]) and lead were detected at concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC. No SVOCs were greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC.

- Benzene was detected in 166 of the 473 samples at concentrations ranging from 0.00016 to 65 mg/kg. The average detected concentration was 1.7 mg/kg. Of the 166 detected concentrations of benzene, as shown on **Table 3.1**, 29 were greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 0.5 mg/kg.
- Ethylbenzene was detected in 157 of the 473 samples at concentrations ranging from 0.00012 to 120 mg/kg. The average detected concentration was 3.6 mg/kg. Of the 157 samples with detected concentrations, as shown on **Table 3.1**, two exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 70 mg/kg.
- MTBE was detected in 16 of the 473 samples at concentrations ranging from 0.00021 to 3.2 mg/kg. The average detected concentration was 0.32 mg/kg. Of the 16 samples with detected concentrations, as shown on **Table 3.1**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 2 mg/kg.



- Toluene was detected in 102 of the 473 samples at concentrations ranging from 0.00051 to 150 mg/kg. The average detected concentration was 2.4 mg/kg. Of the 102 samples with detected concentrations, as shown on **Table 3.1**, one exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 100 mg/kg.
- 1,2,4-TMB was detected in 149 of the 473 samples at concentrations ranging from 0.00032 to 600 mg/kg. The average detected concentration was 12 mg/kg. Of the 149 samples with detected concentrations, as shown on **Table 3.1**, 2 exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 300 mg/kg.
- 1,3,5-TMB was detected in 126 of the 473 samples at concentrations ranging from 0.0002 to 200 mg/kg. The average detected concentration was 5.1 mg/kg. Of the 126 samples with detected concentrations, as shown on **Table 3.1**, two exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 93 mg/kg.
- Of the 473 samples with detected concentrations of lead, as shown on **Table 3.2**, 25 exhibited a concentration greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSC of 450 mg/kg.
- Overall, 62 samples (13 percent) exhibited concentrations greater than the Non-Residential Used Aquifer Soil-to-Groundwater MSCs.

### 3.1.2 Consideration for Historical Sampling Results

In addition to considering the soil sampling results summarized above, historical soil sampling results from the target analyte list (Table 1.3) reported by Evergreen and aboveground storage tank (AST) site assessment and site characterization soil sampling results<sup>5</sup> were also considered in determining soil reuse categories. A figure presenting the spatial distribution of chemicals identified in **Table 1.3** with concentrations in soil samples reported by Evergreen that were greater than the Non-Residential Used Aquifer Soil-to-Groundwater or Non-Residential Direct Contact MSCs is included in **Appendix B**. Sampling results for the tank groups within the Phase 1B area, Tank Groups 03, 04, and 05, were also reviewed. A figure presenting the spatial distribution of locations with chemicals identified in **Table 1.3** with concentrations exceeding the Non-Residential Used Aquifer Soil-to-Groundwater or Non-Residential Direct Contact MSCs in soil samples collected in support of AST closure is included in **Appendix B**.

As shown in **Table 3.3**, the concentrations for each target analyte from the historical and AST samples were summarized and averaged for each cell. These averages were compared against the non-residential screening levels used to support this program (Section 1.2.3). Within the development area

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<sup>5</sup> AST site assessment and site characterization sampling is being conducted by PESRM in accordance with the requirements of the PADEP Storage Tank Cleanup Program and the Above Ground Storage Tank Closure Work Plan (Terraphase 2021b). The sampling results and conclusions related to closure of historical tank releases will be documented in separate submittals to PADEP as part of the Corrective Action Process. The results from the AST samples are being used in the context of this SMP Addendum as additional data that can be used to inform soil management decision-making. Unless specifically stated in a tank program report, soil management is not being used to address releases from the ASTs under the Corrective Action Process.



that is planned for soil regrading in Phase 1B, lead and benzene were detected in historical and AST soil samples at concentrations greater than the non-residential screening levels. As summarized in **Table 3.3**, lead was identified at concentrations greater than non-residential screening levels in historical or AST samples within one cut cell and benzene within seven cut cells.

These historical and AST sampling results were considered in assigning soil categories to each cell. Overall, in Phase 1B, six cells were recategorized based on these results. Originally categorized as A, five of these cells were recategorized as B and one was recategorized as E.

Cell	Original Category	Recategorization	Chemical Driver
301-V01	A	B	Benzene
302-AF05	A	E	Lead
302-AF09	A	B	Benzene
302-AL03	A	B	Benzene
302-AO02	A	B	Benzene
302-AZ02	A	B	Benzene

### 3.1.3 Categorization of Soil to be Relocated During Mass Grading

As discussed in Section 1.2.4, the pre-soil grading characterization data generated via the SMP is used to divide soil that will be relocated during mass grading into categories that determine how the material will be managed during the cut and fill activities. The specific categories to which soil is assigned depends upon a comparison of the measured chemical-specific soil concentrations to the applicable screening levels. These categories are presented in **Table 1.2**. Concentrations from historical soil samples (discussed in Section 3.1.2) were also considered. The two-dimensional cell boundaries for the cut soil samples (**Figures 2.2A** through **2.2C**) were used to visualize the aerial extent of soil that will be managed in accordance with these categories.

**Figure 3.1A** through **3.1C** presents the results of the soil categorization for the cut material. As illustrated, most of the development in Industrial Phase 1B area did not exhibit chemical concentrations greater than applicable screening levels. Therefore, most of the soil is categorized as “A” (*Soil can be reused in area not beneath a surface cap, e.g., as backfill in utility corridors or in landscaped areas, as long as a risk assessment demonstrates attainment of the site-specific standard*).

There are seven cells which were identified as having concentrations greater than both the Non-residential Soil Direct Contact and Soil-to-GW Protection MSCs. Cut soil within these seven cells are categorized as “E” (*Soil can be reused beneath an impervious surface cap that will serve as an engineering control under Act 2 at elevations above the groundwater table*). Depending on the cell, the chemicals exceeding the MSCs included lead and benzene.

As illustrated on **Figures 3.1A** through **3.1C**, an additional 29 cells have been categorized as “B” (*Soil that can be reused (1) in areas beneath an impervious surface cap (e.g., building slabs, parking lots, or roadways) that will serve as an engineering control under Act 2 at elevations above the groundwater*



table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline (i.e., the edge of the Schuylkill River) as long as a risk assessment demonstrates attainment of the Site-specific standard). The chemicals identified in these areas exhibited concentrations that were greater than the Non-residential Soil-to-GW Protection MSCs but less than the Non-residential Soil Direct Contact MSCs. Depending on the cell, the chemicals exceeding MSCs included lead, benzene, ethyl benzene, MTBE, toluene, 1,2,4-TMB, and 1,3,5-TMB.

## 4 Soil Management

The soil sampling results described in Section 3.1, including the results from historical samples collected by Evergreen and AST site assessment and site characterization soil samples, have been used to categorize and determine how soil that will be relocated during mass grading activities may be re-used on site. The sections below describe the process that will be used to manage soil during construction and document that soil in each category is used in accordance with the requirements specified in **Table 1.2** and the *2020 Plan*.

### 4.1 Identification of Waste Material during Soil Movement

During mass grading activities, there is the potential for previously unidentified waste materials, such as leaded tank bottoms or containerized wastes, to be encountered. An environmental professional will be on site during mass grading to observe soil movement, to document that soil is placed appropriately, and to observe suspect waste materials. Procedures for identifying waste materials and subsequent notifications are described in **Appendix D**.

### 4.2 Bulk Soil Movement and Placement

**Figure 4.1a through 4.1c** identifies how soil in the cut cells will be managed. This drawing includes control points with specific coordinates to identify the boundaries of each area that has a soil category other than “A”. The volume of soil associated with each category “B” and “E” area is provided in **Table 4.1**.

Overall, it is estimated that approximately 880,600 yd<sup>3</sup> of soil will be cut from this area and re-used during site redevelopment<sup>6</sup>. As summarized in the table below, this includes 46,800 yd<sup>3</sup> that will be managed as category “E” material and 215,700 yd<sup>3</sup> that will be managed as category “B” material. The remaining soil (618,000 yd<sup>3</sup>) will be managed as category “A”.

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<sup>6</sup> The volumes presented here are rounded and approximate. More precise estimates are included in Table 4.1.



Soil Management Category	Volume (yd <sup>3</sup> )
A	618,000
B	215,700
E	46,800
Total	<b>880,600</b>

The earthwork contractor will excavate and segregate the category “B” and “E” soil identified on **Figure 4.1** and **Table 4.1** for reuse in accordance with the requirements specified in **Table 1.2**. An environmental professional will oversee the earthwork and will ensure that soil is managed consistent with this *Plan Addendum*.

### 4.3 Documentation

The earthwork contractor will provide survey documentation of the soil volume excavated from each category “B” and “E” area. The surveys will be reviewed by the environmental professional overseeing the earthwork. The environmental professional will also be responsible for documenting the movement and storage of this soil during construction, including documenting the location of each soil volume identified in the above table (more detail provided in **Table 4.1**), in the final developed condition. The documentation will include cubic yards of soil moved, coordinates or maps of the new soil locations, and as-built drawings demonstrating that the areas where this soil is placed are covered by development components that serve as adequate engineering controls. PESRM understands that plans and descriptions of surface caps will need to be included in the Cleanup Plan(s) and that the Cleanup Plan(s) will be subject to the Act 2 public involvement process and will be coordinated with Evergreen.

## 5 Conclusion

This *Plan Addendum* has been prepared on behalf of PESRM for the PADEP. It presents the results of soil sampling performed in the Industrial Phase 1B area of the former Philadelphia Energy Solutions Refinery. The sampling was performed in accordance with the 2020 *Plan*. The results of the soil sampling were used to categorize volumes of soil from across the development area so that decisions could be made regarding how soil that will be cut during mass grading activities will be managed and reused. PESRM intends to characterize the top 2 feet of soil remaining in the cut areas after the cut soil has been relocated. The data from these post-grading samples will be shared with Evergreen and PADEP.

Overall, 880,600 yd<sup>3</sup> of soil material is planned for cut during grading activities in the Industrial Phase 1B portion of the refinery. When accounting for the soil sampling results obtained during the SMP, the AST soil sampling results, and the historical soil sampling results provided by Evergreen, of this cut material:



- 5.3 percent (46,800 yd<sup>3</sup>) should be reused *beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table* (Category E)<sup>7</sup>.
- 24.5 percent (215,700 yd<sup>3</sup>) should be managed as soil that can be reused (1) *in areas beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline as long as a risk assessment demonstrates attainment of the Site-specific standard* (Category B)<sup>8</sup>.
- The remaining soil (618,000 yd<sup>3</sup>) *can be reused in area not beneath a surface cap, e.g., as backfill in utility corridors or in landscaped areas.*

## 6 References

Evergreen. 2017. *AOI 8 Remedial Investigation Report*. December 21.

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<sup>7</sup> Due predominantly to detected concentrations of lead and benzene.

<sup>8</sup> Due predominantly to detected concentrations of lead, benzene, ethyl benzene, MTBE, toluene, 1,2,4-TMB, and 1,3,5-TMB.



# Tables

- 1.1 Development Component Functions
- 1.2 Soil Reuse Categories
- 1.3 Target Analyte List and Associated Soil Cleanup Standards
- 3.1 Cut Soil Discrete Analytical Results
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**Table 1.1**

**Development Component Functions**

Soil Management Plan Addendum No. 3

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

<b>Development Component</b>	<b>Exposure Barrier</b>	<b>Impervious Barrier</b>
<i>Surface Soil Layer</i> Imported soil used in accessible areas at the ground surface will be subject to PADEP's Management of Fill Policy (PADEP 2020). Before using soil from the Site in accessible areas at the ground surface, a risk assessment will be conducted to demonstrate attainment of the Site-specific standard.	X	
<i>Building Slab</i> Minimum section will consist of 4 inches of concrete over 4 inches of aggregate subbase.	X	X
<i>Parking Lot</i> Minimum section will consist of 3.75 inches of concrete or asphalt over 4 inches of aggregate subbase.	X	X
<i>Roadway</i> Minimum section will consist of 5 inches of concrete and/or asphalt over 4 inches of aggregate subbase.	X	X
<i>Drive Aisle</i> Minimum section will consist of 5 inches of concrete or asphalt over 4 inches of aggregate subbase.	X	X

**Table 1.2**

**Soil Reuse Categories**

Soil Management Plan Addendum No. 3

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

Category	Description	Reuse Options <sup>4</sup>
A	Concentrations of target analytes below nonresidential soil direct contact <sup>1,3</sup> and soil-to-groundwater <sup>2</sup> MSCs.	(1) in areas beneath a surface cap that provides an exposure barrier (e.g., building slabs, parking lots, roadways, or imported soil) that will serve as an engineering control under Act 2, or (2) in areas not beneath a surface cap (e.g., as backfill in utility corridors or in landscaped areas) as long as a risk assessment demonstrates attainment of the Site-specific standard.
B	Concentrations of target analytes above nonresidential soil-to-groundwater numeric values <sup>2</sup> but below the nonresidential direct contact numeric values <sup>1,3</sup> , where direct contact values are higher than the nonresidential soil-to-groundwater numeric values.	(1) in areas beneath an impervious surface cap (e.g., building slabs, parking lots, or roadways) that will serve as an engineering control under Act 2 at elevations above the groundwater table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline (i.e., the edge of the Schuylkill River) as long as a risk assessment demonstrates attainment of the Site-specific standard.
C	Concentrations of target analytes above the nonresidential direct contact numeric values <sup>1,3</sup> but below the nonresidential soil-to-groundwater numeric values <sup>2</sup> , where the soil-to-groundwater numeric values are higher than the nonresidential direct contact numeric values.	In areas beneath a surface cap that provides an exposure barrier (e.g., building slabs, parking lots, roadways, imported soil, or appropriate Site soil) that will serve as an engineering control under Act 2. <sup>4,5</sup>
D	Concentrations of target analytes above the nonresidential direct contact numeric values <sup>1,3</sup> but below site-specific leaching based soil standards (if derived by PESRM).	In areas beneath a surface cap that provides an exposure barrier (e.g., building slabs, parking lots, roadways, imported soil, or appropriate Site soil) that will serve as an engineering control under Act 2. <sup>4,5</sup>
E	Concentrations of target analytes above the nonresidential direct contact numeric values <sup>1,3</sup> and above both nonresidential soil-to-groundwater numeric values <sup>2</sup> and site-specific leaching-based standards (if derived by PESRM).	Soil can be reused beneath an impervious surface cap (e.g., building slabs, parking lots, or roadways) that will serve as an engineering control under Act 2 at elevations above the groundwater table.

- 1 The non-residential soil direct contact numeric value (0-2 ft bgs) are the current PADEP values.
- 2 The non-residential soil to groundwater numeric value are the current PADEP values for non-residential use aquifer (TDS ≤ 2500) soil-to-groundwater numeric value.
- 3 The Site-specific standard develop by Langan (2015) for lead is lower than PADEP's current non-residential soil direct contact numeric value of 2,500 mg/kg. For the SMP, PADEP's current generic value was used.
- 4 Imported soil used as an exposure barrier will be subject to PADEP's (2020) Management of Fill Policy.
- 5 Soil from the Site will only be considered appropriate for use as an exposure barrier if a risk assessment demonstrates attainment of the Site-specific standard.
- 6 Relocated soil from the Site will likely all be placed at elevations above the groundwater table because existing grades are above the groundwater table and the objective of soil relocation is to raise grades in areas of current relative lower elevation.

**Table 1.3**

**Target Analyte List and Associated Soil Cleanup Standards**

Soil Management Plan Addendum No. 3

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

Analyte	USEPA Analytical Method	CASRN	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Numeric Value (mg/kg)
<b>Volatile Organic Compounds</b>				
Benzene	8260	71-43-2	280	0.5
1,2-Dibromoethane (EDB)	8260	106-93-4	3.7	0.005
1,2-Dichloroethane (EDC)	8260	107-06-2	85	0.5
Ethylbenzene	8260	100-41-4	880	70
Isopropylbenzene (Cumene)	8260	98-82-8	10,000	2,500
Methyl Tertiary Butyl Ether	8260	1634-04-4	8,500	2
Naphthalene	8270	91-20-3	66	25
Toluene	8260	108-88-3	10,000	100
1,2,4-Trimethylbenzene	8260	95-63-6	4,700	300
1,3,5-Trimethylbenzene	8260	108-67-8	4,700	93
Xylenes (Total)	8260	1330-20-7	7,900	1,000
<b>Semi-Volatile Compounds</b>				
Anthracene	8270	120-12-7	190,000	350
Benzo(a)anthracene	8270	56-55-3	130	340
Benzo(a)pyrene	8270	50-32-8	91	46
Benzo(b)fluoranthene	8270	205-99-2	76	170
Benzo(g,h,i)perylene	8270	191-24-2	190,000	180
Chrysene	8270	218-01-9	760	230
Fluorene	8270	86-73-7	130,000	3,800
Phenanthrene	8270	85-01-8	190,000	10,000
Pyrene	8270	129-00-0	96,000	2,200
<b>Metals</b>				
Lead	6010/6020	7439-92-1	1000	450

**Notes:**

- <sup>1</sup> The Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) are the current PADEP values.
- <sup>2</sup> The Non-Residential Soil to Groundwater Numeric Value are the current PADEP values for Non-Residential Use Aquifer (TDS ≤ 2500) Soil-to-Groundwater Numeric Value.
- <sup>3</sup> The Act 2 Standards are subject to change, and the Standards in effect at the time of an Act 2 report submittal will apply.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-A01-c 201-A01	201-A01-c 201-A01	201-A01-c 201-A01	201-A02-c 201-A02	201-A02-c 201-A02	201-A02-c 201-A02	201-A03-a 201-A03	201-A03-c 201-A03	201-A03-d 201-A03	201-A04-a 201-A04	201-A04-a 201-A04	201-A04-a 201-A04	201-A04-b 201-A04	201-A05-b 201-A05
Field Sample ID	Numeric Value	Numeric Value	201-A01-C1-VOC	201-A01-C2-VOC	201-A01-CX-VOC	201-A02-C1-VOC	201-A02-C2-VOC	201-A02-CX-VOC	201-A03-C1-VOC	201-A03-C2-VOC	201-A03-CX-VOC	201-A04-C2-VOC	201-A04-C3-VOC	201-A04-CX-VOC	201-A04-C1-VOC	201-A05-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.1 - 1.2	2.3 - 2.4	2.9 - 3.0	0.9 - 1.1	2.0 - 2.1	3.0 - 3.2	0.6 - 0.8	1.8 - 2.0	3.2 - 3.4	1.1 - 1.2	2.3 - 2.4	3.4 - 3.5	0.6 - 0.8	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	1/17/2022	1/17/2022	1/17/2022	1/18/2022	1/18/2022	1/18/2022	1/18/2022	1/18/2022	1/18/2022	1/19/2022	1/19/2022	1/19/2022	1/19/2022	1/19/2022
<b>VOCs</b>																
Benzene	280	0.5	0.066 (0.034)	U (0.031)	U (0.037)	23 (0.15)	5.5 (0.034)	11 (0.064)	61 (0.25)	10 (0.032)	38 (0.21)	60 (0.68)	63 (0.31)	5.5 (0.03)	1.1 (0.028)	8.2 (0.42)
1,2-Dibromoethane	3.7	0.005	U (0.034)	U (0.031)	U (0.037)	U (0.15)	U (0.034)	U (0.064)	U (0.25)	U (0.032)	U (0.21)	U (0.68)	U (0.31)	U (0.03)	U (0.028)	U (0.42)
1,2-Dichloroethane	85	0.5	U (0.069)	U (0.061)	U (0.073)	U (0.3)	U (0.067)	U (0.13)	U (0.5)	U (0.064)	U (0.42)	U (1.4)	U (0.62)	U (0.061)	U (0.056)	U (0.85)
Ethyl Benzene	880	70	1.7 (0.069)	7.9 (0.061)	U (0.073)	50 (0.3)	7.5 (0.067)	8.9 (0.13)	58 (0.5)	1.7 (0.064)	76 (0.42)	110 (1.4)	95 (0.62)	0.43 (0.061)	7.6 (0.056)	55 (0.85)
Isopropylbenzene	10000	2500	0.54 (0.069)	1.9 (0.061)	U (0.073)	4.3 (0.3)	0.59 (0.067)	0.78 (0.13)	6 (0.5)	0.043 J (0.064)	5.3 (0.42)	7.2 (1.4)	5.7 (0.62)	0.027 J (0.061)	0.5 (0.056)	12 (0.85)
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.12)	U (0.15)	U (0.6)	U (0.13)	U (0.26)	1.1 (1)	12 (0.13)	0.98 (0.83)	U (2.7)	U (1.2)	0.17 (0.12)	0.1 J (0.11)	U (1.7)
Toluene	10000	100	0.066 J (0.069)	7.6 (0.061)	U (0.073)	42 (0.3)	30 (0.27)	0.97 (0.13)	8.5 (0.5)	24 (0.32)	230 (1.7)	510 (3.4)	410 (3.1)	8.9 (0.061)	0.38 (0.056)	2.2 (0.85)
1,2,4-Trimethylbenzene	4700	300	0.074 J (0.14)	18 (0.12)	U (0.15)	96 (1.2)	13 (0.13)	4.5 (0.26)	17 (1)	1.3 (0.13)	120 (3.3)	190 (2.7)	150 (1.2)	0.72 (0.12)	17 (0.22)	310 (3.4)
1,3,5-Trimethylbenzene	4700	93	0.089 J (0.14)	8.1 (0.12)	U (0.15)	30 (0.6)	4.3 (0.13)	1.6 (0.26)	10 (1)	0.39 (0.13)	44 (0.83)	59 (2.7)	44 (1.2)	0.23 (0.12)	4.8 (0.11)	78 (1.7)
Xylenes (total)	7900	1000	1.76 J (0.14)	19.6 J (0.12)	U (0.15)	305 J (1.2)	46 J (0.13)	35.75 J (0.26)	62 J (1)	10.8 J (0.13)	420 J (3.3)	730 J (2.7)	560 J (6.2)	2.43 J (0.12)	33.7 J (0.11)	180 J (1.7)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-A05-b 201-A05	201-A05-b 201-A05	201-A05-c 201-A05	201-A06-a 201-A06	201-A06-a 201-A06	201-A06-d 201-A06	201-A07-a 201-A07	201-A07-a 201-A07	201-A07-b 201-A07	201-A08-a 201-A08	201-A08-a 201-A08	201-A08-d 201-A08	201-A09-b 201-A09	201-A09-d 201-A09
Field Sample ID	Numeric Value	Numeric Value	201-A05-C2-VOC	201-A05-C3-VOC	201-A05-CX-VOC	201-A06-C2-VOC	201-A06-CX-VOC	201-A06-C1-VOC	201-A07-C1-VOC	201-A07-CX-VOC	201-A07-C2-VOC	201-A08-C2-VOC	201-A08-CX-VOC	201-A08-C1-VOC	201-A09-C1-VOC	201-A09-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.9 - 1.1	2.3 - 2.4	2.5 - 2.7	0.8 - 0.9	1.5 - 1.7	0.9 - 1.1	0.5 - 0.6	2.9 - 3.0	1.5 - 1.7	2.9 - 3.0	4.0 - 4.1	0.5 - 0.6	0.6 - 0.8	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	1/19/2022	1/19/2022	1/19/2022	1/21/2022	1/21/2022	1/21/2022	1/19/2022	1/19/2022	1/19/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022
<b>VOCs</b>																
Benzene	280	0.5	1.8 (0.12)	0.11 (0.03)	0.38 (0.037)	U (0.14)	0.17 (0.032)	1.7 (0.032)	1.9 (0.037)	3.2 (0.029)	1.7 (0.33)	1 (0.073)	1 (0.035)	2 (0.032)	13 (0.71)	340 (2.9)
1,2-Dibromoethane	3.7	0.005	U (0.12)	U (0.03)	U (0.037)	U (0.14)	U (0.032)	U (0.032)	U (0.037)	U (0.029)	U (0.33)	U (0.073)	U (0.035)	U (0.032)	U (0.71)	U (2.9)
1,2-Dichloroethane	85	0.5	U (0.25)	U (0.061)	U (0.074)	U (0.28)	U (0.064)	U (0.064)	U (0.074)	U (0.057)	U (0.66)	U (0.14)	U (0.071)	U (0.064)	U (1.4)	U (5.8)
Ethyl Benzene	880	70	43 (0.25)	0.076 (0.061)	0.043 J (0.074)	0.28 (0.28)	0.088 (0.064)	6.4 (0.064)	46 (0.74)	0.95 (0.057)	95 (0.66)	14 (0.14)	0.91 (0.071)	15 (0.064)	170 (1.4)	420 (5.8)
Isopropylbenzene	10000	2500	6.6 (0.25)	0.49 (0.061)	0.15 (0.074)	4.5 (0.28)	0.9 (0.064)	0.96 (0.064)	6.3 (0.074)	0.054 J (0.057)	8.5 (0.66)	2.4 (0.14)	3.3 (0.071)	5.5 (0.064)	17 (1.4)	30 (5.8)
Methyl tert-butyl ether	8500	2	U (0.49)	U (0.12)	0.018 J (0.15)	U (0.56)	U (0.13)	U (0.13)	U (0.15)	0.024 J (0.11)	U (1.3)	U (0.29)	0.023 J (0.14)	0.013 J (0.13)	U (2.8)	U (12)
Toluene	10000	100	0.26 (0.25)	0.045 J (0.061)	0.058 J (0.074)	0.33 (0.28)	0.12 (0.064)	0.64 (0.064)	0.25 (0.074)	0.087 (0.057)	1.7 (0.66)	0.14 (0.14)	0.072 (0.071)	0.19 (0.064)	46 (1.4)	1400 (14)
1,2,4-Trimethylbenzene	4700	300	100 (1.2)	0.71 (0.12)	0.44 (0.15)	0.6 (0.56)	0.079 J (0.13)	13 (0.13)	1.4 (0.15)	1 (0.11)	280 (2.7)	50 (1.4)	10 (0.14)	0.34 (0.13)	500 (7.1)	760 (12)
1,3,5-Trimethylbenzene	4700	93	30 (0.49)	0.42 (0.12)	0.2 (0.15)	0.2 J (0.56)	0.034 J (0.13)	3.7 (0.13)	0.33 (0.15)	0.32 (0.11)	76 (1.3)	13 (0.29)	17 (0.14)	0.29 (0.13)	160 (2.8)	240 (12)
Xylenes (total)	7900	1000	14.73 J (0.49)	0.307 J (0.12)	0.174 J (0.15)	1.22 J (0.56)	0.135 J (0.13)	12.45 J (0.13)	3.47 J (0.15)	4.08 J (0.11)	282 J (1.3)	43.58 J (0.29)	3.251 J (0.14)	1.86 J (0.13)	830 J (2.8)	2430 J (12)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-A09-d 201-A09	201-A10-d 201-A10	201-A10-d 201-A10	201-A10-d 201-A10	201-A11-b 201-A11	201-A11-c 201-A11	201-A11-c 201-A11	201-A12-a 201-A12	201-A12-a 201-A12	201-A12-d 201-A12	201-A13-a 201-A13	201-A13-b 201-A13	201-A13-b 201-A13	201-A14-a 201-A14
Field Sample ID	Numeric Value	Numeric Value	201-A09-CX-VOC	201-A10-C1-VOC	201-A10-C2-VOC	201-A10-CX-VOC	201-A11-C1-VOC	201-A11-C2-VOC	201-A11-CX-VOC	201-A12-C2-VOC	201-A12-CX-VOC	201-A12-C1-VOC	201-A13-CX-VOC	201-A13-C1-VOC	201-A13-C2-VOC	201-A14-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.0 - 2.1	0.5 - 0.6	1.4 - 1.5	1.8 - 2.0	0.8 - 0.9	1.4 - 1.5	1.7 - 1.8	2.1 - 2.3	4.3 - 4.4	0.3 - 0.5	4.4 - 4.6	0.8 - 0.9	1.5 - 1.7	0.2 - 0.3
Sample Date	(mg/kg)	(mg/kg)	1/20/2022	1/21/2022	1/21/2022	1/21/2022	1/21/2022	1/21/2022	1/21/2022	1/24/2022	1/24/2022	1/24/2022	1/24/2022	1/24/2022	1/24/2022	1/24/2022
<b>VOCs</b>																
Benzene	280	0.5	340 (2)	3.1 (0.15)	4.6 (0.14)	2.6 (0.14)	U (0.14)	9.5 (0.22)	2.3 (0.18)	11 (0.61)	32 (0.64)	0.5 (0.036)	4.6 (0.061)	56 (0.44)	58 (0.34)	0.0016 (0.00064)
1,2-Dibromoethane	3.7	0.005	U (2)	U (0.15)	U (0.14)	U (0.14)	U (0.14)	U (0.22)	U (0.18)	U (0.61)	U (0.64)	U (0.036)	U (0.061)	U (0.44)	U (0.34)	U (0.00064)
1,2-Dichloroethane	85	0.5	U (4.1)	U (0.3)	U (0.29)	U (0.28)	U (0.27)	U (0.43)	U (0.35)	U (1.2)	U (1.3)	U (0.072)	U (0.12)	U (0.89)	U (0.69)	U (0.0013)
Ethyl Benzene	880	70	470 (4.1)	0.89 (0.3)	0.85 (0.29)	0.77 (0.28)	17 (0.27)	5.4 (0.43)	11 (0.35)	55 (1.2)	98 (1.3)	0.54 (0.072)	36 (0.12)	150 (0.89)	140 (0.69)	0.00023 J (0.0013)
Isopropylbenzene	10000	2500	39 (4.1)	1.8 (0.3)	2.3 (0.29)	2.2 (0.28)	4.6 (0.27)	4.7 (0.43)	7.5 (0.35)	3.7 (1.2)	6.4 (1.3)	0.2 (0.072)	2.7 (0.12)	13 (0.89)	11 (0.69)	0.00064 J (0.0013)
Methyl tert-butyl ether	8500	2	U (8.2)	4.2 (0.6)	6.2 (0.57)	4.8 (0.56)	U (0.54)	0.37 J (0.86)	U (0.7)	U (2.4)	U (2.6)	0.016 J (0.14)	U (0.24)	0.29 J (1.8)	U (1.4)	0.0015 J (0.0026)
Toluene	10000	100	2400 (8.2)	U (0.3)	0.17 J (0.29)	U (0.28)	U (0.27)	1.3 (0.43)	3.1 (0.35)	160 (1.2)	410 (3.2)	0.45 (0.072)	52 (0.3)	19 (0.89)	350 (1.4)	U (0.0013)
1,2,4-Trimethylbenzene	4700	300	900 (8.2)	U (0.6)	0.16 J (0.57)	U (0.56)	96 (1.4)	8.3 (0.86)	320 (3.5)	88 (2.4)	170 (2.6)	4.2 (0.14)	66 (0.61)	270 (3.5)	260 (2.8)	U (0.0026)
1,3,5-Trimethylbenzene	4700	93	310 (8.2)	U (0.6)	U (0.57)	U (0.56)	27 (0.54)	2.8 (0.86)	100 (0.7)	29 (2.4)	56 (2.6)	1.4 (0.14)	22 (0.24)	90 (1.8)	84 (1.4)	0.00031 J (0.0026)
Xylenes (total)	7900	1000	2460 J (8.2)	U (0.6)	U (0.57)	U (0.56)	52.14 J (0.54)	25.7 J (0.86)	125 J (0.7)	326 J (2.4)	610 J (2.6)	2.14 J (0.14)	185 J (0.61)	620 J (1.8)	740 J (2.8)	U (0.0026)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-A14-a 201-A14	201-A14-c 201-A14	201-A15-b 201-A15	201-A15-b 201-A15	201-B01-a 201-B01	201-B01-d 201-B01	201-B02-c 201-B02	201-B02-c 201-B02	201-B02-c 201-B02	201-B02-c 201-B02	201-B03-b 201-B03	201-B03-c 201-B03	201-B03-c 201-B03	201-B04-d 201-B04
Field Sample ID	Numeric Value	Numeric Value	201-A14-CX-VOC	201-A14-C2-VOC	201-A15-C1-VOC	201-A15-CX-VOC	201-B01-C1-VOC	201-B01-CX-VOC	201-B02-C1-VOC	201-B02-C2-VOC	201-B02-C3-VOC	201-B02-CX-VOC	201-B03-C1-VOC	201-B03-C2-VOC	201-B03-CX-VOC	201-B04-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		2.0 - 2.1	1.7 - 1.8	0.2 - 0.3	0.6 - 0.8	1.7 - 1.8	3.7 - 3.8	0.6 - 0.8	1.5 - 1.7	2.3 - 2.4	2.9 - 3.0	1.4 - 1.5	3.0 - 3.2	3.8 - 4.0	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	1/24/2022	1/24/2022	1/25/2022	1/25/2022	1/25/2022	1/25/2022	1/26/2022	1/26/2022	1/26/2022	1/26/2022	1/26/2022	1/26/2022	1/26/2022	1/26/2022
<b>VOCs</b>																
Benzene	280	0.5	0.00042 J (0.00045)	0.0003 J (0.00054)	0.00018 J (0.00056)	U (0.00051)	0.025 (0.00069)	0.032 (0.031)	0.0026 (0.00054)	0.0033 (0.00054)	0.014 J (0.032)	0.00074 (0.00059)	0.0049 (0.00073)	6.4 (0.12)	9.1 (2.8)	1.5 (0.16)
1,2-Dibromoethane	3.7	0.005	U (0.00045)	U (0.00054)	U (0.00056)	U (0.00051)	U (0.00069)	U (0.031)	U (0.00054)	U (0.00054)	U (0.032)	U (0.00059)	U (0.00073)	U (0.12)	U (2.8)	U (0.16)
1,2-Dichloroethane	85	0.5	U (0.0009)	U (0.0011)	U (0.0011)	U (0.001)	U (0.0014)	U (0.062)	U (0.0011)	U (0.0011)	U (0.065)	U (0.0012)	U (0.0014)	U (0.24)	U (5.7)	U (0.32)
Ethyl Benzene	880	70	U (0.0009)	U (0.0011)	0.0017 (0.0011)	0.00031 J (0.001)	0.014 (0.0014)	0.12 (0.062)	0.0099 (0.0011)	0.00064 J (0.0011)	0.41 (0.065)	0.00053 J (0.0012)	0.00044 J (0.0014)	49 (0.24)	18 (5.7)	3.2 (0.32)
Isopropylbenzene	10000	2500	0.0019 (0.0009)	0.0056 (0.0011)	0.074 (0.0011)	0.00088 J (0.001)	0.009 (0.0014)	0.063 (0.062)	0.0041 (0.0011)	0.001 J (0.0011)	0.088 (0.065)	U (0.0012)	0.0002 J (0.0014)	4.1 (0.24)	33 (5.7)	5.8 (0.32)
Methyl tert-butyl ether	8500	2	0.0082 (0.0018)	0.0046 (0.0021)	0.0016 J (0.0022)	0.00092 J (0.002)	0.015 (0.0028)	U (0.12)	U (0.0022)	0.00052 J (0.0022)	U (0.13)	U (0.0023)	U (0.0029)	U (0.49)	U (11)	U (0.63)
Toluene	10000	100	0.0026 (0.0009)	U (0.0011)	0.001 J (0.0011)	U (0.001)	U (0.0014)	0.037 J (0.062)	0.016 (0.0011)	0.0017 (0.0011)	0.14 (0.065)	0.00096 J (0.0012)	U (0.0014)	110 (0.49)	16 (5.7)	0.59 (0.32)
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	0.00043 J (0.0021)	0.0062 (0.0022)	0.00038 J (0.002)	0.12 (0.0028)	0.88 (0.12)	0.02 (0.0022)	0.0011 J (0.0022)	4.2 (0.13)	0.0011 J (0.0023)	0.0024 J (0.0029)	73 (0.98)	550 (11)	31 (0.63)
1,3,5-Trimethylbenzene	4700	93	0.0012 J (0.0018)	0.00026 J (0.0021)	0.0018 J (0.0022)	U (0.002)	0.014 (0.0028)	0.27 (0.12)	0.007 (0.0022)	0.00031 J (0.0022)	1.3 (0.13)	0.00034 J (0.0023)	0.00092 J (0.0029)	41 (0.49)	150 (11)	3.2 (0.63)
Xylenes (total)	7900	1000	0.0057 J (0.0018)	0.00138 J (0.0021)	0.0085 J (0.0022)	U (0.002)	0.026 J (0.0028)	0.39 J (0.12)	0.058 J (0.0022)	0.00246 J (0.0022)	4.5 J (0.13)	0.0033 J (0.0023)	0.0041 J (0.0029)	216 J (0.98)	117 J (11)	3.25 J (0.63)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-B04-d 201-B04	201-B04-d 201-B04	201-B05-b 201-B05	201-B05-c 201-B05	201-B05-c 201-B05	201-B06-a 201-B06	201-B06-a 201-B06	201-B06-c 201-B06	201-B07-b 201-B07	201-B07-c 201-B07	201-B07-d 201-B07	201-B08-b 201-B08	201-B08-c 201-B08	201-B08-c 201-B08
Field Sample ID	Numeric Value	Numeric Value	201-B04-C2-VOC	201-B04-CX-VOC	201-B05-C1-VOC	201-B05-C2-VOC	201-B05-CX-VOC	201-B06-C2-VOC	201-B06-CX-VOC	201-B06-C1-VOC	201-B07-CX-VOC	201-B07-C2-VOC	201-B07-C1-VOC	201-B08-CX-VOC	201-B08-C1-VOC	201-B08-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.7 - 2.9	3.2 - 3.4	1.5 - 1.7	4.7 - 4.9	5.3 - 5.5	3.7 - 3.8	4.3 - 4.4	1.5 - 1.7	3.2 - 3.4	2.4 - 2.6	0.0 - 0.2	2.0 - 2.1	0.6 - 0.8	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	1/26/2022	1/26/2022	1/27/2022	1/27/2022	1/27/2022	1/27/2022	1/27/2022	1/27/2022	2/2/2022	2/2/2022	2/2/2022	1/28/2022	1/28/2022	1/28/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.033)	U (0.14)	0.02 J (0.034)	U (0.067)	0.018 J (0.033)	0.085 (0.029)	0.11 (0.046)	0.94 (0.095)	U (0.00052)	U (0.00044)	U (0.072)	0.026 J (0.039)	U (0.00053)	U (0.00048)
1,2-Dibromoethane	3.7	0.005	U (0.033)	U (0.14)	U (0.034)	U (0.067)	U (0.00064)	U (0.029)	U (0.046)	U (0.095)	U (0.00052)	U (0.00044)	U (0.072)	U (0.039)	U (0.00053)	U (0.00048)
1,2-Dichloroethane	85	0.5	U (0.066)	U (0.29)	U (0.068)	U (0.13)	U (0.0013)	U (0.057)	U (0.092)	U (0.19)	U (0.001)	U (0.00088)	U (0.14)	U (0.079)	U (0.001)	U (0.00097)
Ethyl Benzene	880	70	U (0.066)	4.9 (0.29)	0.11 (0.068)	0.019 J (0.13)	0.034 J (0.066)	0.3 (0.057)	0.077 J (0.092)	0.38 (0.19)	U (0.001)	U (0.00088)	U (0.14)	2.6 (0.079)	U (0.001)	U (0.00097)
Isopropylbenzene	10000	2500	0.71 (0.066)	8 (0.29)	0.83 (0.068)	1.5 (0.13)	0.065 J (0.066)	0.38 (0.057)	0.17 (0.092)	3.9 (0.19)	0.011 (0.001)	0.0035 (0.00088)	1.3 (0.14)	2.1 (0.079)	U (0.001)	U (0.00097)
Methyl tert-butyl ether	8500	2	U (0.13)	U (0.58)	U (0.14)	U (0.27)	0.00059 J (0.0026)	0.025 J (0.11)	U (0.18)	U (0.38)	U (0.0021)	U (0.0018)	U (0.29)	U (0.16)	U (0.0021)	U (0.0019)
Toluene	10000	100	U (0.066)	U (0.29)	U (0.068)	U (0.13)	0.0042 (0.0013)	0.044 J (0.057)	U (0.092)	0.52 (0.19)	U (0.001)	U (0.00088)	U (0.14)	U (0.079)	U (0.001)	U (0.00097)
1,2,4-Trimethylbenzene	4700	300	0.044 J (0.13)	120 (2.3)	5.5 (0.14)	0.074 J (0.27)	0.82 (0.13)	7.3 (0.11)	3.2 (0.18)	0.45 (0.38)	0.00058 J (0.0021)	U (0.0018)	U (0.29)	50 (1.6)	U (0.0021)	0.00074 J (0.0019)
1,3,5-Trimethylbenzene	4700	93	U (0.13)	14 (0.58)	2.4 (0.14)	0.028 J (0.27)	0.26 (0.13)	1.6 (0.11)	0.9 (0.18)	0.12 J (0.38)	U (0.0021)	U (0.0018)	U (0.29)	11 (0.16)	U (0.0021)	U (0.0019)
Xylenes (total)	7900	1000	0.1 J (0.13)	7.2 J (0.58)	0.194 J (0.14)	0.176 J (0.27)	0.265 J (0.13)	1.83 J (0.11)	0.6 J (0.18)	1.17 J (0.38)	U (0.0021)	U (0.0018)	U (0.29)	3.63 J (0.16)	U (0.0021)	U (0.0019)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-B09-a 201-B09	201-B09-c 201-B09	201-B09-c 201-B09	201-B10-b 201-B10	201-B10-d 201-B10	201-B10-d 201-B10	201-B10-d 201-B10	201-B11-d 201-B11	201-B11-d 201-B11	201-B11-d 201-B11	201-B11-d 201-B11	201-B12-a 201-B12	201-B12-a 201-B12	201-B12-b 201-B12	201-C01-b 201-C01
Field Sample ID	Numeric Value	Numeric Value	201-B09-C1-VOC	201-B09-C2-VOC	201-B09-CX-VOC	201-B10-C1-VOC	201-B10-C2-VOC	201-B10-CX-VOC	201-B11-C1-VOC	201-B11-C2-VOC	201-B11-C3-VOC	201-B11-CX-VOC	201-B12-C2-VOC	201-B12-CX-VOC	201-B12-C1-VOC	201-C01-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.8 - 0.9	0.9 - 1.1	1.8 - 2.0	1.1 - 1.2	2.6 - 2.7	3.2 - 3.4	0.8 - 0.9	2.0 - 2.1	2.6 - 2.7	3.5 - 3.7	1.4 - 1.5	2.0 - 2.1	0.5 - 0.6	1.1 - 1.2	
Sample Date	(mg/kg)	(mg/kg)	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	2/2/2022	2/2/2022	2/2/2022	2/2/2022	2/2/2022	2/2/2022	2/2/2022	2/3/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.021 (0.00072)	2.1 (0.033)	U (0.034)	U (0.00051)	0.19 (0.028)	1.5 (0.025)	U (0.00057)	0.052 (0.00048)	U (0.00043)	1.1 (0.072)	15 (0.3)	0.45 J (0.58)	0.19 (0.044)	U (0.068)	
1,2-Dibromoethane	3.7	0.005	U (0.00072)	U (0.033)	U (0.034)	U (0.00051)	U (0.028)	U (0.025)	U (0.00057)	U (0.00048)	U (0.00043)	U (0.072)	U (0.3)	U (0.58)	U (0.044)	U (0.068)	
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.067)	U (0.069)	U (0.001)	U (0.056)	U (0.05)	U (0.0011)	U (0.00097)	U (0.00086)	U (0.14)	U (0.6)	U (1.2)	U (0.087)	U (0.14)	
Ethyl Benzene	880	70	0.0027 (0.0014)	16 (0.067)	U (0.069)	U (0.001)	0.44 (0.056)	0.4 (0.05)	U (0.0011)	0.02 (0.00097)	U (0.00086)	0.4 (0.14)	59 (0.6)	0.26 J (1.2)	0.26 (0.087)	U (0.14)	
Isopropylbenzene	10000	2500	0.00044 J (0.0014)	7 (0.067)	0.79 (0.069)	0.0085 (0.001)	0.48 (0.056)	3.9 (0.05)	0.0029 (0.0011)	0.19 (0.00097)	0.00025 J (0.00086)	1.2 (0.14)	14 (0.6)	3.6 (1.2)	1.2 (0.087)	1.4 (0.14)	
Methyl tert-butyl ether	8500	2	U (0.0029)	0.16 (0.13)	0.016 J (0.14)	U (0.002)	U (0.11)	U (0.1)	U (0.0023)	U (0.0019)	U (0.0017)	U (0.29)	U (1.2)	0.24 J (2.3)	0.024 J (0.17)	U (0.27)	
Toluene	10000	100	0.026 (0.0014)	3.9 (0.067)	U (0.069)	U (0.001)	0.07 (0.056)	0.22 (0.05)	U (0.0011)	0.024 (0.00097)	U (0.00086)	0.32 (0.14)	4.6 (0.6)	U (1.2)	0.2 (0.087)	U (0.14)	
1,2,4-Trimethylbenzene	4700	300	0.0016 J (0.0029)	84 (1.3)	0.027 J (0.14)	0.00054 J (0.002)	0.86 (0.11)	2.6 (0.1)	U (0.0023)	0.0035 (0.0019)	U (0.0017)	0.13 J (0.29)	94 (1.2)	1 J (2.3)	0.16 J (0.17)	U (0.27)	
1,3,5-Trimethylbenzene	4700	93	0.00038 J (0.0029)	27 (1.3)	0.016 J (0.14)	0.00026 J (0.002)	0.21 (0.11)	0.33 (0.1)	U (0.0023)	0.0031 (0.0019)	U (0.0017)	0.042 J (0.29)	27 (1.2)	0.22 J (2.3)	0.048 J (0.17)	U (0.27)	
Xylenes (total)	7900	1000	0.017 J (0.0029)	76.7 J (1.3)	U (0.14)	0.0012 J (0.002)	0.304 J (0.11)	0.698 J (0.1)	U (0.0023)	0.0717 J (0.0019)	U (0.0017)	0.84 J (0.29)	104.2 J (1.2)	1.46 J (2.3)	0.504 J (0.17)	U (0.27)	

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-C01-b 201-C01	201-C01-d 201-C01	201-C01-d 201-C01	201-C02-a 201-C02	201-C02-c 201-C02	201-C02-c 201-C02	201-C03-b 201-C03	201-C03-b 201-C03	201-C03-b 201-C03	201-C04-c 201-C04	201-C04-c 201-C04	201-C04-c 201-C04	201-C05-c 201-C05	201-C05-c 201-C05
Field Sample ID	Numeric Value	Numeric Value	201-C01-C2-VOC	201-C01-C3-VOC	201-C01-CX-VOC	201-C02-CX-VOC	201-C02-C1-VOC	201-C02-C2-VOC	201-C03-C1-VOC	201-C03-C2-VOC	201-C03-CX-VOC	201-C04-C1-VOC	201-C04-C2-VOC	201-C04-CX-VOC	201-C05-C1-VOC	201-C05-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.4 - 2.6	4.1 - 4.3	4.6 - 4.7	3.8 - 4.0	1.5 - 1.7	2.7 - 2.9	2.1 - 2.3	2.7 - 2.9	4.9 - 5.0	1.8 - 2.0	3.7 - 3.8	4.4 - 4.6	0.3 - 0.5	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/4/2022	2/4/2022	2/4/2022	2/4/2022	2/4/2022	2/4/2022	2/17/2022	2/17/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.44)	0.04 (0.00052)	1.1 (0.14)	0.62 (0.029)	0.00024 J (0.00059)	0.071 (0.03)	U (0.097)	1.8 (0.34)	0.024 J (0.041)	0.28 (0.07)	U (0.18)	0.12 (0.058)	0.65 (0.074)	1.4 (0.1)
1,2-Dibromoethane	3.7	0.005	U (0.44)	U (0.00052)	U (0.14)	U (0.029)	U (0.00059)	U (0.03)	U (0.097)	U (0.34)	U (0.041)	U (0.07)	U (0.18)	U (0.058)	U (0.074)	U (0.1)
1,2-Dichloroethane	85	0.5	U (0.89)	U (0.001)	U (0.28)	U (0.059)	U (0.0012)	U (0.061)	U (0.19)	U (0.67)	U (0.082)	U (0.14)	U (0.37)	U (0.12)	U (0.15)	U (0.21)
Ethyl Benzene	880	70	U (0.89)	0.00032 J (0.001)	1.6 (0.28)	1.3 (0.059)	0.00052 J (0.0012)	0.18 (0.061)	U (0.19)	4.3 (0.67)	0.23 (0.082)	4.8 (0.14)	11 (0.37)	3.5 (0.12)	5.3 (0.15)	20 (0.21)
Isopropylbenzene	10000	2500	0.25 J (0.89)	0.006 (0.001)	1.8 (0.28)	3 (0.059)	0.0017 (0.0012)	0.71 (0.061)	0.55 (0.19)	3.5 (0.67)	0.28 (0.082)	1.6 (0.14)	3.6 (0.37)	1.1 (0.12)	1.1 (0.15)	7.4 (0.21)
Methyl tert-butyl ether	8500	2	U (1.8)	0.0018 J (0.0021)	U (0.56)	0.084 J (0.12)	U (0.0023)	U (0.12)	U (0.39)	U (1.3)	U (0.16)	U (0.28)	U (0.74)	U (0.23)	U (0.29)	U (0.41)
Toluene	10000	100	U (0.89)	0.0023 (0.001)	0.22 J (0.28)	0.26 (0.059)	U (0.0012)	0.078 (0.061)	U (0.19)	1.2 (0.67)	U (0.082)	0.12 J (0.14)	0.37 (0.37)	0.087 J (0.12)	2.1 (0.15)	4.7 (0.21)
1,2,4-Trimethylbenzene	4700	300	U (1.8)	0.012 (0.0021)	28 (0.56)	17 (1.2)	0.0009 J (0.0023)	0.59 (0.12)	U (0.39)	51 (1.3)	4.7 (0.16)	25 (0.28)	63 (0.74)	16 (0.23)	46 (0.74)	130 (1)
1,3,5-Trimethylbenzene	4700	93	U (1.8)	0.01 (0.0021)	8.4 (0.56)	6.6 (0.12)	0.00046 J (0.0023)	0.33 (0.12)	U (0.39)	14 (1.3)	1.5 (0.16)	0.27 J (0.28)	1.8 (0.74)	0.65 (0.23)	13 (0.29)	46 (0.41)
Xylenes (total)	7900	1000	U (1.8)	0.0153 J (0.0021)	10.4 J (0.56)	6.5 J (0.12)	0.00176 J (0.0023)	0.7 J (0.12)	U (0.39)	17.9 J (1.3)	0.898 J (0.16)	1.06 J (0.28)	19.4 J (0.74)	0.74 J (0.23)	50.78 J (0.29)	299 J (1)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-C05-c 201-C05	201-C06-a 201-C06	201-C06-b 201-C06	201-C06-b 201-C06	201-C07-b 201-C07	201-C07-b 201-C07	201-C07-b 201-C07	201-C08-d 201-C08	201-C08-d 201-C08	201-C08-d 201-C08	201-C09-a 201-C09	201-C09-b 201-C09	201-C09-b 201-C09	201-C10-a 201-C10
Field Sample ID	Numeric Value	Numeric Value	201-C05-CX-VOC	201-C06-C2-VOC	201-C06-C1-VOC	201-C06-CX-VOC	201-C07-C1-VOC	201-C07-C2-VOC	201-C07-CX-VOC	201-C08-C1-VOC	201-C08-C2-VOC	201-C08-CX-VOC	201-C09-CX-VOC	201-C09-C1-VOC	201-C09-C2-VOC	201-C10-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.0 - 2.1	1.8 - 2.0	1.2 - 1.4	3.2 - 3.4	1.2 - 1.4	2.1 - 2.3	2.9 - 3.0	0.0 - 0.2	0.3 - 0.5	0.8 - 0.9	0.8 - 0.9	0.8 - 0.9	1.5 - 1.7	2.4 - 2.6
Sample Date	(mg/kg)	(mg/kg)	2/17/2022	2/22/2022	2/22/2022	2/22/2022	2/17/2022	2/17/2022	2/17/2022	2/17/2022	2/17/2022	2/17/2022	2/22/2022	2/22/2022	2/22/2022	2/18/2022
<b>VOCs</b>																
Benzene	280	0.5	0.45 (0.042)	0.0016 (0.0014)	U (0.00051)	U (0.073)	0.28 (0.078)	0.48 (0.32)	U (0.00051)	0.091 J (0.15)	0.1 (0.066)	U (0.00067)	0.00048 J (0.00058)	0.00032 J (0.00084)	U (0.00052)	U (0.00046)
1,2-Dibromoethane	3.7	0.005	U (0.00082)	U (0.0014)	U (0.00051)	U (0.073)	U (0.078)	U (0.32)	U (0.00051)	U (0.15)	U (0.066)	U (0.00067)	U (0.00058)	U (0.00084)	U (0.00052)	U (0.00046)
1,2-Dichloroethane	85	0.5	U (0.0016)	U (0.0027)	U (0.001)	U (0.14)	0.057 J (0.16)	U (0.64)	U (0.001)	U (0.3)	U (0.13)	U (0.0013)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00093)
Ethyl Benzene	880	70	0.22 (0.084)	U (0.0027)	0.00024 J (0.001)	0.028 J (0.14)	0.14 J (0.16)	0.31 J (0.64)	U (0.001)	0.16 J (0.3)	0.036 J (0.13)	U (0.0013)	0.0088 (0.0012)	0.0013 J (0.0017)	U (0.001)	U (0.00093)
Isopropylbenzene	10000	2500	0.062 (0.0016)	0.0017 J (0.0027)	0.00028 J (0.001)	0.43 (0.14)	1.9 (0.16)	3.7 (0.64)	U (0.001)	2.8 (0.3)	0.57 (0.13)	U (0.0013)	0.043 (0.0012)	0.0036 (0.0017)	U (0.001)	U (0.00093)
Methyl tert-butyl ether	8500	2	U (0.0033)	0.00089 J (0.0054)	U (0.002)	U (0.29)	U (0.31)	U (1.3)	U (0.002)	U (0.6)	U (0.26)	U (0.0027)	U (0.0023)	U (0.0034)	U (0.0021)	U (0.0018)
Toluene	10000	100	0.21 (0.084)	0.005 (0.0027)	U (0.001)	0.16 (0.14)	0.17 (0.16)	U (0.64)	U (0.001)	U (0.3)	U (0.13)	U (0.0013)	0.0021 (0.0012)	0.0022 (0.0017)	U (0.001)	U (0.00093)
1,2,4-Trimethylbenzene	4700	300	0.66 (0.17)	0.024 (0.0054)	0.0013 J (0.002)	1.2 (0.29)	0.56 (0.31)	0.77 J (1.3)	U (0.002)	0.85 (0.6)	0.16 J (0.26)	0.0014 J (0.0027)	0.21 (0.0023)	0.029 (0.0034)	U (0.0021)	U (0.0018)
1,3,5-Trimethylbenzene	4700	93	0.2 (0.17)	0.0038 J (0.0054)	0.00066 J (0.002)	0.5 (0.29)	0.16 J (0.31)	0.19 J (1.3)	U (0.002)	0.23 J (0.6)	0.034 J (0.26)	0.00065 J (0.0027)	0.19 (0.0023)	0.018 (0.0034)	U (0.0021)	U (0.0018)
Xylenes (total)	7900	1000	1.6 J (0.17)	0.032 J (0.0054)	0.00142 J (0.002)	0.223 J (0.29)	1.14 J (0.31)	1.03 J (1.3)	U (0.002)	1.13 J (0.6)	0.149 J (0.26)	U (0.0027)	0.0224 J (0.0023)	0.0188 J (0.0034)	U (0.0021)	U (0.0018)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-C10-b 201-C10	201-C10-b 201-C10	201-C11-d 201-C11	201-C11-d 201-C11	201-C11-d 201-C11	201-C11-d 201-C11	201-C11-d 201-C11	201-D01-c 201-D01	201-D01-c 201-D01	201-D01-c 201-D01	201-D02-d 201-D02	201-D02-d 201-D02	201-D02-d 201-D02	201-D03-a 201-D03	201-D03-a 201-D03
Field Sample ID	Numeric Value	Numeric Value	201-C10-C1-VOC	201-C10-CX-VOC	201-C11-C1-VOC	201-C11-C2-VOC	201-C11-C3-VOC	201-C11-CX-VOC	201-D01-C1-VOC	201-D01-C2-VOC	201-D01-CX-VOC	201-D02-C1-VOC	201-D02-C2-VOC	201-D02-CX-VOC	201-D03-C1-VOC	201-D03-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		1.1 - 1.2	3.2 - 3.4	0.9 - 1.1	2.0 - 2.1	3.2 - 3.4	3.7 - 3.8	0.5 - 0.6	1.5 - 1.7	2.1 - 2.3	0.3 - 0.5	0.6 - 0.8	1.2 - 1.4	1.5 - 1.7	2.1 - 2.3	
Sample Date	(mg/kg)	(mg/kg)	2/18/2022	2/18/2022	3/28/2022	3/28/2022	3/28/2022	3/28/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.0011)	U (0.0011)	0.01 (0.00062)	2.1 (0.042)	28 (0.37)	34 (0.37)	U (0.0013)	U (0.00095)	U (0.00045)	U (0.00059)	U (0.00063)	U (0.00066)	1.5 (0.12)	U (0.28)	
1,2-Dibromoethane	3.7	0.005	U (0.0011)	U (0.0011)	U (0.00062)	U (0.042)	U (0.37)	U (0.37)	U (0.0013)	U (0.00095)	U (0.00045)	U (0.00059)	U (0.00063)	U (0.00066)	U (0.12)	U (0.28)	
1,2-Dichloroethane	85	0.5	U (0.0022)	U (0.0022)	U (0.0012)	U (0.084)	U (0.73)	U (0.74)	U (0.0026)	U (0.0019)	U (0.0009)	U (0.0012)	U (0.0013)	U (0.0013)	U (0.23)	U (0.57)	
Ethyl Benzene	880	70	U (0.0022)	U (0.0022)	0.0024 (0.0012)	1.2 (0.084)	82 (0.73)	81 (0.74)	U (0.0026)	U (0.0019)	U (0.0009)	U (0.0012)	U (0.0013)	U (0.0013)	0.82 (0.23)	U (0.57)	
Isopropylbenzene	10000	2500	0.00072 J (0.0022)	U (0.0022)	0.038 (0.0012)	0.64 (0.084)	35 (0.73)	34 (0.74)	U (0.0026)	U (0.0019)	U (0.0009)	U (0.0012)	U (0.0013)	U (0.0013)	4.4 (0.23)	1.8 (0.57)	
Methyl tert-butyl ether	8500	2	U (0.0044)	U (0.0044)	U (0.0025)	U (0.17)	U (1.5)	U (1.5)	U (0.0053)	U (0.0038)	U (0.0018)	U (0.0023)	U (0.0025)	U (0.0026)	U (0.47)	U (1.1)	
Toluene	10000	100	U (0.0022)	U (0.0022)	0.0029 (0.0012)	1.2 (0.084)	140 (0.73)	96 (0.74)	U (0.0026)	U (0.0019)	U (0.0009)	U (0.0012)	U (0.0013)	U (0.0013)	1.2 (0.23)	U (0.57)	
1,2,4-Trimethylbenzene	4700	300	U (0.0044)	U (0.0044)	0.0064 (0.0025)	4.4 (0.17)	300 (2.9)	250 (2.9)	U (0.0053)	U (0.0038)	U (0.0018)	U (0.0023)	U (0.0025)	U (0.0026)	1 (0.47)	U (1.1)	
1,3,5-Trimethylbenzene	4700	93	U (0.0044)	U (0.0044)	0.0022 J (0.0025)	1.5 (0.17)	84 (1.5)	82 (1.5)	U (0.0053)	U (0.0038)	U (0.0018)	U (0.0023)	U (0.0025)	U (0.0026)	2.9 (0.47)	U (1.1)	
Xylenes (total)	7900	1000	U (0.0044)	U (0.0044)	0.0128 J (0.0025)	3.4 J (0.17)	430 J (1.5)	420 J (1.5)	U (0.0053)	U (0.0038)	U (0.0018)	U (0.0023)	U (0.0025)	U (0.0026)	3.41 J (0.47)	U (1.1)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-D04-a 201-D04	201-D04-a 201-D04	201-D04-b 201-D04	201-D05-c 201-D05	201-D05-c 201-D05	201-D05-c 201-D05	201-D06-a 201-D06	201-D06-c 201-D06	201-D06-c 201-D06	201-D07-b 201-D07	201-D07-c 201-D07	201-D07-c 201-D07	201-D07-c 201-D07	201-D08-c 201-D08
Field Sample ID	Numeric Value	Numeric Value	201-D04-C1-VOC	201-D04-C2-VOC	201-D04-CX-VOC	201-D05-C1-VOC	201-D05-C2-VOC	201-D05-CX-VOC	201-D06-C1-VOC	201-D06-C2-VOC	201-D06-CX-VOC	201-D07-C2-VOC	201-D07-C1-VOC	201-D07-C3-VOC	201-D07-CX-VOC	201-D08-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.9 - 1.1	2.0 - 2.1	2.6 - 2.7	1.4 - 1.5	2.9 - 3.0	3.5 - 3.7	1.2 - 1.4	2.1 - 2.3	3.4 - 3.5	1.4 - 1.5	1.2 - 1.4	3.8 - 4.0	4.3 - 4.4	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/22/2022	2/22/2022	2/22/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/18/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.0011)	U (0.00052)	U (0.0006)	U (0.00089)	U (0.00091)	3.3 (0.5)	0.00034 J (0.00072)	0.00083 J (0.0012)	U (0.00055)	U (0.00068)	U (0.00049)	U (0.00048)	U (0.00058)	26 (1.2)
1,2-Dibromoethane	3.7	0.005	U (0.0011)	U (0.00052)	U (0.0006)	U (0.00089)	U (0.00091)	U (0.5)	U (0.00072)	U (0.0012)	U (0.00055)	U (0.00068)	U (0.00049)	U (0.00048)	U (0.00058)	U (1.2)
1,2-Dichloroethane	85	0.5	U (0.0021)	U (0.001)	U (0.0012)	U (0.0018)	U (0.0018)	U (1)	U (0.0014)	U (0.0023)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.00096)	U (0.0012)	U (2.4)
Ethyl Benzene	880	70	U (0.0021)	U (0.001)	U (0.0012)	U (0.0018)	0.059 J (0.13)	34 (1)	U (0.0014)	0.00038 J (0.0023)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.00096)	U (0.0012)	87 (2.4)
Isopropylbenzene	10000	2500	U (0.0021)	U (0.001)	U (0.0012)	U (0.0018)	0.091 J (0.13)	42 (1)	0.00062 J (0.0014)	0.00052 J (0.0023)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.00096)	U (0.0012)	50 (2.4)
Methyl tert-butyl ether	8500	2	U (0.0042)	U (0.0021)	U (0.0024)	0.0013 J (0.0036)	0.0018 J (0.0036)	0.53 J (2)	U (0.0029)	U (0.0047)	U (0.0022)	U (0.0027)	U (0.002)	U (0.0019)	U (0.0023)	U (4.8)
Toluene	10000	100	U (0.0021)	U (0.001)	U (0.0012)	U (0.0018)	0.072 J (0.13)	13 (1)	U (0.0014)	U (0.0023)	U (0.0011)	U (0.0014)	U (0.00098)	U (0.00096)	U (0.0012)	2.9 (2.4)
1,2,4-Trimethylbenzene	4700	300	U (0.0042)	U (0.0021)	U (0.0024)	U (0.0036)	0.0085 (0.0036)	190 (2)	0.0012 J (0.0029)	0.001 J (0.0047)	U (0.0022)	U (0.0027)	U (0.002)	U (0.0019)	U (0.0023)	400 (4.8)
1,3,5-Trimethylbenzene	4700	93	U (0.0042)	U (0.0021)	U (0.0024)	U (0.0036)	0.074 J (0.25)	65 (2)	0.00066 J (0.0029)	0.00071 J (0.0047)	U (0.0022)	U (0.0027)	U (0.002)	U (0.0019)	U (0.0023)	140 (4.8)
Xylenes (total)	7900	1000	U (0.0042)	U (0.0021)	U (0.0024)	U (0.0036)	0.304 J (0.25)	130 J (2)	0.00219 J (0.0029)	0.00325 J (0.0047)	U (0.0022)	U (0.0027)	U (0.002)	U (0.0019)	U (0.0023)	208.2 J (4.8)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-D08-c 201-D08	201-D08-c 201-D08	201-D08-d 201-D08	201-D09-d 201-D09	201-D09-d 201-D09	201-D09-d 201-D09	201-D09-d 201-D09	201-D09-d 201-D09	201-D10-a 201-D10	201-D10-a 201-D10	201-D10-c 201-D10	201-D11-a 201-D11	201-D11-b 201-D11	201-D11-b 201-D11	201-D12-c 201-D12
Field Sample ID	Numeric Value	Numeric Value	201-D08-C2-VOC	201-D08-C3-VOC	201-D08-CX-VOC	201-D09-C1-VOC	201-D09-C2-VOC	201-D09-C3-VOC	201-D09-CX-VOC	201-D10-C2-VOC	201-D10-CX-VOC	201-D10-C1-VOC	201-D11-C2-VOC	201-D11-C1-VOC	201-D11-CX-VOC	201-D12-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		0.9 - 1.1	1.7 - 1.8	5.0 - 5.2	1.2 - 1.4	3.2 - 3.4	5.0 - 5.2	6.4 - 6.6	3.2 - 3.4	3.8 - 4.0	1.2 - 1.4	0.8 - 0.9	0.2 - 0.3	1.5 - 1.7	1.4 - 1.5	
Sample Date	(mg/kg)	(mg/kg)	2/18/2022	2/18/2022	2/18/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/21/2022	2/18/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.39 (0.037)	U (0.0006)	0.00063 J (0.00095)	U (0.00052)	U (0.00049)	U (0.00052)	U (0.00069)	U (0.00057)	U (0.00053)	U (0.00083)	0.018 J (0.035)	0.00031 J (0.00051)	0.00072 (0.00051)	0.0025 (0.00062)	
1,2-Dibromoethane	3.7	0.005	U (0.037)	U (0.0006)	U (0.00095)	U (0.00052)	U (0.00049)	U (0.00052)	U (0.00069)	U (0.00057)	U (0.00053)	U (0.00083)	U (0.035)	U (0.00051)	U (0.00051)	U (0.00062)	
1,2-Dichloroethane	85	0.5	U (0.074)	U (0.0012)	U (0.0019)	U (0.001)	U (0.00099)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0011)	U (0.0017)	U (0.07)	U (0.001)	U (0.001)	U (0.0012)	
Ethyl Benzene	880	70	0.79 (0.074)	U (0.0012)	0.00079 J (0.0019)	U (0.001)	U (0.00099)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0011)	U (0.0017)	1.6 (0.07)	0.00015 J (0.001)	0.00019 J (0.001)	0.013 (0.0012)	
Isopropylbenzene	10000	2500	2.3 (0.074)	U (0.0012)	0.00065 J (0.0019)	U (0.001)	U (0.00099)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0011)	U (0.0017)	0.85 (0.07)	0.0016 (0.001)	0.00029 J (0.001)	0.11 (0.0012)	
Methyl tert-butyl ether	8500	2	U (0.15)	U (0.0024)	U (0.0038)	U (0.0021)	U (0.002)	U (0.0021)	U (0.0028)	U (0.0023)	U (0.0021)	U (0.0033)	U (0.14)	U (0.002)	U (0.002)	U (0.0025)	
Toluene	10000	100	0.23 (0.074)	U (0.0012)	U (0.0019)	U (0.001)	U (0.00099)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0011)	U (0.0017)	U (0.07)	U (0.001)	U (0.001)	0.0026 (0.0012)	
1,2,4-Trimethylbenzene	4700	300	4.7 (0.15)	U (0.0024)	0.0027 J (0.0038)	U (0.0021)	U (0.002)	U (0.0021)	U (0.0028)	U (0.0023)	U (0.0021)	U (0.0033)	5.6 (0.14)	0.00075 J (0.002)	0.00077 J (0.002)	0.011 (0.0025)	
1,3,5-Trimethylbenzene	4700	93	2.1 (0.15)	U (0.0024)	0.0009 J (0.0038)	U (0.0021)	U (0.002)	U (0.0021)	U (0.0028)	U (0.0023)	0.00074 J (0.0021)	U (0.0033)	2.9 (0.14)	0.00057 J (0.002)	0.0013 J (0.002)	0.003 (0.0025)	
Xylenes (total)	7900	1000	2.93 J (0.15)	U (0.0024)	0.00235 J (0.0038)	U (0.0021)	U (0.002)	U (0.0021)	U (0.0028)	U (0.0023)	U (0.0021)	U (0.0033)	0.543 J (0.14)	0.0015 J (0.002)	U (0.002)	0.0047 J (0.0025)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-D12-c 201-D12	201-E01-c 201-E01	201-E01-c 201-E01	201-E02-a 201-E02	201-E02-b 201-E02	201-E03-c 201-E03	201-E03-c 201-E03	201-E04-b 201-E04	201-E04-b 201-E04	201-E04-b 201-E04	201-E05-d 201-E05	201-E05-d 201-E05	201-F01-b 201-F01	201-F01-b 201-F01
Field Sample ID	Numeric Value	Numeric Value	201-D12-CX-VOC	201-E01-C1-VOC	201-E01-CX-VOC	201-E02-CX-VOC	201-E02-C1-VOC	201-E03-C1-VOC	201-E03-CX-VOC	201-E04-C1-VOC	201-E04-C2-VOC	201-E04-CX-VOC	201-E05-C1-VOC	201-E05-CX-VOC	201-F01-C1-VOC	201-F01-CX-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.0 - 2.1	1.7 - 1.8	2.3 - 2.4	2.0 - 2.1	1.4 - 1.5	0.3 - 0.5	3.0 - 3.2	0.9 - 1.1	2.4 - 2.6	3.0 - 3.2	1.1 - 1.2	1.7 - 1.8	1.8 - 2.0	2.4 - 2.6
Sample Date	(mg/kg)	(mg/kg)	2/18/2022	2/23/2022	2/23/2022	2/23/2022	2/23/2022	4/19/2022	4/19/2022	2/23/2022	2/23/2022	2/23/2022	2/23/2022	2/23/2022	4/19/2022	4/19/2022
<b>VOCs</b>																
Benzene	280	0.5	0.00043 J (0.00059)	6.3 (0.032)	1.1 (0.032)	U (0.00051)	U (0.00058)	0.0002 J (0.00052)	0.001 (0.00057)	U (0.00063)	U (0.00056)	U (0.00045)	U (0.00053)	U (0.00052)	U (0.00058)	U (0.00084)
1,2-Dibromoethane	3.7	0.005	U (0.00059)	U (0.032)	U (0.032)	U (0.00051)	U (0.00058)	U (0.00052)	U (0.00057)	U (0.00063)	U (0.00056)	U (0.00045)	U (0.00053)	U (0.00052)	U (0.00058)	U (0.00084)
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.063)	U (0.064)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0009)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0017)
Ethyl Benzene	880	70	0.0008 J (0.0012)	0.25 (0.063)	0.2 (0.064)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0009)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0017)
Isopropylbenzene	10000	2500	0.00034 J (0.0012)	2.2 (0.063)	0.023 J (0.064)	0.002 (0.001)	0.0022 (0.0012)	U (0.001)	0.038 (0.0011)	U (0.0012)	0.00048 J (0.0011)	0.00073 J (0.0009)	U (0.0011)	0.00018 J (0.001)	U (0.0012)	U (0.0017)
Methyl tert-butyl ether	8500	2	U (0.0024)	U (0.13)	U (0.13)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0023)	U (0.0025)	U (0.0022)	U (0.0018)	U (0.0021)	U (0.0021)	U (0.0023)	U (0.0033)
Toluene	10000	100	U (0.0012)	0.54 (0.063)	3.4 (0.064)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0009)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0017)
1,2,4-Trimethylbenzene	4700	300	0.002 J (0.0024)	0.25 (0.13)	0.084 J (0.13)	U (0.002)	U (0.0023)	U (0.0021)	0.00054 J (0.0023)	U (0.0025)	U (0.0022)	0.00041 J (0.0018)	0.00041 J (0.0021)	0.00091 J (0.0021)	U (0.0023)	U (0.0033)
1,3,5-Trimethylbenzene	4700	93	0.00073 J (0.0024)	0.1 J (0.13)	0.027 J (0.13)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0023)	U (0.0025)	U (0.0022)	0.00018 J (0.0018)	U (0.0021)	0.00032 J (0.0021)	U (0.0023)	U (0.0033)
Xylenes (total)	7900	1000	0.0019 J (0.0024)	1.2 J (0.13)	1.18 J (0.13)	U (0.002)	U (0.0023)	U (0.0021)	0.00168 J (0.0023)	U (0.0025)	U (0.0022)	U (0.0018)	U (0.0021)	0.0029 J (0.0021)	U (0.0023)	U (0.0033)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-F02-a 201-F02	201-F02-a 201-F02	201-F03-d 201-F03	201-F03-d 201-F03	201-F03-d 201-F03	201-F04-c 201-F04	201-F04-c 201-F04	201-F05-d 201-F05	201-F05-d 201-F05	202-A01-a 202-A01	202-A01-a 202-A01	202-A01-a 202-A01	202-A01-c 202-A01	202-A02-d 202-A02
Field Sample ID	Numeric Value	Numeric Value	201-F02-C1-VOC	201-F02-CX-VOC	201-F03-C1-VOC	201-F03-C2-VOC	201-F03-CX-VOC	201-F04-C1-VOC	201-F04-CX-VOC	201-F05-C1-VOC	201-F05-CX-VOC	202-A01-C2-VOC	202-A01-C3-VOC	202-A01-CX-VOC	202-A01-C1-VOC	202-A02-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.1 - 1.2	1.5 - 1.7	0.5 - 0.6	1.2 - 1.4	2.1 - 2.3	1.4 - 1.5	2.4 - 2.6	0.0 - 0.2	0.6 - 0.8	2.3 - 2.4	2.7 - 2.9	4.0 - 4.1	1.4 - 1.5	0.8 - 0.9
Sample Date	(mg/kg)	(mg/kg)	4/19/2022	4/19/2022	2/24/2022	2/24/2022	2/24/2022	4/19/2022	4/19/2022	3/29/2022	3/29/2022	3/30/2022	3/30/2022	3/30/2022	3/30/2022	3/29/2022
<b>VOCs</b>																
Benzene	280	0.5	0.05 (0.016)	0.026 J (0.03)	U (0.00052)	U (0.00068)	0.13 J (0.22)	U (0.00068)	U (0.00057)	U (0.00064)	U (0.00065)	U (0.00053)	U (0.00072)	0.00026 J (0.00046)	U (0.00054)	0.00061 (0.00055)
1,2-Dibromoethane	3.7	0.005	U (0.016)	U (0.03)	U (0.00052)	U (0.00068)	U (0.22)	U (0.00068)	U (0.00057)	U (0.00064)	U (0.00065)	U (0.00053)	U (0.00072)	U (0.00046)	U (0.00054)	U (0.00055)
1,2-Dichloroethane	85	0.5	U (0.032)	U (0.061)	U (0.001)	U (0.0014)	U (0.43)	U (0.0014)	U (0.0011)	U (0.0013)	U (0.0013)	U (0.0011)	U (0.0014)	U (0.00092)	U (0.0011)	U (0.0011)
Ethyl Benzene	880	70	0.015 J (0.032)	0.014 J (0.061)	U (0.001)	U (0.0014)	U (0.43)	U (0.0014)	U (0.0011)	U (0.0013)	0.00028 J (0.0013)	U (0.0011)	U (0.0014)	U (0.00092)	U (0.0011)	0.012 (0.0011)
Isopropylbenzene	10000	2500	0.15 (0.032)	1.9 (0.061)	U (0.001)	U (0.0014)	0.24 J (0.43)	U (0.0014)	U (0.0011)	U (0.0013)	0.00024 J (0.0013)	0.00015 J (0.0011)	0.0024 (0.0014)	0.00015 J (0.00092)	U (0.0011)	0.021 (0.0011)
Methyl tert-butyl ether	8500	2	U (0.064)	U (0.12)	U (0.0021)	U (0.0027)	U (0.87)	U (0.0027)	U (0.0023)	U (0.0026)	U (0.0026)	0.00081 J (0.0021)	0.00031 J (0.0029)	U (0.0018)	U (0.0022)	U (0.0022)
Toluene	10000	100	0.04 (0.032)	0.058 J (0.061)	U (0.001)	U (0.0014)	U (0.43)	U (0.0014)	U (0.0011)	U (0.0013)	U (0.0013)	U (0.0011)	U (0.0014)	U (0.00092)	U (0.0011)	0.00062 J (0.0011)
1,2,4-Trimethylbenzene	4700	300	0.05 J (0.064)	0.081 J (0.12)	U (0.0021)	U (0.0027)	U (0.87)	U (0.0027)	U (0.0023)	U (0.0026)	0.00071 J (0.0026)	U (0.0021)	0.0005 J (0.0029)	U (0.0018)	U (0.0022)	0.042 (0.0022)
1,3,5-Trimethylbenzene	4700	93	0.015 J (0.064)	0.03 J (0.12)	U (0.0021)	U (0.0027)	U (0.87)	U (0.0027)	U (0.0023)	U (0.0026)	0.00033 J (0.0026)	U (0.0021)	U (0.0029)	U (0.0018)	U (0.0022)	0.067 (0.0022)
Xylenes (total)	7900	1000	0.105 J (0.064)	0.298 J (0.12)	U (0.0021)	U (0.0027)	U (0.87)	U (0.0027)	U (0.0023)	U (0.0026)	U (0.0026)	U (0.0021)	U (0.0029)	U (0.0018)	U (0.0022)	0.00202 J (0.0022)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-A02-d 202-A02	202-A03-a 202-A03	202-A03-a 202-A03	202-A03-d 202-A03	202-A03-d 202-A03	202-A04-c 202-A04	202-A04-c 202-A04	202-A04-c 202-A04	202-A04-c 202-A04	202-A05-d 202-A05	202-A05-d 202-A05	202-A05-d 202-A05	202-A06-b 202-A06	202-A06-b 202-A06
Field Sample ID	Numeric Value	Numeric Value	202-A02-CX-VOC	202-A03-C1-VOC	202-A03-C2-VOC	202-A03-C3-VOC	202-A03-CX-VOC	202-A04-C1-VOC	202-A04-C2-VOC	202-A04-C3-VOC	202-A04-CX-VOC	202-A05-C1-VOC	202-A05-C2-VOC	202-A05-CX-VOC	202-A06-C1-VOC	202-A06-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.4 - 1.5	1.2 - 1.4	2.7 - 2.9	2.9 - 3.0	3.4 - 3.5	0.2 - 0.3	0.9 - 1.1	1.8 - 2.0	2.4 - 2.6	2.6 - 2.7	3.7 - 3.8	6.1 - 6.2	0.3 - 0.5	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	4/28/2022	4/28/2022
<b>VOCs</b>																
Benzene	280	0.5	0.012 J (0.033)	0.00021 J (0.00057)	0.00058 (0.00058)	0.00024 J (0.00048)	U (0.00063)	U (0.00061)	U (0.00054)	U (0.00049)	U (0.0005)	U (0.00051)	U (0.00065)	U (0.00064)	U (0.00062)	U (0.00046)
1,2-Dibromoethane	3.7	0.005	U (0.033)	U (0.00057)	U (0.00058)	U (0.00048)	U (0.00063)	U (0.00061)	U (0.00054)	U (0.00049)	U (0.0005)	U (0.00051)	U (0.00065)	U (0.00064)	U (0.00062)	U (0.00046)
1,2-Dichloroethane	85	0.5	U (0.066)	U (0.0011)	U (0.0012)	U (0.00096)	U (0.0013)	U (0.0012)	U (0.0011)	U (0.00099)	U (0.001)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0012)	U (0.00093)
Ethyl Benzene	880	70	0.19 (0.066)	U (0.0011)	U (0.0012)	U (0.00096)	U (0.0013)	0.00052 J (0.0012)	U (0.0011)	U (0.00099)	U (0.001)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0012)	U (0.00093)
Isopropylbenzene	10000	2500	0.27 (0.066)	U (0.0011)	U (0.0012)	U (0.00096)	U (0.0013)	0.13 (0.0012)	U (0.0011)	0.00016 J (0.00099)	0.00022 J (0.001)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0012)	U (0.00093)
Methyl tert-butyl ether	8500	2	U (0.13)	U (0.0023)	U (0.0023)	U (0.0019)	U (0.0025)	0.0016 J (0.0024)	U (0.0022)	U (0.002)	U (0.002)	U (0.002)	U (0.0026)	U (0.0026)	U (0.0025)	U (0.0018)
Toluene	10000	100	U (0.066)	U (0.0011)	U (0.0012)	U (0.00096)	U (0.0013)	0.0021 (0.0012)	U (0.0011)	U (0.00099)	U (0.001)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0012)	U (0.00093)
1,2,4-Trimethylbenzene	4700	300	3.5 (0.13)	U (0.0023)	0.00052 J (0.0023)	U (0.0019)	U (0.0025)	0.0018 J (0.0024)	U (0.0022)	U (0.002)	U (0.002)	U (0.002)	U (0.0026)	U (0.0026)	U (0.0025)	U (0.0018)
1,3,5-Trimethylbenzene	4700	93	1.4 (0.13)	U (0.0023)	0.00062 J (0.0023)	U (0.0019)	U (0.0025)	0.0004 J (0.0024)	U (0.0022)	U (0.002)	U (0.002)	U (0.002)	U (0.0026)	U (0.0026)	U (0.0025)	U (0.0018)
Xylenes (total)	7900	1000	0.133 J (0.13)	U (0.0023)	U (0.0023)	U (0.0019)	U (0.0025)	0.0066 J (0.0024)	U (0.0022)	U (0.002)	U (0.002)	U (0.002)	U (0.0026)	U (0.0026)	U (0.0025)	U (0.0018)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-A06-b 202-A06	202-A06-b 202-A06	202-A07-d 202-A07	202-A07-d 202-A07	202-A07-d 202-A07	202-A07-d 202-A07	202-A08-a 202-A08	202-A08-a 202-A08	202-A08-a 202-A08	202-A09-a 202-A09	202-A09-b 202-A09	202-A09-b 202-A09	202-A09-c 202-A09	202-B01-d 202-B01
Field Sample ID	Numeric Value	Numeric Value	202-A06-C3-VOC	202-A06-CX-VOC	202-A07-C1-VOC	202-A07-C2-VOC	202-A07-C3-VOC	202-A07-CX-VOC	202-A08-C1-VOC	202-A08-C2-VOC	202-A08-CX-VOC	202-A09-C2-VOC	202-A09-C3-VOC	202-A09-CX-VOC	202-A09-C1-VOC	202-B01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.2 - 1.4	1.8 - 2.0	0.6 - 0.8	2.1 - 2.3	4.3 - 4.4	6.4 - 6.6	2.6 - 2.7	4.7 - 4.9	6.7 - 6.9	1.4 - 1.5	2.9 - 3.0	3.4 - 3.5	0.2 - 0.3	0.9 - 1.1
Sample Date	(mg/kg)	(mg/kg)	4/28/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022	3/30/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00046)	U (0.00054)	U (0.0006)	U (0.00067)	U (0.00048)	U (0.00053)	U (0.03)	0.00026 J (0.00042)	U (0.00067)	U (0.00081)	U (0.00056)	U (0.00068)	U (0.00062)	0.0025 (0.00066)
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00054)	U (0.0006)	U (0.00067)	U (0.00048)	U (0.00053)	U (0.03)	U (0.00042)	U (0.00067)	U (0.00081)	U (0.00056)	U (0.00068)	U (0.00062)	U (0.00066)
1,2-Dichloroethane	85	0.5	U (0.00093)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00096)	U (0.001)	U (0.061)	U (0.00084)	U (0.0013)	U (0.0016)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0013)
Ethyl Benzene	880	70	U (0.00093)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00096)	U (0.001)	U (0.061)	U (0.00084)	U (0.0013)	U (0.0016)	U (0.0011)	U (0.0014)	U (0.0012)	0.0061 (0.0013)
Isopropylbenzene	10000	2500	U (0.00093)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00096)	U (0.001)	0.066 (0.061)	0.00043 J (0.00084)	U (0.0013)	U (0.0016)	U (0.0011)	U (0.0014)	U (0.0012)	0.0058 (0.0013)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0019)	U (0.0021)	U (0.12)	U (0.0017)	U (0.0027)	U (0.0032)	U (0.0023)	U (0.0027)	U (0.0025)	U (0.0026)
Toluene	10000	100	U (0.00093)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00096)	U (0.001)	U (0.061)	U (0.00084)	U (0.0013)	U (0.0016)	U (0.0011)	U (0.0014)	U (0.0012)	0.00079 J (0.0013)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0019)	U (0.0021)	U (0.12)	U (0.0017)	U (0.0027)	U (0.0032)	U (0.0023)	U (0.0027)	0.00052 J (0.0025)	0.085 (0.0026)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0019)	U (0.0021)	U (0.12)	U (0.0017)	U (0.0027)	U (0.0032)	0.00022 J (0.0023)	U (0.0027)	0.0005 J (0.0025)	0.052 (0.0026)
Xylenes (total)	7900	1000	U (0.0019)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0019)	U (0.0021)	U (0.12)	U (0.0017)	U (0.0027)	U (0.0032)	U (0.0023)	U (0.0027)	U (0.0025)	0.0106 J (0.0026)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-B01-d 202-B01	202-B01-d 202-B01	202-B01-d 202-B01	202-B02-c 202-B02	202-B02-d 202-B02	202-B02-d 202-B02	202-B02-d 202-B02	202-B02-d 202-B02	202-B03-b 202-B03	202-B03-b 202-B03	202-B03-b 202-B03	202-B03-b 202-B03	202-B04-c 202-B04	202-B04-c 202-B04	202-B04-c 202-B04
Field Sample ID	Numeric Value	Numeric Value	202-B01-C2-VOC	202-B01-C3-VOC	202-B01-CX-VOC	202-B02-C1-VOC	202-B02-C2-VOC	202-B02-C3-VOC	202-B02-CX-VOC	202-B03-C1-VOC	202-B03-C2-VOC	202-B03-C3-VOC	202-B03-CX-VOC	202-B04-C1-VOC	202-B04-C2-VOC	202-B04-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.8 - 2.0	3.2 - 3.4	3.7 - 3.8	0.8 - 0.9	3.2 - 3.4	4.9 - 5.0	5.5 - 5.6	0.6 - 0.8	0.9 - 1.1	2.0 - 2.1	2.3 - 2.4	0.9 - 1.1	1.5 - 1.7	3.7 - 3.8	
Sample Date	(mg/kg)	(mg/kg)	3/30/2022	3/30/2022	3/30/2022	3/30/2022	3/30/2022	3/30/2022	3/30/2022	3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/2/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.0014 (0.0011)	U (0.047)	U (0.0005)	U (0.00074)	U (0.00061)	U (0.00049)	U (0.00072)	U (0.00041)	U (0.0005)	U (0.00059)	U (0.00062)	U (0.00059)	U (0.00059)	U (0.00048)	
1,2-Dibromoethane	3.7	0.005	U (0.0011)	U (0.047)	U (0.0005)	U (0.00074)	U (0.00061)	U (0.00049)	U (0.00072)	U (0.00041)	U (0.0005)	U (0.00059)	U (0.00062)	U (0.00059)	U (0.00059)	U (0.00048)	
1,2-Dichloroethane	85	0.5	U (0.0022)	U (0.094)	U (0.001)	U (0.0015)	U (0.0012)	U (0.00097)	U (0.0014)	U (0.00081)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00095)	
Ethyl Benzene	880	70	0.0016 J (0.0022)	U (0.094)	U (0.001)	U (0.0015)	U (0.0012)	U (0.00097)	U (0.0014)	U (0.00081)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00095)	
Isopropylbenzene	10000	2500	0.019 (0.0022)	U (0.094)	U (0.001)	U (0.0015)	U (0.0012)	U (0.00097)	U (0.0014)	U (0.00081)	0.0032 (0.001)	U (0.0012)	U (0.0012)	0.0018 (0.0012)	U (0.0012)	U (0.00095)	
Methyl tert-butyl ether	8500	2	U (0.0044)	U (0.19)	U (0.002)	U (0.003)	U (0.0024)	U (0.0019)	U (0.0029)	U (0.0016)	U (0.002)	U (0.0024)	U (0.0025)	U (0.0023)	U (0.0024)	U (0.0019)	
Toluene	10000	100	0.0016 J (0.0022)	0.16 (0.094)	U (0.001)	U (0.0015)	U (0.0012)	U (0.00097)	U (0.0014)	U (0.00081)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00095)	
1,2,4-Trimethylbenzene	4700	300	0.0077 (0.0044)	U (0.19)	U (0.002)	U (0.003)	U (0.0024)	U (0.0019)	U (0.0029)	U (0.0016)	U (0.002)	U (0.0024)	U (0.0025)	U (0.0023)	U (0.0024)	U (0.0019)	
1,3,5-Trimethylbenzene	4700	93	0.0031 J (0.0044)	U (0.19)	U (0.002)	U (0.003)	U (0.0024)	U (0.0019)	U (0.0029)	U (0.0016)	U (0.002)	U (0.0024)	U (0.0025)	U (0.0023)	U (0.0024)	U (0.0019)	
Xylenes (total)	7900	1000	0.0145 J (0.0044)	U (0.19)	U (0.002)	U (0.003)	U (0.0024)	U (0.0019)	U (0.0029)	U (0.0016)	0.00158 J (0.002)	U (0.0024)	U (0.0025)	U (0.0023)	U (0.0024)	U (0.0019)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-B04-c 202-B04	202-B04-c 202-B04	202-B05-b 202-B05	202-B05-c 202-B05	202-B05-d 202-B05	202-B05-d 202-B05	202-B06-a 202-B06	202-B06-a 202-B06	202-B06-a 202-B06	202-B07-a 202-B07	202-B07-a 202-B07	202-B07-a 202-B07	202-B07-a 202-B07	202-B08-a 202-B08
Field Sample ID	Numeric Value	Numeric Value	202-B04-C4-VOC	202-B04-CX-VOC	202-B05-C1-VOC	202-B05-CX-VOC	202-B05-C2-VOC	202-B05-C3-VOC	202-B06-C1-VOC	202-B06-C2-VOC	202-B06-CX-VOC	202-B07-C1-VOC	202-B07-C2-VOC	202-B07-C3-VOC	202-B07-CX-VOC	202-B08-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		5.2 - 5.3	6.1 - 6.2	0.3 - 0.5	1.8 - 2.0	1.8 - 2.0	3.0 - 3.2	2.6 - 2.7	5.2 - 5.3	6.2 - 6.4	0.9 - 1.1	2.6 - 2.7	4.6 - 4.7	5.2 - 5.3	1.8 - 2.0
Sample Date	(mg/kg)	(mg/kg)	3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	2/25/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00063)	U (0.00043)	U (0.00058)	U (0.0005)	U (0.00049)	U (0.00054)	U (0.00063)	U (0.00046)	0.00079 (0.00048)	U (0.00045)	U (0.00065)	U (0.00055)	U (0.0006)	U (0.00045)
1,2-Dibromoethane	3.7	0.005	U (0.00063)	U (0.00043)	U (0.00058)	U (0.0005)	U (0.00049)	U (0.00054)	U (0.00063)	U (0.00046)	U (0.00048)	U (0.00045)	U (0.00065)	U (0.00055)	U (0.0006)	U (0.00045)
1,2-Dichloroethane	85	0.5	U (0.0013)	U (0.00086)	U (0.0012)	U (0.001)	U (0.00098)	U (0.0011)	U (0.0012)	U (0.00093)	U (0.00095)	U (0.0009)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00091)
Ethyl Benzene	880	70	U (0.0013)	U (0.00086)	U (0.0012)	U (0.001)	U (0.00098)	U (0.0011)	U (0.0012)	U (0.00093)	U (0.00095)	U (0.0009)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00091)
Isopropylbenzene	10000	2500	U (0.0013)	U (0.00086)	U (0.0012)	U (0.001)	U (0.00098)	U (0.0011)	U (0.0012)	U (0.00093)	0.00015 J (0.00095)	U (0.0009)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00091)
Methyl tert-butyl ether	8500	2	U (0.0025)	U (0.0017)	U (0.0023)	U (0.002)	U (0.002)	U (0.0022)	U (0.0025)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)
Toluene	10000	100	U (0.0013)	U (0.00086)	U (0.0012)	U (0.001)	U (0.00098)	U (0.0011)	U (0.0012)	U (0.00093)	U (0.00095)	U (0.0009)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00091)
1,2,4-Trimethylbenzene	4700	300	U (0.0025)	U (0.0017)	U (0.0023)	U (0.002)	U (0.002)	U (0.0022)	U (0.0025)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)
1,3,5-Trimethylbenzene	4700	93	U (0.0025)	U (0.0017)	U (0.0023)	U (0.002)	U (0.002)	U (0.0022)	U (0.0025)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)
Xylenes (total)	7900	1000	U (0.0025)	U (0.0017)	U (0.0023)	U (0.002)	U (0.002)	U (0.0022)	U (0.0025)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-B08-a 202-B08	202-B08-b 202-B08	202-B08-b 202-B08	202-B09-c 202-B09	202-B09-c 202-B09	202-B09-c 202-B09	202-B10-c 202-B10	202-B10-c 202-B10	202-B10-c 202-B10	202-B10-c 202-B10	202-C01-a 202-C01	202-C01-a 202-C01	202-C01-a 202-C01	202-C01-a 202-C01
Field Sample ID	Numeric Value	Numeric Value	202-B08-C3-VOC	202-B08-C1-VOC	202-B08-CX-VOC	202-B09-C1-VOC	202-B09-C2-VOC	202-B09-CX-VOC	202-B10-C1-VOC	202-B10-C2-VOC	202-B10-C3-VOC	202-B10-CX-VOC	202-C01-C1-VOC	202-C01-C2-VOC	202-C01-C3-VOC	202-C01-CX-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	3.7 - 3.8	1.2 - 1.4	4.6 - 4.7	1.1 - 1.2	1.5 - 1.7	2.7 - 2.9	1.4 - 1.5	2.7 - 2.9	4.3 - 4.4	4.9 - 5.0	0.9 - 1.1	2.1 - 2.3	3.7 - 3.8	5.2 - 5.3
Sample Date	(mg/kg)	(mg/kg)	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	2/25/2022	4/5/2022	4/5/2022	4/5/2022	4/5/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00069)	U (0.00076)	U (0.00054)	U (0.00045)	U (0.00084)	U (0.00051)	U (0.00055)	U (0.00052)	U (0.00058)	U (0.0006)	0.23 (0.099)	U (0.00052)	U (0.058)	0.039 (0.033)
1,2-Dibromoethane	3.7	0.005	U (0.00069)	U (0.00076)	U (0.00054)	U (0.00045)	U (0.00084)	U (0.00051)	U (0.00055)	U (0.00052)	U (0.00058)	U (0.0006)	U (0.099)	U (0.00052)	U (0.058)	U (0.033)
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.0015)	U (0.0011)	U (0.0009)	U (0.0017)	U (0.001)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0012)	U (0.2)	U (0.001)	U (0.12)	U (0.066)
Ethyl Benzene	880	70	U (0.0014)	U (0.0015)	U (0.0011)	U (0.0009)	U (0.0017)	U (0.001)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0012)	0.56 (0.2)	0.00017 J (0.001)	U (0.12)	0.54 (0.066)
Isopropylbenzene	10000	2500	U (0.0014)	U (0.0015)	U (0.0011)	U (0.0009)	U (0.0017)	U (0.001)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0012)	3.4 (0.2)	0.0016 (0.001)	U (0.12)	1.1 (0.066)
Methyl tert-butyl ether	8500	2	U (0.0028)	U (0.003)	U (0.0022)	U (0.0018)	U (0.0034)	U (0.002)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.4)	U (0.0021)	U (0.23)	U (0.13)
Toluene	10000	100	U (0.0014)	U (0.0015)	U (0.0011)	U (0.0009)	U (0.0017)	U (0.001)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0012)	U (0.2)	U (0.001)	U (0.12)	U (0.066)
1,2,4-Trimethylbenzene	4700	300	U (0.0028)	U (0.003)	U (0.0022)	U (0.0018)	U (0.0034)	U (0.002)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0024)	0.36 J (0.4)	U (0.0021)	U (0.23)	6.3 (0.13)
1,3,5-Trimethylbenzene	4700	93	U (0.0028)	U (0.003)	U (0.0022)	U (0.0018)	U (0.0034)	U (0.002)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0024)	0.055 J (0.4)	0.00029 J (0.0021)	U (0.23)	0.33 (0.13)
Xylenes (total)	7900	1000	U (0.0028)	U (0.003)	U (0.0022)	U (0.0018)	U (0.0034)	U (0.002)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0024)	0.59 J (0.4)	U (0.0021)	U (0.23)	0.627 J (0.13)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-C02-b 202-C02	202-C02-b 202-C02	202-C02-d 202-C02	202-C02-d 202-C02	202-C02-d 202-C02	202-C03-a 202-C03	202-C03-a 202-C03	202-C03-a 202-C03	202-C03-b 202-C03	202-C03-d 202-C03	202-C04-a 202-C04	202-C04-a 202-C04	202-C04-a 202-C04	202-C04-a 202-C04
Field Sample ID	Numeric Value	Numeric Value	202-C02-C4-VOC	202-C02-CX-VOC	202-C02-C1-VOC	202-C02-C2-VOC	202-C02-C3-VOC	202-C03-C1-VOC	202-C03-C2-VOC	202-C03-C3-VOC	202-C03-CX-VOC	202-C03-C4-VOC	202-C04-C1-VOC	202-C04-C2-VOC	202-C04-C3-VOC	202-C04-CX-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.7 - 2.9	3.7 - 3.8	0.0 - 0.2	1.5 - 1.7	1.8 - 2.0	0.8 - 0.9	1.2 - 1.4	2.4 - 2.6	2.4 - 2.6	0.8 - 0.9	0.6 - 0.8	1.2 - 1.4	2.4 - 2.6	3.7 - 3.8
Sample Date	(mg/kg)	(mg/kg)	4/1/2022	4/1/2022	4/1/2022	4/1/2022	4/1/2022	4/1/2022	4/1/2022	4/1/2022	4/1/2022	4/1/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.31)	U (0.03)	0.00022 J (0.00053)	U (0.03)	U (0.028)	U (0.043)	U (0.00045)	U (0.0007)	U (0.00058)	U (0.00052)	U (0.063)	U (0.00054)	U (0.0005)	U (0.00056)
1,2-Dibromoethane	3.7	0.005	U (0.31)	U (0.03)	U (0.00053)	U (0.03)	U (0.028)	U (0.043)	U (0.00045)	U (0.0007)	U (0.00058)	U (0.00052)	U (0.063)	U (0.00054)	U (0.0005)	U (0.00056)
1,2-Dichloroethane	85	0.5	U (0.61)	U (0.06)	U (0.001)	U (0.06)	U (0.057)	U (0.086)	U (0.0009)	U (0.0014)	U (0.0012)	U (0.001)	U (0.12)	U (0.0011)	U (0.001)	U (0.0011)
Ethyl Benzene	880	70	U (0.61)	U (0.06)	0.0003 J (0.001)	U (0.06)	0.022 J (0.057)	U (0.086)	U (0.0009)	0.00021 J (0.0014)	U (0.0012)	U (0.001)	0.059 J (0.12)	U (0.0011)	U (0.001)	U (0.0011)
Isopropylbenzene	10000	2500	30 (0.61)	4.2 (0.06)	0.012 (0.001)	0.032 J (0.06)	5.4 (0.057)	2.6 (0.086)	0.0073 (0.0009)	0.017 (0.0014)	U (0.0012)	U (0.001)	1.6 (0.12)	U (0.0011)	0.00029 J (0.001)	U (0.0011)
Methyl tert-butyl ether	8500	2	U (1.2)	U (0.12)	U (0.0021)	U (0.12)	U (0.11)	U (0.17)	U (0.0018)	U (0.0028)	U (0.0023)	U (0.0021)	U (0.25)	U (0.0022)	U (0.002)	U (0.0022)
Toluene	10000	100	U (0.61)	U (0.06)	U (0.001)	U (0.06)	U (0.057)	U (0.086)	0.00075 J (0.0009)	U (0.0014)	U (0.0012)	U (0.001)	U (0.12)	U (0.0011)	U (0.001)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	U (1.2)	U (0.12)	0.0012 J (0.0021)	U (0.12)	U (0.11)	U (0.17)	U (0.0018)	0.00061 J (0.0028)	U (0.0023)	U (0.0021)	0.075 J (0.25)	U (0.0022)	U (0.002)	U (0.0022)
1,3,5-Trimethylbenzene	4700	93	U (1.2)	U (0.12)	0.00034 J (0.0021)	U (0.12)	U (0.11)	U (0.17)	U (0.0018)	0.001 J (0.0028)	U (0.0023)	U (0.0021)	U (0.25)	U (0.0022)	U (0.002)	U (0.0022)
Xylenes (total)	7900	1000	U (1.2)	U (0.12)	0.0027 J (0.0021)	U (0.12)	0.084 J (0.11)	U (0.17)	0.0026 J (0.0018)	0.00214 J (0.0028)	U (0.0023)	U (0.0021)	U (0.25)	U (0.0022)	U (0.002)	U (0.0022)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-C05-a 202-C05	202-C05-a 202-C05	202-C05-c 202-C05	202-C05-c 202-C05	202-C06-a 202-C06	202-C06-a 202-C06	202-C06-a 202-C06	202-C06-a 202-C06	202-C07-b 202-C07	202-C07-b 202-C07	202-C07-b 202-C07	202-C07-b 202-C07	202-C07-b 202-C07	202-C08-b 202-C08
Field Sample ID	Numeric Value	Numeric Value	202-C05-C1-VOC	202-C05-C3-VOC	202-C05-C2-VOC	202-C05-CX-VOC	202-C06-C1-VOC	202-C06-C2-VOC	202-C06-C3-VOC	202-C06-CX-VOC	202-C07-C1-VOC	202-C07-C2-VOC	202-C07-C3-VOC	202-C07-C4-VOC	202-C07-CX-VOC	202-C08-CX-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		0.5 - 0.6	2.3 - 2.4	2.1 - 2.3	4.9 - 5.0	0.5 - 0.6	0.9 - 1.1	1.8 - 2.0	2.4 - 2.6	0.6 - 0.8	2.3 - 2.4	3.2 - 3.4	5.0 - 5.2	5.6 - 5.8	5.6 - 5.8
Sample Date	(mg/kg)	(mg/kg)	4/1/2022	4/1/2022	4/1/2022	4/1/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/7/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00071)	U (0.00055)	U (0.0006)	U (0.00067)	U (0.00077)	U (0.00053)	U (0.00063)	U (0.00092)	U (0.00055)	U (0.00047)	U (0.00051)	U (0.00054)	U (0.00051)	U (0.029)
1,2-Dibromoethane	3.7	0.005	U (0.00071)	U (0.00055)	U (0.0006)	U (0.00067)	U (0.00077)	U (0.00053)	U (0.00063)	U (0.00092)	U (0.00055)	U (0.00047)	U (0.00051)	U (0.00054)	U (0.00051)	U (0.029)
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0015)	U (0.001)	U (0.0012)	U (0.0018)	U (0.0011)	U (0.00094)	U (0.001)	U (0.0011)	U (0.001)	U (0.058)
Ethyl Benzene	880	70	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0015)	U (0.001)	U (0.0012)	U (0.0018)	0.00018 J (0.0011)	U (0.00094)	U (0.001)	U (0.0011)	U (0.001)	1.5 (0.058)
Isopropylbenzene	10000	2500	U (0.0014)	U (0.0011)	0.00097 J (0.0012)	U (0.0013)	U (0.0015)	U (0.001)	U (0.0012)	U (0.0018)	U (0.0011)	U (0.00094)	U (0.001)	U (0.0011)	U (0.001)	1.8 (0.058)
Methyl tert-butyl ether	8500	2	U (0.0028)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0031)	U (0.0021)	U (0.0025)	U (0.0037)	U (0.0022)	U (0.0019)	U (0.002)	U (0.0022)	U (0.002)	U (0.12)
Toluene	10000	100	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0015)	U (0.001)	U (0.0012)	0.0053 (0.0018)	U (0.0011)	U (0.00094)	U (0.001)	U (0.0011)	U (0.001)	U (0.058)
1,2,4-Trimethylbenzene	4700	300	U (0.0028)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0031)	U (0.0021)	U (0.0025)	U (0.0037)	0.0023 (0.0022)	0.00049 J (0.0019)	U (0.002)	U (0.0022)	U (0.002)	2.3 (0.12)
1,3,5-Trimethylbenzene	4700	93	U (0.0028)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0031)	U (0.0021)	U (0.0025)	U (0.0037)	0.012 (0.0022)	0.00092 J (0.0019)	U (0.002)	0.00047 J (0.0022)	0.0026 (0.002)	0.87 (0.12)
Xylenes (total)	7900	1000	U (0.0028)	U (0.0022)	U (0.0024)	U (0.0027)	U (0.0031)	U (0.0021)	U (0.0025)	U (0.0037)	0.0023 J (0.0022)	U (0.0019)	U (0.002)	U (0.0022)	U (0.002)	0.129 J (0.12)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-C08-c 202-C08	202-C08-c 202-C08	202-C08-c 202-C08	202-C08-d 202-C08	202-C09-c 202-C09	202-C09-c 202-C09	202-C09-c 202-C09	202-C09-c 202-C09	202-C10-b 202-C10	202-C10-b 202-C10	202-C10-b 202-C10	202-C10-b 202-C10	202-C11-a 202-C11	202-C11-d 202-C11
Field Sample ID	Numeric Value	Numeric Value	202-C08-C1-VOC	202-C08-C2-VOC	202-C08-C3-VOC	202-C08-C4-VOC	202-C09-C1-VOC	202-C09-C2-VOC	202-C09-C3-VOC	202-C09-CX-VOC	202-C10-C1-VOC	202-C10-C2-VOC	202-C10-C3-VOC	202-C10-CX-VOC	202-C11-C1-VOC	202-C11-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.2 - 1.4	1.5 - 1.7	3.0 - 3.2	3.8 - 4.0	1.2 - 1.4	2.7 - 2.9	3.8 - 4.0	4.7 - 4.9	0.2 - 0.3	2.1 - 2.3	3.4 - 3.5	4.7 - 4.9	1.2 - 1.4	2.6 - 2.7
Sample Date	(mg/kg)	(mg/kg)	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/1/2022	3/1/2022	3/1/2022	3/1/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.0005)	U (0.00074)	U (0.00065)	U (0.00053)	U (0.00065)	U (0.00053)	U (0.00047)	U (0.00068)	U (0.00061)	U (0.00064)	U (0.00052)	U (0.00047)	0.00039 J (0.00063)	0.00016 J (0.00048)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00074)	U (0.00065)	U (0.00053)	U (0.00065)	U (0.00053)	U (0.00047)	U (0.00068)	U (0.00061)	U (0.00064)	U (0.00052)	U (0.00047)	U (0.00063)	U (0.00048)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0015)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0011)	U (0.00095)	U (0.0014)	U (0.0012)	U (0.0013)	U (0.001)	U (0.00094)	U (0.0012)	U (0.00096)
Ethyl Benzene	880	70	U (0.001)	U (0.0015)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0011)	U (0.00095)	U (0.0014)	U (0.0012)	U (0.0013)	U (0.001)	U (0.00094)	U (0.0012)	U (0.00096)
Isopropylbenzene	10000	2500	U (0.001)	U (0.0015)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0011)	U (0.00095)	U (0.0014)	U (0.0012)	U (0.0013)	U (0.001)	U (0.00094)	U (0.0012)	U (0.00096)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.003)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0027)	U (0.0024)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0025)	U (0.0019)
Toluene	10000	100	U (0.001)	U (0.0015)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0011)	U (0.00095)	U (0.0014)	U (0.0012)	U (0.0013)	U (0.001)	U (0.00094)	U (0.0012)	U (0.00096)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.003)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0027)	U (0.0024)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0025)	U (0.0019)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.003)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0027)	U (0.0024)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0025)	U (0.0019)
Xylenes (total)	7900	1000	U (0.002)	U (0.003)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0027)	U (0.0024)	U (0.0026)	U (0.0021)	U (0.0019)	U (0.0025)	U (0.0019)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-C11-d 202-C11	202-C12-a 202-C12	202-C12-a 202-C12	202-C12-a 202-C12	202-C12-a 202-C12	202-C12-a 202-C12	202-C12-a 202-C12	202-D01-c 202-D01	202-D01-c 202-D01	202-D01-c 202-D01	202-D01-c 202-D01	202-D01-c 202-D01	202-D02-c 202-D02	202-D02-c 202-D02	202-D02-c 202-D02
Field Sample ID	Numeric Value	Numeric Value	202-C11-CX-VOC	202-C12-C1-VOC	202-C12-C2-VOC	202-C12-C3-VOC	202-C12-C4-VOC	202-C12-CX-VOC	202-D01-C1-VOC	202-D01-C2-VOC	202-D01-C3-VOC	202-D01-C4-VOC	202-D01-CX-VOC	202-D02-C1-VOC	202-D02-C2-VOC	202-D02-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	4.3 - 4.4	0.8 - 0.9	1.5 - 1.7	3.0 - 3.2	3.8 - 4.0	4.9 - 5.0	0.5 - 0.6	1.2 - 1.4	2.9 - 3.0	3.7 - 3.8	4.6 - 4.7	0.5 - 0.6	1.1 - 1.2	1.5 - 1.7	
Sample Date	(mg/kg)	(mg/kg)	2/28/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	4/4/2022	4/4/2022	4/4/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00055)	U (0.00055)	U (0.00053)	U (0.00048)	U (0.00049)	U (0.00058)	U (0.00059)	0.00018 J (0.0005)	U (0.0006)	U (0.00059)	U (0.00055)	U (0.00058)	0.014 J (0.031)	0.014 J (0.033)	
1,2-Dibromoethane	3.7	0.005	U (0.00055)	U (0.00055)	U (0.00053)	U (0.00048)	U (0.00049)	U (0.00058)	U (0.00059)	U (0.0005)	U (0.0006)	U (0.00059)	U (0.00055)	U (0.00058)	U (0.031)	U (0.033)	
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.063)	U (0.066)	
Ethyl Benzene	880	70	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0012)	0.033 J (0.063)	0.05 J (0.066)	
Isopropylbenzene	10000	2500	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0012)	1.4 (0.063)	3.1 (0.066)	
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0023)	U (0.0024)	U (0.002)	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0023)	U (0.12)	U (0.13)	
Toluene	10000	100	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0012)	0.058 J (0.063)	0.057 J (0.066)	
1,2,4-Trimethylbenzene	4700	300	U (0.0022)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0023)	U (0.0024)	U (0.002)	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0023)	0.13 (0.12)	U (0.13)	
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0023)	U (0.0024)	U (0.002)	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0023)	0.044 J (0.12)	U (0.13)	
Xylenes (total)	7900	1000	U (0.0022)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0023)	U (0.0024)	U (0.002)	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0023)	0.265 J (0.12)	0.111 J (0.13)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-D02-c 202-D02	202-D03-d 202-D03	202-D03-d 202-D03	202-D03-d 202-D03	202-D03-d 202-D03	202-D03-d 202-D03	202-D04-b 202-D04	202-D04-d 202-D04	202-D04-d 202-D04	202-D04-d 202-D04	202-D05-b 202-D05	202-D05-b 202-D05	202-D05-b 202-D05	202-D05-b 202-D05	202-D05-b 202-D05
Field Sample ID	Numeric Value	Numeric Value	202-D02-CX-VOC	202-D03-C1-VOC	202-D03-C2-VOC	202-D03-C3-VOC	202-D03-CX-VOC	202-D04-C1-VOC	202-D04-C2-VOC	202-D04-C3-VOC	202-D04-CX-VOC	202-D05-C1-VOC	202-D05-C2-VOC	202-D05-C3-VOC	202-D05-C4-VOC	202-D05-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.1 - 2.3	0.9 - 1.1	2.1 - 2.3	3.0 - 3.2	4.0 - 4.1	0.8 - 0.9	1.2 - 1.4	1.5 - 1.7	2.6 - 2.7	0.8 - 0.9	1.5 - 1.7	3.0 - 3.2	4.3 - 4.4	5.0 - 5.2	
Sample Date	(mg/kg)	(mg/kg)	4/4/2022	4/4/2022	4/4/2022	4/4/2022	4/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.00047 J (0.00053)	U (0.00053)	U (0.00048)	U (0.00061)	U (0.00052)	U (0.00058)	U (0.00059)	U (0.00052)	U (0.00051)	0.00038 J (0.00056)	U (0.00061)	U (0.00052)	U (0.00051)	U (0.0005)	
1,2-Dibromoethane	3.7	0.005	U (0.00053)	U (0.00053)	U (0.00048)	U (0.00061)	U (0.00052)	U (0.00058)	U (0.00059)	U (0.00052)	U (0.00051)	U (0.00056)	U (0.00061)	U (0.00052)	U (0.00051)	U (0.0005)	
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0011)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.001)	U (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.001)	
Ethyl Benzene	880	70	0.0085 (0.001)	U (0.0011)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.001)	0.0014 (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.001)	
Isopropylbenzene	10000	2500	0.03 (0.001)	U (0.0011)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.001)	0.0045 (0.0011)	0.00034 J (0.0012)	0.0083 (0.001)	U (0.001)	U (0.001)	
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.0021)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	U (0.0022)	U (0.0024)	U (0.0021)	U (0.002)	U (0.002)	
Toluene	10000	100	0.0037 (0.001)	U (0.0011)	U (0.00097)	U (0.0012)	U (0.001)	0.0033 (0.0012)	U (0.0012)	U (0.001)	U (0.001)	U (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.001)	
1,2,4-Trimethylbenzene	4700	300	0.0068 (0.0021)	U (0.0021)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	0.0033 (0.0022)	U (0.0024)	U (0.0021)	U (0.002)	U (0.002)	
1,3,5-Trimethylbenzene	4700	93	0.004 (0.0021)	U (0.0021)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	0.0014 J (0.0022)	U (0.0024)	U (0.0021)	U (0.002)	U (0.002)	
Xylenes (total)	7900	1000	0.0085 J (0.0021)	U (0.0021)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	0.0027 J (0.0022)	U (0.0024)	U (0.0021)	U (0.002)	U (0.002)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-D06-d 202-D06	202-D06-d 202-D06	202-D06-d 202-D06	202-D06-d 202-D06	202-D07-b 202-D07	202-D07-b 202-D07	202-D07-b 202-D07	202-D07-c 202-D07	202-D07-c 202-D07	202-D08-b 202-D08	202-D08-b 202-D08	202-D08-b 202-D08	202-D08-c 202-D08	202-D09-b 202-D09
Field Sample ID	Numeric Value	Numeric Value	202-D06-C1-VOC	202-D06-C2-VOC	202-D06-C3-VOC	202-D06-CX-VOC	202-D07-C1-VOC	202-D07-C2-VOC	202-D07-C4-VOC	202-D07-C3-VOC	202-D07-CX-VOC	202-D08-C1-VOC	202-D08-C2-VOC	202-D08-C3-VOC	202-D08-CX-VOC	202-D09-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		0.9 - 1.1	2.6 - 2.7	3.7 - 3.8	4.6 - 4.7	0.3 - 0.5	0.9 - 1.1	2.7 - 2.9	1.5 - 1.7	2.7 - 2.9	1.1 - 1.2	1.8 - 2.0	3.4 - 3.5	2.4 - 2.6	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00046)	U (0.00051)	U (0.00046)	U (0.00055)	U (0.0005)	U (0.0006)	U (0.00054)	U (0.0005)	U (0.00057)	U (0.0006)	U (0.00066)	U (0.00046)	U (0.00051)	U (0.00051)
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00051)	U (0.00046)	U (0.00055)	U (0.0005)	U (0.0006)	U (0.00054)	U (0.0005)	U (0.00057)	U (0.0006)	U (0.00066)	U (0.00046)	U (0.00051)	U (0.00051)
1,2-Dichloroethane	85	0.5	U (0.00092)	U (0.001)	U (0.00092)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0011)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00092)	U (0.001)	U (0.001)
Ethyl Benzene	880	70	U (0.00092)	U (0.001)	U (0.00092)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0011)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00092)	U (0.001)	U (0.001)
Isopropylbenzene	10000	2500	U (0.00092)	U (0.001)	U (0.00092)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0011)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00092)	U (0.001)	U (0.001)
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.002)	U (0.0018)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0023)	U (0.0024)	U (0.0026)	U (0.0018)	U (0.002)	U (0.002)
Toluene	10000	100	U (0.00092)	U (0.001)	U (0.00092)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0011)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.00092)	U (0.001)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	U (0.002)	U (0.0018)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0023)	U (0.0024)	U (0.0026)	U (0.0018)	U (0.002)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.0018)	U (0.002)	U (0.0018)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0023)	U (0.0024)	U (0.0026)	U (0.0018)	U (0.002)	U (0.002)
Xylenes (total)	7900	1000	U (0.0018)	U (0.002)	U (0.0018)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0023)	U (0.0024)	U (0.0026)	U (0.0018)	U (0.002)	U (0.002)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-D09-b 202-D09	202-D09-b 202-D09	202-D09-c 202-D09	202-D09-c 202-D09	202-E01-d 202-E01	202-E01-d 202-E01	202-E01-d 202-E01	202-E01-d 202-E01	202-E01-d 202-E01	202-E02-d 202-E02	202-E02-d 202-E02	202-E02-d 202-E02	202-E02-d 202-E02	202-E03-a 202-E03
Field Sample ID	Numeric Value	Numeric Value	202-D09-C4-VOC	202-D09-CX-VOC	202-D09-C1-VOC	202-D09-C2-VOC	202-E01-C1-VOC	202-E01-C2-VOC	202-E01-C3-VOC	202-E01-C4-VOC	202-E01-CX-VOC	202-E02-C1-VOC	202-E02-C2-VOC	202-E02-C3-VOC	202-E02-CX-VOC	202-E03-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.4 - 2.6	2.7 - 2.9	0.6 - 0.8	1.5 - 1.7	0.6 - 0.8	1.8 - 2.0	3.7 - 3.8	5.5 - 5.6	7.5 - 7.6	1.1 - 1.2	2.3 - 2.4	4.6 - 4.7	6.7 - 6.9	1.2 - 1.4
Sample Date	(mg/kg)	(mg/kg)	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00055)	U (0.00051)	U (0.00053)	U (0.00048)	U (0.0006)	0.0011 (0.00087)	U (0.00053)	U (0.00049)	U (0.034)	U (0.059)	U (0.00058)	U (0.00056)	U (0.033)	U (0.0014)
1,2-Dibromoethane	3.7	0.005	U (0.00055)	U (0.00051)	U (0.00053)	U (0.00048)	U (0.0006)	U (0.00087)	U (0.00053)	U (0.00049)	U (0.034)	U (0.059)	U (0.00058)	U (0.00056)	U (0.033)	U (0.0014)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.001)	U (0.001)	U (0.00097)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00097)	U (0.067)	U (0.12)	U (0.0012)	U (0.0011)	U (0.066)	U (0.0029)
Ethyl Benzene	880	70	U (0.0011)	U (0.001)	U (0.001)	U (0.00097)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00098)	0.21 (0.067)	0.069 J (0.12)	U (0.0012)	0.00037 J (0.0011)	U (0.066)	U (0.0029)
Isopropylbenzene	10000	2500	U (0.0011)	U (0.001)	U (0.001)	U (0.00097)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00098)	0.88 (0.067)	3 (0.12)	U (0.0012)	0.002 (0.0011)	0.29 (0.066)	U (0.0029)
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.002)	U (0.0021)	U (0.0019)	U (0.0024)	U (0.0035)	U (0.0021)	U (0.002)	U (0.13)	U (0.24)	U (0.0023)	U (0.0022)	U (0.13)	U (0.0058)
Toluene	10000	100	U (0.0011)	U (0.001)	U (0.001)	U (0.00097)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00098)	0.046 J (0.067)	U (0.12)	U (0.0012)	U (0.0011)	U (0.066)	U (0.0029)
1,2,4-Trimethylbenzene	4700	300	U (0.0022)	U (0.002)	U (0.0021)	U (0.0019)	U (0.0024)	0.0008 J (0.0035)	U (0.0021)	U (0.002)	6.2 (0.13)	U (0.24)	U (0.0023)	U (0.0022)	U (0.13)	U (0.0058)
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	U (0.002)	U (0.0021)	U (0.0019)	U (0.0024)	0.00047 J (0.0035)	U (0.0021)	U (0.002)	1.5 (0.13)	U (0.24)	U (0.0023)	U (0.0022)	U (0.13)	U (0.0058)
Xylenes (total)	7900	1000	U (0.0022)	U (0.002)	U (0.0021)	U (0.0019)	U (0.0024)	U (0.0035)	U (0.0021)	U (0.002)	0.487 J (0.13)	U (0.24)	U (0.0023)	U (0.0022)	U (0.13)	U (0.0058)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-E03-a 202-E03	202-E03-a 202-E03	202-E03-a 202-E03	202-E04-b 202-E04	202-E04-b 202-E04	202-E04-b 202-E04	202-E04-c 202-E04	202-E05-c 202-E05	202-E05-c 202-E05	202-E05-c 202-E05	202-E05-c 202-E05	202-E06-d 202-E06	202-E06-d 202-E06	202-E06-d 202-E06
Field Sample ID	Numeric Value (0-2 ft bgs)	Numeric Value (mg/kg)	202-E03-C2-VOC 2.4 - 2.6 3/24/2022	202-E03-C3-VOC 4.6 - 4.7 3/24/2022	202-E03-CX-VOC 7.0 - 7.2 3/24/2022	202-E04-C1-VOC 0.6 - 0.8 3/23/2022	202-E04-C3-VOC 3.4 - 3.5 3/23/2022	202-E04-CX-VOC 4.9 - 5.0 3/23/2022	202-E04-C2-VOC 1.8 - 2.0 3/23/2022	202-E05-C1-VOC 0.8 - 0.9 3/22/2022	202-E05-C2-VOC 1.5 - 1.7 3/22/2022	202-E05-C3-VOC 3.0 - 3.2 3/22/2022	202-E05-CX-VOC 4.6 - 4.7 3/22/2022	202-E06-C1-VOC 0.5 - 0.6 3/23/2022	202-E06-C2-VOC 0.8 - 0.9 3/23/2022	202-E06-C3-VOC 1.4 - 1.5 3/23/2022
Collection Depth (ft bgs)	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date
<b>VOCs</b>																
Benzene	280	0.5	U (0.00061)	U (0.035)	U (0.0006)	U (0.0005)	U (0.00054)	U (0.00054)	U (0.00071)	U (0.00061)	U (0.00062)	U (0.00052)	U (0.00054)	U (0.00053)	U (0.00046)	U (0.00058)
1,2-Dibromoethane	3.7	0.005	U (0.00061)	U (0.035)	U (0.0006)	U (0.0005)	U (0.00054)	U (0.00054)	U (0.00071)	U (0.00061)	U (0.00062)	U (0.00052)	U (0.00054)	U (0.00053)	U (0.00046)	U (0.00058)
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.07)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.001)	U (0.001)	U (0.00092)	U (0.0012)
Ethyl Benzene	880	70	0.00018 J (0.0012)	0.48 (0.07)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0011)	U (0.001)	U (0.00092)	U (0.0012)
Isopropylbenzene	10000	2500	U (0.0012)	1.1 (0.07)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0011)	U (0.001)	U (0.00092)	U (0.0012)
Methyl tert-butyl ether	8500	2	U (0.0024)	U (0.14)	U (0.0024)	U (0.002)	U (0.0022)	U (0.0022)	U (0.0028)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0022)	U (0.0021)	U (0.0018)	U (0.0023)
Toluene	10000	100	U (0.0012)	U (0.07)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0011)	U (0.001)	U (0.00092)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	0.00099 J (0.0024)	27 (0.7)	U (0.0024)	U (0.002)	U (0.0022)	U (0.0022)	U (0.0028)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0022)	U (0.0021)	U (0.0018)	U (0.0023)
1,3,5-Trimethylbenzene	4700	93	0.00042 J (0.0024)	9.4 (0.14)	U (0.0024)	U (0.002)	U (0.0022)	U (0.0022)	U (0.0028)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0022)	U (0.0021)	U (0.0018)	U (0.0023)
Xylenes (total)	7900	1000	U (0.0024)	6.1 J (0.14)	U (0.0024)	U (0.002)	U (0.0022)	U (0.0022)	U (0.0028)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0022)	U (0.0021)	U (0.0018)	U (0.0023)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-E06-d 202-E06	202-E07-b 202-E07	202-E07-b 202-E07	202-E07-b 202-E07	202-E07-b 202-E07	202-E07-b 202-E07	202-E08-a 202-E08	202-E08-a 202-E08	202-E08-b 202-E08	202-E08-b 202-E08	202-E08-b 202-E08	202-E09-c 202-E09	202-E09-c 202-E09	202-E09-c 202-E09	202-E09-c 202-E09
Field Sample ID	Numeric Value	Numeric Value	202-E06-CX-VOC	202-E07-C1-VOC	202-E07-C2-VOC	202-E07-C3-VOC	202-E07-CX-VOC	202-E08-C1-VOC	202-E08-C3-VOC	202-E08-C2-VOC	202-E08-C4-VOC	202-E08-CX-VOC	202-E09-C1-VOC	202-E09-C2-VOC	202-E09-C3-VOC	202-E09-C4-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		2.0 - 2.1	0.2 - 0.3	0.8 - 0.9	1.4 - 1.5	2.0 - 2.1	0.2 - 0.3	0.9 - 1.1	0.6 - 0.8	1.5 - 1.7	2.1 - 2.3	0.2 - 0.3	0.6 - 0.8	0.9 - 1.1	1.4 - 1.5	
Sample Date	(mg/kg)	(mg/kg)	3/23/2022	3/23/2022	3/23/2022	3/23/2022	3/23/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00071)	U (0.0005)	U (0.00049)	U (0.00063)	U (0.00058)	U (0.00067)	0.0013 (0.00049)	U (0.00055)	U (0.00082)	U (0.00049)	U (0.00062)	0.00047 (0.00046)	0.00021 J (0.00043)	U (0.00052)	
1,2-Dibromoethane	3.7	0.005	U (0.00071)	U (0.0005)	U (0.00049)	U (0.00063)	U (0.00058)	U (0.00067)	U (0.00049)	U (0.00055)	U (0.00082)	U (0.00049)	U (0.00062)	U (0.00046)	U (0.00043)	U (0.00052)	
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.001)	U (0.00098)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.00097)	U (0.0011)	U (0.0016)	U (0.00098)	U (0.0012)	U (0.00092)	U (0.00087)	U (0.001)	
Ethyl Benzene	880	70	U (0.0014)	U (0.001)	U (0.00098)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.00097)	U (0.0011)	U (0.0016)	U (0.00098)	U (0.0012)	U (0.00092)	0.00024 J (0.00087)	U (0.001)	
Isopropylbenzene	10000	2500	U (0.0014)	U (0.001)	U (0.00098)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.00097)	U (0.0011)	U (0.0016)	U (0.00098)	U (0.0012)	U (0.00092)	U (0.00087)	U (0.001)	
Methyl tert-butyl ether	8500	2	U (0.0028)	U (0.002)	U (0.002)	U (0.0025)	U (0.0023)	U (0.0027)	U (0.0019)	U (0.0022)	U (0.0033)	U (0.002)	U (0.0025)	U (0.0018)	U (0.0017)	U (0.0021)	
Toluene	10000	100	U (0.0014)	U (0.001)	U (0.00098)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.00097)	U (0.0011)	U (0.0016)	U (0.00098)	U (0.0012)	U (0.00092)	0.00063 J (0.00087)	U (0.001)	
1,2,4-Trimethylbenzene	4700	300	U (0.0028)	U (0.002)	U (0.002)	U (0.0025)	U (0.0023)	U (0.0027)	U (0.0019)	U (0.0022)	U (0.0033)	U (0.002)	U (0.0025)	U (0.0018)	0.00042 J (0.0017)	U (0.0021)	
1,3,5-Trimethylbenzene	4700	93	U (0.0028)	U (0.002)	U (0.002)	U (0.0025)	U (0.0023)	U (0.0027)	U (0.0019)	U (0.0022)	U (0.0033)	U (0.002)	U (0.0025)	U (0.0018)	U (0.0017)	U (0.0021)	
Xylenes (total)	7900	1000	U (0.0028)	U (0.002)	U (0.002)	U (0.0025)	U (0.0023)	U (0.0027)	U (0.0019)	U (0.0022)	U (0.0033)	U (0.002)	U (0.0025)	U (0.0018)	0.00108 J (0.0017)	U (0.0021)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-E09-c 202-E09	202-E10-c 202-E10	202-E10-c 202-E10	202-E10-c 202-E10	202-E10-c 202-E10	202-E10-c 202-E10	202-E10-c 202-E10	202-E11-c 202-E11	202-E11-c 202-E11	202-E11-c 202-E11	202-E11-c 202-E11	202-E12-b 202-E12	202-E12-b 202-E12	202-E12-b 202-E12	202-E12-b 202-E12
Field Sample ID	Numeric Value	Numeric Value	202-E09-CX-VOC	202-E10-C1-VOC	202-E10-C2-VOC	202-E10-C3-VOC	202-E10-C4-VOC	202-E10-CX-VOC	202-E11-C1-VOC	202-E11-C2-VOC	202-E11-C3-VOC	202-E11-CX-VOC	202-E12-C1-VOC	202-E12-C2-VOC	202-E12-C3-VOC	202-E12-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		1.8 - 2.0	0.2 - 0.3	0.5 - 0.6	0.9 - 1.1	1.4 - 1.5	1.8 - 2.0	0.3 - 0.5	0.9 - 1.1	1.4 - 1.5	2.0 - 2.1	0.6 - 0.8	1.1 - 1.2	2.1 - 2.3	3.0 - 3.2	
Sample Date	(mg/kg)	(mg/kg)	3/10/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.0021 (0.00066)	U (0.0006)	U (0.00057)	U (0.00056)	U (0.00055)	U (0.00056)	U (0.00065)	U (0.00059)	U (0.00059)	U (0.00095)	U (0.00066)	U (0.00051)	U (0.00052)	U (0.00049)	
1,2-Dibromoethane	3.7	0.005	U (0.00066)	U (0.0006)	U (0.00057)	U (0.00056)	U (0.00055)	U (0.00056)	U (0.00065)	U (0.00059)	U (0.00059)	U (0.00095)	U (0.00066)	U (0.00051)	U (0.00052)	U (0.00049)	
1,2-Dichloroethane	85	0.5	U (0.0013)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0012)	U (0.0019)	U (0.0013)	U (0.001)	U (0.001)	U (0.00098)	
Ethyl Benzene	880	70	U (0.0013)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0012)	U (0.0019)	U (0.0013)	U (0.001)	U (0.001)	U (0.00098)	
Isopropylbenzene	10000	2500	U (0.0013)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0012)	U (0.0019)	U (0.0013)	U (0.001)	U (0.001)	U (0.00098)	
Methyl tert-butyl ether	8500	2	U (0.0026)	U (0.0024)	U (0.0023)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0026)	U (0.0024)	U (0.0024)	U (0.0038)	U (0.0026)	U (0.002)	U (0.0021)	U (0.002)	
Toluene	10000	100	0.00094 J (0.0013)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0012)	U (0.0019)	U (0.0013)	U (0.001)	U (0.001)	U (0.00098)	
1,2,4-Trimethylbenzene	4700	300	U (0.0026)	U (0.0024)	U (0.0023)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0026)	U (0.0024)	U (0.0024)	U (0.0038)	U (0.0026)	U (0.002)	U (0.0021)	U (0.002)	
1,3,5-Trimethylbenzene	4700	93	U (0.0026)	U (0.0024)	U (0.0023)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0026)	U (0.0024)	U (0.0024)	U (0.0038)	U (0.0026)	U (0.002)	U (0.0021)	U (0.002)	
Xylenes (total)	7900	1000	U (0.0026)	U (0.0024)	U (0.0023)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0026)	U (0.0024)	U (0.0024)	U (0.0038)	U (0.0026)	U (0.002)	U (0.0021)	U (0.002)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-E13-d 202-E13	202-E13-d 202-E13	202-E13-d 202-E13	202-E13-d 202-E13	202-E13-d 202-E13	202-E13-d 202-E13	202-E14-b 202-E14	202-E14-c 202-E14	202-E14-c 202-E14	202-E14-c 202-E14	202-E15-a 202-E15	202-E15-a 202-E15	202-E15-a 202-E15	202-E15-d 202-E15	202-F01-a 202-F01
Field Sample ID	Numeric Value	Numeric Value	202-E13-C1-VOC	202-E13-C2-VOC	202-E13-C3-VOC	202-E13-C4-VOC	202-E13-CX-VOC	202-E14-C1-VOC	202-E14-C2-VOC	202-E14-C3-VOC	202-E14-CX-VOC	202-E15-C1-VOC	202-E15-C3-VOC	202-E15-CX-VOC	202-E15-C2-VOC	202-F01-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		0.6 - 0.8	1.4 - 1.5	2.1 - 2.3	2.4 - 2.6	3.5 - 3.7	0.6 - 0.8	2.1 - 2.3	3.4 - 3.5	3.8 - 4.0	0.8 - 0.9	2.9 - 3.0	4.0 - 4.1	1.7 - 1.8	0.3 - 0.5	
Sample Date	(mg/kg)	(mg/kg)	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022	3/10/2022	3/10/2022	3/10/2022	3/10/2022	4/12/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.0005)	U (0.00055)	U (0.00047)	U (0.00052)	U (0.00065)	U (0.00067)	U (0.00053)	U (0.0008)	U (0.00065)	U (0.00054)	U (0.0006)	U (0.00045)	U (0.00074)	U (0.00055)	
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00055)	U (0.00047)	U (0.00052)	U (0.00065)	U (0.00067)	U (0.00053)	U (0.0008)	U (0.00065)	U (0.00054)	U (0.0006)	U (0.00045)	U (0.00074)	U (0.00055)	
1,2-Dichloroethane	85	0.5	U (0.00099)	U (0.0011)	U (0.00095)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0011)	U (0.0016)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00089)	U (0.0015)	U (0.0011)	
Ethyl Benzene	880	70	U (0.00099)	U (0.0011)	U (0.00095)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0011)	U (0.0016)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00089)	U (0.0015)	U (0.0011)	
Isopropylbenzene	10000	2500	U (0.00099)	U (0.0011)	U (0.00095)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0011)	U (0.0016)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00089)	U (0.0015)	U (0.0011)	
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0022)	U (0.0019)	U (0.0021)	U (0.0026)	U (0.0027)	U (0.0021)	U (0.0032)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)	U (0.003)	U (0.0022)	
Toluene	10000	100	U (0.00099)	U (0.0011)	U (0.00095)	U (0.001)	U (0.0013)	U (0.0013)	U (0.0011)	U (0.0016)	U (0.0013)	U (0.0011)	U (0.0012)	U (0.00089)	U (0.0015)	U (0.0011)	
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.0022)	U (0.0019)	U (0.0021)	U (0.0026)	U (0.0027)	U (0.0021)	U (0.0032)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)	U (0.003)	U (0.0022)	
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.0022)	U (0.0019)	U (0.0021)	U (0.0026)	U (0.0027)	U (0.0021)	U (0.0032)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)	U (0.003)	U (0.0022)	
Xylenes (total)	7900	1000	U (0.002)	U (0.0022)	U (0.0019)	U (0.0021)	U (0.0026)	U (0.0027)	U (0.0021)	U (0.0032)	U (0.0026)	U (0.0022)	U (0.0024)	U (0.0018)	U (0.003)	U (0.0022)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F01-a 202-F01	202-F02-b 202-F02	202-F02-b 202-F02	202-F02-b 202-F02	202-F02-b 202-F02	202-F02-b 202-F02	202-F03-c 202-F03	202-F03-c 202-F03	202-F03-c 202-F03	202-F03-c 202-F03	202-F04-a 202-F04	202-F04-a 202-F04	202-F04-d 202-F04	202-F04-d 202-F04	202-F04-d 202-F04	202-F05-d 202-F05
Field Sample ID	Numeric Value	Numeric Value	202-F01-CX-VOC	202-F02-C1-VOC	202-F02-C2-VOC	202-F02-C3-VOC	202-F02-CX-VOC	202-F03-C1-VOC	202-F03-C2-VOC	202-F03-C3-VOC	202-F03-CX-VOC	202-F04-C1-VOC	202-F04-C2-VOC	202-F04-C3-VOC	202-F04-CX-VOC	202-F05-C1-VOC		
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	5.8 - 5.9	0.9 - 1.1	1.5 - 1.7	2.9 - 3.0	4.3 - 4.4	0.2 - 0.3	1.5 - 1.7	3.0 - 3.2	4.6 - 4.7	0.5 - 0.6	1.5 - 1.7	3.0 - 3.2	4.3 - 4.4	0.5 - 0.6		
Sample Date	(mg/kg)	(mg/kg)	4/12/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	3/25/2022	4/5/2022		
<b>VOCs</b>																		
Benzene	280	0.5	U (0.034)	U (0.00056)	U (0.00056)	U (0.00056)	U (0.78)	U (0.00061)	U (0.00064)	U (0.0006)	U (0.00066)	0.0006 (0.00059)	0.00035 J (0.00068)	U (0.00046)	U (0.00062)	U (0.00054)		
1,2-Dibromoethane	3.7	0.005	U (0.034)	U (0.00056)	U (0.00056)	U (0.00056)	U (0.78)	U (0.00061)	U (0.00064)	U (0.0006)	U (0.00066)	U (0.00059)	U (0.00068)	U (0.00046)	U (0.00062)	U (0.00054)		
1,2-Dichloroethane	85	0.5	U (0.067)	U (0.0011)	U (0.0011)	U (0.0011)	U (1.6)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0014)	U (0.00092)	U (0.0012)	U (0.0011)		
Ethyl Benzene	880	70	U (0.067)	U (0.0011)	U (0.0011)	0.11 (0.0011)	94 (1.6)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0014)	U (0.00092)	U (0.0012)	U (0.0011)		
Isopropylbenzene	10000	2500	U (0.067)	0.0038 (0.0011)	U (0.0011)	0.015 (0.0011)	14 (1.6)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0013)	0.0007 J (0.0012)	0.0011 J (0.0014)	U (0.00092)	0.00015 J (0.0012)	U (0.0011)		
Methyl tert-butyl ether	8500	2	U (0.13)	U (0.0022)	U (0.0022)	U (0.0022)	U (3.1)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0027)	U (0.0018)	U (0.0025)	U (0.0021)		
Toluene	10000	100	U (0.067)	U (0.0011)	U (0.0011)	U (0.0011)	1 J (1.6)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0013)	U (0.0012)	U (0.0014)	U (0.00092)	U (0.0012)	U (0.0011)		
1,2,4-Trimethylbenzene	4700	300	U (0.13)	0.0025 (0.0022)	U (0.0022)	0.2 (0.0022)	870 (12)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0026)	0.00039 J (0.0024)	U (0.0027)	U (0.0018)	U (0.0025)	U (0.0021)		
1,3,5-Trimethylbenzene	4700	93	U (0.13)	0.00081 J (0.0022)	U (0.0022)	0.14 (0.0022)	210 (3.1)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0027)	U (0.0018)	U (0.0025)	U (0.0021)		
Xylenes (total)	7900	1000	U (0.13)	0.00185 J (0.0022)	U (0.0022)	0.2111 J (0.0022)	213.4 J (3.1)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0026)	U (0.0024)	U (0.0027)	U (0.0018)	U (0.0025)	U (0.0021)		

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F05-d 202-F05	202-F05-d 202-F05	202-F05-d 202-F05	202-F06-a 202-F06	202-F06-a 202-F06	202-F06-a 202-F06	202-F06-a 202-F06	202-F06-a 202-F06	202-F06-a 202-F06	202-F07-c 202-F07	202-F07-c 202-F07	202-F07-c 202-F07	202-F07-c 202-F07	202-F07-c 202-F07	202-F08-d 202-F08
Field Sample ID	Numeric Value	Numeric Value	202-F05-C2-VOC	202-F05-C3-VOC	202-F05-CX-VOC	202-F06-C1-VOC	202-F06-C2-VOC	202-F06-C3-VOC	202-F06-C4-VOC	202-F06-CX-VOC	202-F07-C1-VOC	202-F07-C2-VOC	202-F07-C3-VOC	202-F07-C4-VOC	202-F07-CX-VOC	202-F08-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		2.1 - 2.3	3.7 - 3.8	4.3 - 4.4	0.2 - 0.3	1.2 - 1.4	2.4 - 2.6	3.4 - 3.5	4.6 - 4.7	0.8 - 0.9	1.4 - 1.5	2.1 - 2.3	3.0 - 3.2	4.0 - 4.1	0.8 - 0.9	
Sample Date	(mg/kg)	(mg/kg)	4/5/2022	4/5/2022	4/5/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00072)	U (0.00054)	U (0.0005)	U (0.00061)	U (0.0007)	U (0.00063)	U (0.00053)	U (0.00058)	0.032 (0.00052)	0.66 (0.16)	0.17 (0.029)	0.11 (0.038)	0.065 (0.032)	U (0.00056)	
1,2-Dibromoethane	3.7	0.005	U (0.00072)	U (0.00054)	U (0.0005)	U (0.00061)	U (0.0007)	U (0.00063)	U (0.00053)	U (0.00058)	U (0.00052)	U (0.16)	U (0.029)	U (0.038)	U (0.032)	U (0.00056)	
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.0011)	U (0.001)	U (0.0014)	U (0.0014)	U (0.0013)	U (0.001)	U (0.0012)	U (0.001)	U (0.32)	U (0.058)	U (0.076)	U (0.065)	U (0.0011)	
Ethyl Benzene	880	70	U (0.0014)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0014)	U (0.0013)	U (0.001)	U (0.0012)	0.29 (0.001)	51 (0.32)	6.5 (0.058)	8.3 (0.076)	4.9 (0.065)	U (0.0011)	
Isopropylbenzene	10000	2500	U (0.0014)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0014)	U (0.0013)	U (0.001)	U (0.0012)	0.052 (0.001)	14 (0.32)	1.5 (0.058)	2.4 (0.076)	1.1 (0.065)	U (0.0011)	
Methyl tert-butyl ether	8500	2	U (0.0029)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0028)	U (0.0025)	U (0.0021)	U (0.0023)	U (0.0021)	U (0.65)	U (0.12)	U (0.15)	U (0.13)	U (0.0022)	
Toluene	10000	100	U (0.0014)	U (0.0011)	U (0.001)	U (0.0014)	U (0.0014)	U (0.0013)	U (0.001)	U (0.0012)	U (0.001)	U (0.32)	U (0.058)	0.055 J (0.076)	U (0.065)	U (0.0011)	
1,2,4-Trimethylbenzene	4700	300	U (0.0029)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0028)	U (0.0025)	U (0.0021)	U (0.0023)	0.14 (0.0021)	38 (0.65)	4.4 (0.12)	1.7 (0.15)	5.8 (0.13)	U (0.0022)	
1,3,5-Trimethylbenzene	4700	93	U (0.0029)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0028)	U (0.0025)	U (0.0021)	U (0.0023)	0.076 (0.0021)	21 (0.65)	2.1 (0.12)	3 (0.15)	0.32 (0.13)	U (0.0022)	
Xylenes (total)	7900	1000	U (0.0029)	U (0.0022)	U (0.002)	U (0.0024)	U (0.0028)	U (0.0025)	U (0.0021)	U (0.0023)	0.6134 J (0.0021)	120.46 J (0.65)	21.088 J (0.12)	3.433 J (0.15)	0.0885 J (0.13)	U (0.0022)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F08-d 202-F08	202-F08-d 202-F08	202-F08-d 202-F08	202-F09-d 202-F09	202-F09-d 202-F09	202-F09-d 202-F09	202-F09-d 202-F09	202-F10-a 202-F10	202-F10-c 202-F10	202-F10-c 202-F10	202-F10-c 202-F10	202-F10-c 202-F10	202-F11-c 202-F11	202-F11-d 202-F11	202-F11-d 202-F11
Field Sample ID	Numeric Value	Numeric Value	202-F08-C2-VOC	202-F08-C3-VOC	202-F08-CX-VOC	202-F09-C1-VOC	202-F09-C2-VOC	202-F09-CX-VOC	202-F10-C2-VOC	202-F10-C1-VOC	202-F10-C3-VOC	202-F10-C4-VOC	202-F10-CX-VOC	202-F11-C1-VOC	202-F11-C2-VOC	202-F11-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		1.1 - 1.2	2.4 - 2.6	3.0 - 3.2	0.6 - 0.8	2.1 - 2.3	4.3 - 4.4	2.1 - 2.3	0.9 - 1.1	3.7 - 3.8	5.2 - 5.3	5.8 - 5.9	0.9 - 1.1	3.0 - 3.2	5.5 - 5.6	
Sample Date	(mg/kg)	(mg/kg)	4/27/2022	4/27/2022	4/27/2022	4/28/2022	4/28/2022	4/28/2022	4/6/2022	4/6/2022	4/6/2022	4/6/2022	4/6/2022	4/8/2022	4/8/2022	4/8/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00059)	U (0.00079)	U (0.00063)	U (0.0005)	U (0.0005)	U (0.00051)	U (0.00051)	0.00087 (0.00055)	0.0022 (0.00057)	0.0013 (0.00058)	U (0.00054)	U (0.0012)	U (0.0006)	U (0.035)	
1,2-Dibromoethane	3.7	0.005	U (0.00059)	U (0.00079)	U (0.00063)	U (0.0005)	U (0.0005)	U (0.00051)	U (0.00051)	U (0.00055)	U (0.00057)	U (0.00058)	U (0.00054)	U (0.0012)	U (0.0006)	U (0.035)	
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.0016)	U (0.0013)	U (0.001)	U (0.00099)	U (0.001)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0024)	U (0.0012)	U (0.071)	
Ethyl Benzene	880	70	U (0.0012)	U (0.0016)	U (0.0013)	U (0.001)	U (0.00099)	U (0.001)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0024)	U (0.0012)	U (0.071)	
Isopropylbenzene	10000	2500	U (0.0012)	U (0.0016)	U (0.0013)	U (0.001)	U (0.00099)	U (0.001)	U (0.001)	0.00034 J (0.0011)	0.00057 J (0.0011)	0.00047 J (0.0012)	U (0.0011)	U (0.0024)	U (0.0012)	U (0.071)	
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0031)	U (0.0025)	U (0.002)	U (0.002)	U (0.002)	U (0.002)	0.0003 J (0.0022)	0.00028 J (0.0023)	0.0005 J (0.0023)	U (0.0021)	U (0.0048)	U (0.0024)	U (0.14)	
Toluene	10000	100	U (0.0012)	U (0.0016)	U (0.0013)	U (0.001)	U (0.00099)	U (0.001)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0024)	U (0.0012)	U (0.071)	
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	0.0006 J (0.0031)	U (0.0025)	U (0.002)	U (0.002)	U (0.002)	0.00036 J (0.002)	0.00069 J (0.0022)	0.00067 J (0.0023)	0.00097 J (0.0023)	U (0.0021)	U (0.0048)	U (0.0024)	U (0.14)	
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0031)	U (0.0025)	U (0.002)	U (0.002)	U (0.002)	0.00028 J (0.002)	0.00068 J (0.0022)	0.00052 J (0.0023)	0.00079 J (0.0023)	U (0.0021)	0.0005 J (0.0048)	U (0.0024)	U (0.14)	
Xylenes (total)	7900	1000	U (0.0023)	U (0.0031)	U (0.0025)	U (0.002)	U (0.002)	U (0.002)	U (0.002)	U (0.0022)	U (0.0023)	U (0.0023)	U (0.0021)	U (0.0048)	U (0.0024)	U (0.14)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F11-d 202-F11	202-F12-d 202-F12	202-F12-d 202-F12	202-F12-d 202-F12	202-F12-d 202-F12	202-F12-d 202-F12	202-F13-a 202-F13	202-F13-a 202-F13	202-F13-a 202-F13	202-F13-a 202-F13	202-F13-a 202-F13	202-F14-b 202-F14	202-F14-b 202-F14	202-F14-b 202-F14	202-F14-b 202-F14
Field Sample ID	Numeric Value	Numeric Value	202-F11-CX-VOC	202-F12-C1-VOC	202-F12-C2-VOC	202-F12-C3-VOC	202-F12-CX-VOC	202-F13-C1-VOC	202-F13-C2-VOC	202-F13-C3-VOC	202-F13-C4-VOC	202-F13-CX-VOC	202-F14-C1-VOC	202-F14-C2-VOC	202-F14-C3-VOC	202-F14-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		6.1 - 6.2	0.6 - 0.8	2.1 - 2.3	3.7 - 3.8	4.3 - 4.4	0.8 - 0.9	1.5 - 1.7	2.7 - 2.9	4.0 - 4.1	5.2 - 5.3	0.6 - 0.8	1.5 - 1.7	2.6 - 2.7	3.0 - 3.2	
Sample Date	(mg/kg)	(mg/kg)	4/8/2022	4/12/2022	4/12/2022	4/12/2022	4/12/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/8/2022	4/6/2022	4/6/2022	4/6/2022	4/6/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00057)	U (0.00056)	U (0.00058)	U (0.00063)	U (0.00053)	U (0.04)	U (0.027)	0.00031 J (0.00061)	0.062 (0.04)	0.0011 (0.00088)	U (0.00078)	U (0.076)	U (0.00079)	U (0.00048)	
1,2-Dibromoethane	3.7	0.005	U (0.00057)	U (0.00056)	U (0.00058)	U (0.00063)	U (0.00053)	U (0.04)	U (0.027)	U (0.00061)	U (0.04)	U (0.00088)	U (0.00078)	U (0.076)	U (0.00079)	U (0.00048)	
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0011)	U (0.08)	U (0.054)	U (0.0012)	U (0.079)	U (0.0018)	U (0.0016)	U (0.15)	U (0.0016)	U (0.00096)	
Ethyl Benzene	880	70	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0011)	0.042 J (0.08)	0.021 J (0.054)	0.0098 (0.0012)	0.079 (0.079)	0.00053 J (0.0018)	U (0.0016)	U (0.15)	U (0.0016)	U (0.00096)	
Isopropylbenzene	10000	2500	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0011)	0.16 (0.08)	0.031 J (0.054)	0.019 (0.0012)	0.069 J (0.079)	0.073 (0.0018)	0.00025 J (0.0016)	U (0.15)	U (0.0016)	0.00013 J (0.00096)	
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0025)	U (0.0021)	U (0.16)	U (0.11)	U (0.0024)	U (0.16)	U (0.0035)	U (0.0031)	U (0.3)	U (0.0032)	U (0.0019)	
Toluene	10000	100	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0013)	U (0.0011)	0.044 J (0.08)	0.043 J (0.054)	U (0.0012)	0.17 (0.079)	U (0.0018)	U (0.0016)	0.35 (0.15)	U (0.0016)	U (0.00096)	
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0025)	U (0.0021)	0.22 (0.16)	0.082 J (0.11)	0.072 (0.0024)	0.43 (0.16)	0.0022 J (0.0035)	0.03 (0.0031)	0.47 (0.3)	U (0.0032)	U (0.0019)	
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0025)	U (0.0021)	0.086 J (0.16)	0.024 J (0.11)	0.069 (0.0024)	0.27 (0.16)	0.0022 J (0.0035)	0.024 (0.0031)	0.38 (0.3)	U (0.0032)	0.00019 J (0.0019)	
Xylenes (total)	7900	1000	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0025)	U (0.0021)	0.106 J (0.16)	0.082 J (0.11)	0.0136 J (0.0024)	0.35 J (0.16)	U (0.0035)	U (0.0031)	U (0.3)	U (0.0032)	U (0.0019)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F15-c 202-F15	202-F15-c 202-F15	202-F15-c 202-F15	202-F15-c 202-F15	202-F15-c 202-F15	202-F15-c 202-F15	202-F16-a 202-F16	202-F16-a 202-F16	202-F16-b 202-F16	202-F16-b 202-F16	202-F16-b 202-F16	202-F17-a 202-F17	202-F17-a 202-F17	202-F17-a 202-F17	202-F17-a 202-F17
Field Sample ID	Numeric Value	Numeric Value	202-F15-C1-VOC	202-F15-C2-VOC	202-F15-C3-VOC	202-F15-C4-VOC	202-F15-CX-VOC	202-F16-C1-VOC	202-F16-C2-VOC	202-F16-C3-VOC	202-F16-C4-VOC	202-F16-CX-VOC	202-F17-C1-VOC	202-F17-C2-VOC	202-F17-C3-VOC	202-F17-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.3 - 0.5	0.6 - 0.8	1.2 - 1.4	1.7 - 1.8	2.1 - 2.3	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	1.2 - 1.4	1.8 - 2.0	0.2 - 0.3	0.8 - 0.9	1.4 - 1.5	2.1 - 2.3	
Sample Date	(mg/kg)	(mg/kg)	3/18/2022	3/18/2022	3/18/2022	3/18/2022	3/18/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00052)	U (0.0006)	U (0.0008)	U (0.00054)	U (0.00057)	U (0.0006)	U (0.00063)	U (0.00061)	U (0.00049)	U (0.00058)	U (0.00052)	U (0.00062)	U (0.00056)	U (0.00056)	
1,2-Dibromoethane	3.7	0.005	U (0.00052)	U (0.0006)	U (0.0008)	U (0.00054)	U (0.00057)	U (0.0006)	U (0.00063)	U (0.00061)	U (0.00049)	U (0.00058)	U (0.00052)	U (0.00062)	U (0.00056)	U (0.00056)	
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0011)	U (0.0011)	
Ethyl Benzene	880	70	U (0.001)	0.00019 J (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0011)	U (0.0011)	
Isopropylbenzene	10000	2500	U (0.001)	0.00037 J (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0011)	U (0.0011)	
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.0024)	U (0.0032)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0025)	U (0.0024)	U (0.0019)	U (0.0023)	U (0.0021)	U (0.0025)	U (0.0022)	U (0.0022)	
Toluene	10000	100	U (0.001)	U (0.0012)	U (0.0016)	0.00073 J (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)	U (0.00097)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0011)	U (0.0011)	
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	0.0086 (0.0024)	U (0.0032)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0025)	U (0.0024)	U (0.0019)	U (0.0023)	U (0.0021)	U (0.0025)	U (0.0022)	U (0.0022)	
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	0.0045 (0.0024)	U (0.0032)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0025)	U (0.0024)	U (0.0019)	U (0.0023)	U (0.0021)	U (0.0025)	U (0.0022)	U (0.0022)	
Xylenes (total)	7900	1000	U (0.0021)	0.0019 J (0.0024)	U (0.0032)	U (0.0021)	U (0.0023)	U (0.0024)	U (0.0025)	U (0.0024)	U (0.0019)	U (0.0023)	U (0.0021)	U (0.0025)	U (0.0022)	U (0.0022)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-G01-d 202-G01	202-G01-d 202-G01	202-G01-d 202-G01	202-G01-d 202-G01	202-G02-b 202-G02	202-G02-c 202-G02	202-G02-c 202-G02	202-G02-c 202-G02	202-G02-c 202-G02	202-G03-a 202-G03	202-G03-c 202-G03	202-G03-c 202-G03	202-G03-c 202-G03	202-G04-d 202-G04
Field Sample ID	Numeric Value	Numeric Value	202-G01-C1-VOC	202-G01-C2-VOC	202-G01-C3-VOC	202-G01-CX-VOC	202-G02-C1-VOC	202-G02-C2-VOC	202-G02-C3-VOC	202-G02-C4-VOC	202-G02-CX-VOC	202-G03-C1-VOC	202-G03-C2-VOC	202-G03-C3-VOC	202-G03-CX-VOC	202-G04-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		0.5 - 0.6	1.1 - 1.2	1.5 - 1.7	2.1 - 2.3	0.2 - 0.3	0.6 - 0.8	1.1 - 1.2	1.5 - 1.7	2.0 - 2.1	0.2 - 0.3	1.8 - 2.0	2.4 - 2.6	3.2 - 3.4	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00053)	U (0.00074)	U (0.00048)	U (0.00064)	U (0.00049)	U (0.00057)	U (0.00053)	U (0.00072)	U (0.00064)	U (0.00083)	U (0.00066)	U (0.00065)	U (0.00064)	U (0.00066)
1,2-Dibromoethane	3.7	0.005	U (0.00053)	U (0.00074)	U (0.00048)	U (0.00064)	U (0.00049)	U (0.00057)	U (0.00053)	U (0.00072)	U (0.00064)	U (0.00083)	U (0.00066)	U (0.00065)	U (0.00064)	U (0.00066)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0015)	U (0.00097)	U (0.0013)	U (0.00098)	U (0.0011)	U (0.001)	U (0.0014)	U (0.0013)	U (0.0016)	U (0.0013)	U (0.0013)	U (0.0013)	U (0.0013)
Ethyl Benzene	880	70	U (0.001)	U (0.0015)	U (0.00097)	U (0.0013)	U (0.00098)	U (0.0011)	U (0.001)	U (0.0014)	U (0.0013)	U (0.0016)	U (0.0013)	U (0.0013)	U (0.0013)	U (0.0013)
Isopropylbenzene	10000	2500	U (0.001)	U (0.0015)	U (0.00097)	U (0.0013)	U (0.00098)	U (0.0011)	U (0.001)	U (0.0014)	U (0.0013)	U (0.0016)	U (0.0013)	U (0.0013)	U (0.0013)	U (0.0013)
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.003)	U (0.0019)	U (0.0026)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0029)	U (0.0025)	U (0.0033)	U (0.0026)	U (0.0026)	U (0.0026)	U (0.0027)
Toluene	10000	100	U (0.001)	U (0.0015)	U (0.00097)	U (0.0013)	U (0.00098)	U (0.0011)	U (0.001)	U (0.0014)	U (0.0013)	U (0.0016)	U (0.0013)	U (0.0013)	U (0.0013)	U (0.0013)
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	U (0.003)	U (0.0019)	U (0.0026)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0029)	U (0.0025)	U (0.0033)	U (0.0026)	U (0.0026)	U (0.0026)	U (0.0027)
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	U (0.003)	U (0.0019)	U (0.0026)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0029)	U (0.0025)	U (0.0033)	U (0.0026)	U (0.0026)	U (0.0026)	U (0.0027)
Xylenes (total)	7900	1000	U (0.0021)	U (0.003)	U (0.0019)	U (0.0026)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0029)	U (0.0025)	U (0.0033)	U (0.0026)	U (0.0026)	U (0.0026)	U (0.0027)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-G04-d 202-G04	202-G04-d 202-G04	202-G04-d 202-G04	202-G04-d 202-G04	202-G05-a 202-G05	202-G05-a 202-G05	202-G05-a 202-G05	202-G05-a 202-G05	202-G05-a 202-G05	202-G05-a 202-G05	202-G06-a 202-G06	202-G06-a 202-G06	202-G06-a 202-G06	202-G06-a 202-G06	202-G07-c 202-G07
Field Sample ID	Numeric Value (0-2 ft bgs)	Numeric Value (mg/kg)	202-G04-C2-VOC 1.2 - 1.4 3/11/2022	202-G04-C3-VOC 1.5 - 1.7 3/11/2022	202-G04-C4-VOC 2.4 - 2.6 3/11/2022	202-G04-CX-VOC 3.0 - 3.2 3/11/2022	202-G05-C1-VOC 0.3 - 0.5 3/15/2022	202-G05-C2-VOC 0.8 - 0.9 3/15/2022	202-G05-C3-VOC 1.8 - 2.0 3/15/2022	202-G05-C4-VOC 2.4 - 2.6 3/15/2022	202-G05-CX-VOC 3.0 - 3.2 3/15/2022	202-G06-C1-VOC 0.2 - 0.3 3/21/2022	202-G06-C2-VOC 0.6 - 0.8 3/21/2022	202-G06-C3-VOC 1.2 - 1.4 3/21/2022	202-G06-CX-VOC 1.7 - 1.8 3/21/2022	202-G07-C1-VOC 0.2 - 0.3 3/16/2022	
Collection Depth (ft bgs)	Sample Date																
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00046)	U (0.00066)	U (0.001)	U (0.0008)	U (0.00061)	U (0.00056)	U (0.00057)	U (0.00058)	U (0.00037)	U (0.00055)	U (0.00055)	U (0.00058)	U (0.00058)	U (0.0006)	
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00066)	U (0.001)	U (0.0008)	U (0.00061)	U (0.00056)	U (0.00057)	U (0.00058)	U (0.00037)	U (0.00055)	U (0.00055)	U (0.00058)	U (0.00058)	U (0.0006)	
1,2-Dichloroethane	85	0.5	U (0.00092)	U (0.0013)	U (0.002)	U (0.0016)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.00074)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)	
Ethyl Benzene	880	70	U (0.00092)	U (0.0013)	U (0.002)	U (0.0016)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.00074)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	0.00026 J (0.0012)	
Isopropylbenzene	10000	2500	U (0.00092)	U (0.0013)	U (0.002)	U (0.0016)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.00074)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	0.00017 J (0.0012)	
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.0026)	U (0.0041)	U (0.0032)	U (0.0024)	U (0.0023)	U (0.0023)	U (0.0023)	U (0.0015)	U (0.0022)	U (0.0022)	U (0.0023)	U (0.0023)	U (0.0024)	
Toluene	10000	100	U (0.00092)	U (0.0013)	U (0.002)	U (0.0016)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.00074)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)	
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	U (0.0026)	U (0.0041)	U (0.0032)	U (0.0024)	U (0.0023)	U (0.0023)	U (0.0023)	U (0.0015)	U (0.0022)	0.00066 J (0.0023)	U (0.0023)	U (0.0023)	0.0057 (0.0024)	
1,3,5-Trimethylbenzene	4700	93	U (0.0018)	U (0.0026)	U (0.0041)	U (0.0032)	U (0.0024)	U (0.0023)	U (0.0023)	U (0.0023)	U (0.0015)	U (0.0022)	U (0.0022)	U (0.0023)	U (0.0023)	0.0017 J (0.0024)	
Xylenes (total)	7900	1000	U (0.0018)	U (0.0026)	U (0.0041)	U (0.0032)	U (0.0024)	U (0.0023)	U (0.0023)	U (0.0023)	U (0.0015)	U (0.0022)	U (0.0022)	U (0.0023)	U (0.0023)	0.0019 J (0.0024)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-G07-c 202-G07	202-G07-c 202-G07	202-G07-c 202-G07	202-G08-c 202-G08	202-G08-c 202-G08	202-G08-c 202-G08	202-G08-c 202-G08	202-G08-c 202-G08	202-G09-a 202-G09	202-G09-a 202-G09	202-G09-a 202-G09	202-G09-a 202-G09	202-G10-b 202-G10	202-G10-d 202-G10	202-G10-d 202-G10
Field Sample ID	Numeric Value	Numeric Value	202-G07-C2-VOC	202-G07-C3-VOC	202-G07-CX-VOC	202-G08-C1-VOC	202-G08-C2-VOC	202-G08-C3-VOC	202-G08-CX-VOC	202-G09-C1-VOC	202-G09-C2-VOC	202-G09-C3-VOC	202-G09-CX-VOC	202-G10-C1-VOC	202-G10-C2-VOC	202-G10-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.9 - 1.1	1.5 - 1.7	1.8 - 2.0	0.8 - 0.9	1.8 - 2.0	2.7 - 2.9	3.4 - 3.5	0.2 - 0.3	0.8 - 0.9	1.4 - 1.5	2.1 - 2.3	0.8 - 0.9	4.6 - 4.7	5.5 - 5.6	
Sample Date	(mg/kg)	(mg/kg)	3/16/2022	3/16/2022	3/16/2022	3/15/2022	3/15/2022	3/15/2022	3/15/2022	3/17/2022	3/17/2022	3/17/2022	3/17/2022	3/15/2022	3/15/2022	3/15/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.00021 J (0.00047)	U (0.00052)	U (0.00055)	U (0.00057)	U (0.00067)	U (0.00052)	U (0.00059)	U (0.0005)	U (0.00062)	U (0.00079)	U (0.00056)	U (0.00053)	U (0.00057)	U (0.00062)	
1,2-Dibromoethane	3.7	0.005	U (0.00047)	U (0.00052)	U (0.00055)	U (0.00057)	U (0.00067)	U (0.00052)	U (0.00059)	U (0.0005)	U (0.00062)	U (0.00079)	U (0.00056)	U (0.00053)	U (0.00057)	U (0.00062)	
1,2-Dichloroethane	85	0.5	U (0.00095)	U (0.001)	U (0.0011)	U (0.0013)	U (0.001)	U (0.001)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	
Ethyl Benzene	880	70	U (0.00095)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.001)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	
Isopropylbenzene	10000	2500	U (0.00095)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.001)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.002)	U (0.0025)	U (0.0032)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0025)	
Toluene	10000	100	U (0.00095)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.001)	U (0.0012)	U (0.001)	U (0.0012)	U (0.0016)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.002)	U (0.0025)	U (0.0032)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0025)	
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.002)	U (0.0025)	U (0.0032)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0025)	
Xylenes (total)	7900	1000	U (0.0019)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.002)	U (0.0025)	U (0.0032)	U (0.0022)	U (0.0021)	U (0.0023)	U (0.0025)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-H01-b 202-H01	202-H01-c 202-H01	202-H01-c 202-H01	202-H01-c 202-H01	202-H01-c 202-H01	202-H01-c 202-H01	202-H02-c 202-H02	202-H02-c 202-H02	202-H02-c 202-H02	202-H02-c 202-H02	202-H02-c 202-H02	202-H03-a 202-H03	202-H03-a 202-H03	202-H03-a 202-H03	202-H03-a 202-H03
Field Sample ID	Numeric Value	Numeric Value	202-H01-C4-VOC	202-H01-C1-VOC	202-H01-C2-VOC	202-H01-C3-VOC	202-H01-CX-VOC	202-H02-C1-VOC	202-H02-C2-VOC	202-H02-C3-VOC	202-H02-C4-VOC	202-H02-CX-VOC	202-H03-C1-VOC	202-H03-C2-VOC	202-H03-C3-VOC	202-H03-CX-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	4.9 - 5.0	0.8 - 0.9	1.8 - 2.0	2.1 - 2.3	4.3 - 4.4	0.2 - 0.3	1.2 - 1.4	3.0 - 3.2	3.7 - 3.8	4.6 - 4.7	0.5 - 0.6	2.4 - 2.6	4.7 - 4.9	5.2 - 5.3	
Sample Date	(mg/kg)	(mg/kg)	4/11/2022	4/11/2022	4/11/2022	4/11/2022	4/11/2022	4/14/2022	4/14/2022	4/14/2022	4/14/2022	4/14/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.034)	0.001 (0.00087)	U (0.077)	U (0.03)	0.0046 (0.00055)	0.12 (0.043)	U (0.033)	0.17 (0.08)	0.27 (0.035)	U (0.056)	0.0015 (0.00065)	0.0022 (0.0005)	0.02 (0.00056)	0.011 (0.00064)	
1,2-Dibromoethane	3.7	0.005	U (0.034)	U (0.00087)	U (0.077)	U (0.03)	U (0.00055)	U (0.043)	U (0.033)	U (0.08)	U (0.035)	U (0.056)	U (0.00065)	U (0.0005)	U (0.00056)	U (0.00064)	
1,2-Dichloroethane	85	0.5	U (0.069)	U (0.0017)	U (0.15)	U (0.06)	U (0.0011)	U (0.087)	U (0.066)	U (0.16)	U (0.07)	U (0.11)	U (0.0013)	U (0.001)	U (0.0011)	U (0.0013)	
Ethyl Benzene	880	70	0.047 J (0.069)	0.019 (0.0017)	0.33 (0.15)	0.48 (0.06)	0.00023 J (0.0011)	0.15 (0.087)	0.022 J (0.066)	0.75 (0.16)	1.9 (0.07)	3.3 (0.11)	U (0.0013)	U (0.001)	0.0026 (0.0011)	U (0.0013)	
Isopropylbenzene	10000	2500	0.32 (0.069)	0.019 (0.0017)	0.8 (0.15)	2.9 (0.06)	0.012 (0.0011)	3.6 (0.087)	4.1 (0.066)	5.5 (0.16)	0.18 (0.07)	1.2 (0.11)	0.00064 J (0.0013)	0.00016 J (0.001)	0.0019 (0.0011)	0.0002 J (0.0013)	
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.0035)	U (0.31)	U (0.12)	U (0.0022)	U (0.17)	U (0.13)	U (0.32)	U (0.14)	U (0.22)	U (0.0026)	U (0.002)	U (0.0022)	U (0.0026)	
Toluene	10000	100	0.06 J (0.069)	0.0035 (0.0017)	0.24 (0.15)	0.064 (0.06)	U (0.0011)	0.89 (0.087)	0.1 (0.066)	0.15 J (0.16)	0.43 (0.07)	0.18 (0.11)	U (0.0013)	U (0.001)	U (0.0011)	U (0.0013)	
1,2,4-Trimethylbenzene	4700	300	3.3 (0.14)	0.19 (0.0035)	8.2 (0.31)	38 (2.4)	0.0081 (0.0022)	0.26 (0.17)	0.36 (0.13)	67 (1.3)	5.9 (0.14)	38 (1.1)	0.014 (0.0026)	0.0053 (0.002)	0.015 (0.0022)	U (0.0026)	
1,3,5-Trimethylbenzene	4700	93	1.5 (0.14)	0.05 (0.0035)	2.6 (0.31)	13 (0.12)	0.0028 (0.0022)	0.093 J (0.17)	U (0.13)	0.15 J (0.32)	1.8 (0.14)	13 (0.22)	0.006 (0.0026)	0.0014 J (0.002)	0.0066 (0.0022)	U (0.0026)	
Xylenes (total)	7900	1000	0.1645 J (0.14)	0.055 J (0.0035)	1.96 J (0.31)	1.71 J (0.12)	0.00165 J (0.0022)	1.11 J (0.17)	0.096 J (0.13)	0.2 J (0.32)	9.2 J (0.14)	10.38 J (0.22)	0.013 J (0.0026)	0.0026 J (0.002)	0.0082 J (0.0022)	U (0.0026)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-H04-a 202-H04	202-H04-a 202-H04	202-H04-a 202-H04	202-H04-a 202-H04	202-H05-b 202-H05	202-H05-b 202-H05	202-H05-b 202-H05	202-H05-b 202-H05	202-H05-b 202-H05	202-H06-a 202-H06	202-H06-a 202-H06	202-H06-a 202-H06	202-H06-a 202-H06	202-H07-d 202-H07
Field Sample ID	Numeric Value (0-2 ft bgs)	Numeric Value	202-H04-C1-VOC	202-H04-C2-VOC	202-H04-C3-VOC	202-H04-CX-VOC	202-H05-C1-VOC	202-H05-C2-VOC	202-H05-C3-VOC	202-H05-C4-VOC	202-H05-CX-VOC	202-H06-C1-VOC	202-H06-C2-VOC	202-H06-C3-VOC	202-H06-CX-VOC	202-H07-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.0 - 0.2	1.7 - 1.8	3.4 - 3.5	5.0 - 5.2	0.3 - 0.5	0.9 - 1.1	1.8 - 2.0	2.4 - 2.6	3.0 - 3.2	0.5 - 0.6	1.4 - 1.5	3.2 - 3.4	4.0 - 4.1	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/11/2022	4/11/2022	4/11/2022	4/11/2022	4/11/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/22/2022
<b>VOCs</b>																
Benzene	280	0.5	0.0015 (0.00086)	0.00041 J (0.00052)	0.0034 (0.0011)	0.0027 (0.00051)	U (0.00058)	U (0.0006)	U (0.00053)	U (0.00064)	U (0.00057)	U (0.00046)	U (0.00052)	U (0.00054)	U (0.0005)	U (0.00058)
1,2-Dibromoethane	3.7	0.005	U (0.00086)	U (0.00052)	U (0.0011)	U (0.00051)	U (0.00058)	U (0.0006)	U (0.00053)	U (0.00064)	U (0.00057)	U (0.00046)	U (0.00052)	U (0.00054)	U (0.0005)	U (0.00058)
1,2-Dichloroethane	85	0.5	U (0.0017)	U (0.001)	U (0.0022)	U (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0013)	U (0.0011)	U (0.00093)	U (0.001)	U (0.0011)	U (0.001)	U (0.0012)
Ethyl Benzene	880	70	0.0011 J (0.0017)	0.00022 J (0.001)	0.15 (0.0022)	0.0058 (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0013)	U (0.0011)	0.0024 (0.00093)	0.00051 J (0.001)	0.00066 J (0.0011)	0.0042 (0.001)	0.0002 J (0.0012)
Isopropylbenzene	10000	2500	0.0043 (0.0017)	0.0062 (0.001)	0.53 (0.0022)	0.024 (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0013)	U (0.0011)	0.00072 J (0.00093)	0.00012 J (0.001)	U (0.0011)	0.00092 J (0.001)	0.00035 J (0.0012)
Methyl tert-butyl ether	8500	2	U (0.0035)	U (0.0021)	U (0.0043)	U (0.002)	U (0.0023)	U (0.0024)	U (0.0021)	U (0.0026)	U (0.0023)	U (0.0019)	U (0.0021)	U (0.0021)	U (0.002)	U (0.0023)
Toluene	10000	100	0.0025 (0.0017)	U (0.001)	0.013 (0.0022)	U (0.001)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0013)	U (0.0011)	U (0.00093)	U (0.001)	U (0.0011)	U (0.001)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	0.0034 J (0.0035)	0.0022 (0.0021)	0.24 (0.0043)	0.0038 (0.002)	U (0.0023)	0.00059 J (0.0024)	0.0004 J (0.0021)	U (0.0026)	U (0.0023)	0.0014 J (0.0019)	0.00036 J (0.0021)	U (0.0021)	0.0034 (0.002)	0.0015 J (0.0023)
1,3,5-Trimethylbenzene	4700	93	0.0018 J (0.0035)	0.00094 J (0.0021)	0.11 (0.0043)	0.0046 (0.002)	U (0.0023)	0.0013 J (0.0024)	0.0012 J (0.0021)	0.0012 J (0.0026)	U (0.0023)	0.00051 J (0.0019)	U (0.0021)	U (0.0021)	0.0015 J (0.002)	0.00051 J (0.0023)
Xylenes (total)	7900	1000	0.0071 J (0.0035)	0.00258 J (0.0021)	0.174 J (0.0043)	0.0026 J (0.002)	U (0.0023)	U (0.0024)	U (0.0021)	U (0.0026)	U (0.0023)	0.00543 J (0.0019)	0.0016 J (0.0021)	0.00195 J (0.0021)	0.00963 J (0.002)	0.00127 J (0.0023)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-H07-d 202-H07	202-H07-d 202-H07	202-H07-d 202-H07	202-H08-b 202-H08	202-H08-b 202-H08	202-H08-b 202-H08	202-H08-b 202-H08	202-H08-b 202-H08	202-H09-a 202-H09	202-H09-a 202-H09	202-H09-a 202-H09	202-H09-a 202-H09	202-H09-a 202-H09	202-H10-d 202-H10
Field Sample ID	Numeric Value	Numeric Value	202-H07-C2-VOC	202-H07-C3-VOC	202-H07-CX-VOC	202-H08-C1-VOC	202-H08-C2-VOC	202-H08-C3-VOC	202-H08-C4-VOC	202-H08-CX-VOC	202-H09-C1-VOC	202-H09-C2-VOC	202-H09-C3-VOC	202-H09-C4-VOC	202-H09-CX-VOC	202-H10-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.2 - 1.4	2.4 - 2.6	3.0 - 3.2	0.3 - 0.5	0.9 - 1.1	1.5 - 1.7	2.1 - 2.3	2.7 - 2.9	0.5 - 0.6	0.8 - 0.9	1.5 - 1.7	2.3 - 2.4	3.0 - 3.2	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/14/2022
<b>VOCs</b>																
Benzene	280	0.5	0.00031 J (0.00058)	0.00083 (0.00053)	0.002 (0.00064)	U (0.00028)	U (0.00048)	0.023 (0.00041)	0.035 (0.00053)	0.02 (0.00051)	U (0.032)	U (0.076)	U (0.089)	U (0.039)	U (0.083)	0.25 (0.031)
1,2-Dibromoethane	3.7	0.005	U (0.00058)	U (0.00053)	U (0.00064)	U (0.00028)	U (0.00048)	U (0.00041)	U (0.00053)	U (0.00051)	U (0.032)	U (0.076)	U (0.089)	U (0.039)	U (0.083)	U (0.031)
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.0011)	U (0.0013)	U (0.00057)	U (0.00095)	U (0.00083)	U (0.0011)	U (0.001)	U (0.064)	U (0.15)	U (0.18)	U (0.077)	U (0.16)	U (0.062)
Ethyl Benzene	880	70	U (0.0012)	U (0.0011)	U (0.0013)	U (0.00057)	U (0.00095)	0.00013 J (0.00083)	0.00019 J (0.0011)	U (0.001)	2 (0.064)	5.7 (0.15)	41 (0.18)	1.5 (0.077)	6.8 (0.16)	5.1 (0.062)
Isopropylbenzene	10000	2500	U (0.0012)	U (0.0011)	0.00016 J (0.0013)	U (0.00057)	U (0.00095)	0.00044 J (0.00083)	0.00086 J (0.0011)	0.00045 J (0.001)	0.44 (0.064)	1.5 (0.15)	2.1 (0.18)	0.14 (0.077)	2.4 (0.16)	2.2 (0.062)
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0021)	U (0.0026)	U (0.0011)	U (0.0019)	0.0026 (0.0016)	0.0058 (0.0021)	0.0054 (0.002)	U (0.13)	U (0.3)	U (0.36)	U (0.15)	U (0.33)	U (0.12)
Toluene	10000	100	U (0.0012)	U (0.0011)	U (0.0013)	U (0.00057)	U (0.00095)	0.00058 J (0.00083)	U (0.0011)	U (0.001)	0.071 (0.064)	0.12 J (0.15)	2.4 (0.18)	0.053 J (0.077)	U (0.16)	0.21 (0.062)
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	U (0.0021)	U (0.0026)	U (0.0011)	U (0.0019)	U (0.0016)	0.00036 J (0.0021)	U (0.002)	22 (0.26)	81 (0.61)	84 (0.71)	5.4 (0.15)	63 (0.66)	23 (1.2)
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0021)	U (0.0026)	U (0.0011)	U (0.0019)	U (0.0016)	0.00032 J (0.0021)	U (0.002)	7 (0.13)	24 (0.3)	24 (0.36)	1.5 (0.15)	20 (0.33)	8.8 (0.12)
Xylenes (total)	7900	1000	U (0.0023)	U (0.0021)	U (0.0026)	U (0.0011)	U (0.0019)	0.00164 J (0.0016)	0.00318 J (0.0021)	0.0018 J (0.002)	6.73 J (0.13)	27.3 J (0.3)	253 J (0.71)	8.2 J (0.15)	27.8 J (0.33)	8.1 J (0.12)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-H10-d 202-H10	202-H10-d 202-H10	202-H10-d 202-H10	202-H11-b 202-H11	202-H11-b 202-H11	202-H11-b 202-H11	202-H11-b 202-H11	202-H11-b 202-H11	202-I01-b 202-I01	202-I01-b 202-I01	202-I01-b 202-I01	202-I01-b 202-I01	202-I02-b 202-I02	202-I02-b 202-I02
Field Sample ID	Numeric Value	Numeric Value	202-H10-C2-VOC	202-H10-C3-VOC	202-H10-CX-VOC	202-H11-C1-VOC	202-H11-C2-VOC	202-H11-C3-VOC	202-H11-C4-VOC	202-H11-CX-VOC	202-I01-C1-VOC	202-I01-C2-VOC	202-I01-C3-VOC	202-I01-CX-VOC	202-I02-C1-VOC	202-I02-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.8 - 2.0	3.0 - 3.2	4.0 - 4.1	1.1 - 1.2	1.8 - 2.0	3.0 - 3.2	4.6 - 4.7	6.1 - 6.2	0.3 - 0.5	1.8 - 2.0	2.7 - 2.9	3.4 - 3.5	0.8 - 0.9	2.0 - 2.1
Sample Date	(mg/kg)	(mg/kg)	4/14/2022	4/14/2022	4/14/2022	4/26/2022	4/26/2022	4/26/2022	4/26/2022	4/26/2022	3/18/2022	3/18/2022	3/18/2022	3/18/2022	4/25/2022	4/25/2022
<b>VOCs</b>																
Benzene	280	0.5	0.067 (0.031)	0.57 (0.055)	0.031 (0.00067)	U (0.0006)	0.00016 J (0.00046)	U (0.00048)	U (0.15)	U (0.034)	U (0.00057)	U (0.00049)	U (0.00053)	U (0.00048)	U (0.00049)	U (0.00041)
1,2-Dibromoethane	3.7	0.005	U (0.031)	U (0.055)	U (0.00067)	U (0.0006)	U (0.00046)	U (0.00048)	U (0.15)	U (0.034)	U (0.00057)	U (0.00049)	U (0.00053)	U (0.00048)	U (0.00049)	U (0.00041)
1,2-Dichloroethane	85	0.5	U (0.063)	U (0.11)	U (0.0013)	U (0.0012)	U (0.00092)	U (0.00095)	U (0.3)	U (0.068)	U (0.0011)	U (0.00098)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.00082)
Ethyl Benzene	880	70	0.87 (0.063)	5.4 (0.11)	0.1 (0.044)	0.00034 J (0.0012)	U (0.00092)	U (0.00095)	U (0.3)	U (0.068)	U (0.0011)	U (0.00098)	U (0.0011)	U (0.00097)	U (0.00098)	0.00012 J (0.00082)
Isopropylbenzene	10000	2500	0.41 (0.063)	4.2 (0.11)	0.072 (0.044)	U (0.0012)	0.00011 J (0.00092)	0.00049 J (0.00095)	0.16 J (0.3)	0.027 J (0.068)	U (0.0011)	U (0.00098)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.00082)
Methyl tert-butyl ether	8500	2	U (0.12)	U (0.22)	0.00045 J (0.0027)	U (0.0024)	0.0004 J (0.0018)	U (0.0019)	U (0.59)	U (0.14)	U (0.0023)	U (0.002)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0016)
Toluene	10000	100	0.045 J (0.063)	0.18 (0.11)	U (0.0013)	U (0.0012)	U (0.00092)	U (0.00095)	U (0.3)	U (0.068)	U (0.0011)	U (0.00098)	U (0.0011)	U (0.00097)	U (0.00098)	U (0.00082)
1,2,4-Trimethylbenzene	4700	300	4.5 (0.12)	57 (1.8)	0.98 (0.088)	0.00084 J (0.0024)	U (0.0018)	U (0.0019)	0.19 J (0.59)	U (0.14)	U (0.0023)	U (0.002)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0016)
1,3,5-Trimethylbenzene	4700	93	1.6 (0.12)	16 (0.22)	0.29 (0.088)	0.00033 J (0.0024)	U (0.0018)	0.00036 J (0.0019)	0.33 J (0.59)	0.031 J (0.14)	U (0.0023)	U (0.002)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0016)
Xylenes (total)	7900	1000	2.629 J (0.12)	36.5 J (0.22)	0.552 J (0.088)	0.00138 J (0.0024)	U (0.0018)	U (0.0019)	U (0.59)	U (0.14)	U (0.0023)	U (0.002)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0016)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-102-b 202-102	202-102-c 202-102	202-102-c 202-102	202-103-c 202-103	202-103-c 202-103	202-103-c 202-103	202-104-a 202-104	202-104-c 202-104	202-104-c 202-104	202-104-c 202-104	202-105-d 202-105	202-105-d 202-105	202-105-d 202-105	202-105-d 202-105
Field Sample ID	Numeric Value	Numeric Value	202-102-C4-VOC	202-102-C3-VOC	202-102-CX-VOC	202-103-C1-VOC	202-103-C2-VOC	202-103-CX-VOC	202-104-C1-VOC	202-104-C2-VOC	202-104-C3-VOC	202-104-CX-VOC	202-105-C1-VOC	202-105-C2-VOC	202-105-C3-VOC	202-105-CX-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		3.4 - 3.5	2.0 - 2.1	4.0 - 4.1	0.6 - 0.8	0.9 - 1.1	2.0 - 2.1	0.3 - 0.5	0.9 - 1.1	2.4 - 2.6	3.0 - 3.2	0.3 - 0.5	0.8 - 0.9	1.2 - 1.4	1.8 - 2.0
Sample Date	(mg/kg)	(mg/kg)	4/25/2022	4/25/2022	4/25/2022	3/17/2022	3/17/2022	3/17/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	3/21/2022	3/21/2022	3/21/2022	3/21/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00053)	U (0.00056)	0.0012 (0.0006)	U (0.00058)	U (0.0005)	U (0.00049)	U (0.00069)	0.00035 J (0.00064)	U (0.00046)	0.0072 (0.00052)	U (0.00056)	U (0.00057)	U (0.00074)	U (0.0006)
1,2-Dibromoethane	3.7	0.005	U (0.00053)	U (0.00056)	U (0.0006)	U (0.00058)	U (0.0005)	U (0.00049)	U (0.00069)	U (0.00064)	U (0.00046)	U (0.00052)	U (0.00056)	U (0.00057)	U (0.00074)	U (0.0006)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.001)	U (0.00099)	U (0.0014)	U (0.0013)	U (0.00093)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0015)	U (0.0012)
Ethyl Benzene	880	70	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.001)	U (0.00099)	U (0.0014)	U (0.0013)	U (0.00093)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0015)	U (0.0012)
Isopropylbenzene	10000	2500	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.001)	U (0.00099)	U (0.0014)	U (0.0013)	U (0.00093)	0.00026 J (0.001)	U (0.0011)	U (0.0011)	U (0.0015)	U (0.0012)
Methyl tert-butyl ether	8500	2	U (0.0021)	0.01 (0.0022)	0.01 (0.0024)	U (0.0023)	U (0.002)	U (0.002)	U (0.0028)	0.0017 J (0.0026)	0.00019 J (0.0018)	0.001 J (0.0021)	U (0.0022)	U (0.0023)	U (0.003)	U (0.0024)
Toluene	10000	100	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.001)	U (0.00099)	U (0.0014)	U (0.0013)	U (0.00093)	U (0.001)	U (0.0011)	U (0.0011)	U (0.0015)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	U (0.0022)	U (0.0024)	U (0.0023)	U (0.002)	U (0.002)	U (0.0028)	U (0.0026)	U (0.0018)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.003)	U (0.0024)
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	U (0.0022)	U (0.0024)	U (0.0023)	U (0.002)	U (0.002)	U (0.0028)	U (0.0026)	U (0.0018)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.003)	U (0.0024)
Xylenes (total)	7900	1000	U (0.0021)	U (0.0022)	U (0.0024)	U (0.0023)	U (0.002)	U (0.002)	U (0.0028)	U (0.0026)	U (0.0018)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.003)	U (0.0024)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-106-b 202-106	202-106-b 202-106	202-106-b 202-106	202-106-b 202-106	202-106-c 202-106	202-107-b 202-107	202-107-b 202-107	202-107-b 202-107	202-107-b 202-107	202-108-b 202-108	202-108-b 202-108	202-108-b 202-108	202-108-b 202-108	202-J01-c 202-J01	202-J01-c 202-J01
Field Sample ID	Numeric Value	Numeric Value	202-106-C2-VOC	202-106-C3-VOC	202-106-C4-VOC	202-106-CX-VOC	202-106-C1-VOC	202-107-C1-VOC	202-107-C2-VOC	202-107-C3-VOC	202-107-CX-VOC	202-108-C1-VOC	202-108-C2-VOC	202-108-CX-VOC	202-J01-C1-VOC	202-J01-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.3 - 2.4	3.4 - 3.5	4.6 - 4.7	5.2 - 5.3	1.1 - 1.2	0.3 - 0.5	1.1 - 1.2	2.4 - 2.6	3.2 - 3.4	1.2 - 1.4	2.1 - 2.3	4.3 - 4.4	0.6 - 0.8	1.4 - 1.5	
Sample Date	(mg/kg)	(mg/kg)	3/17/2022	3/17/2022	3/17/2022	3/17/2022	3/17/2022	4/25/2022	4/25/2022	4/25/2022	4/25/2022	3/21/2022	3/21/2022	3/21/2022	4/26/2022	4/26/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.0006)	U (0.00059)	U (0.00055)	U (0.00055)	U (0.0006)	U (0.0005)	0.00032 J (0.00053)	U (0.00057)	U (0.00051)	U (0.00059)	U (0.00058)	U (0.00049)	0.12 (0.026)	0.023 J (0.033)	
1,2-Dibromoethane	3.7	0.005	U (0.0006)	U (0.00059)	U (0.00055)	U (0.00055)	U (0.0006)	U (0.0005)	U (0.00053)	U (0.00057)	U (0.00051)	U (0.00059)	U (0.00058)	U (0.00049)	U (0.026)	U (0.033)	
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0012)	U (0.00098)	U (0.053)	U (0.067)	
Ethyl Benzene	880	70	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.001)	U (0.0011)	0.0014 (0.0011)	0.0016 (0.001)	U (0.0012)	U (0.0012)	U (0.00098)	21 (5.3)	8.5 (0.067)	
Isopropylbenzene	10000	2500	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0011)	U (0.001)	U (0.0012)	U (0.0012)	U (0.00098)	6 (0.053)	4.4 (0.067)	
Methyl tert-butyl ether	8500	2	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0022)	U (0.0024)	U (0.002)	0.012 (0.0021)	U (0.0023)	U (0.002)	U (0.0024)	U (0.0023)	U (0.002)	U (0.11)	U (0.13)	
Toluene	10000	100	U (0.0012)	U (0.0012)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.001)	U (0.0011)	0.00069 J (0.0011)	0.00082 J (0.001)	U (0.0012)	U (0.0012)	U (0.00098)	2.6 (0.053)	0.48 (0.067)	
1,2,4-Trimethylbenzene	4700	300	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0022)	U (0.0024)	U (0.002)	U (0.0021)	U (0.0023)	U (0.002)	U (0.0024)	U (0.0023)	U (0.002)	38 (11)	20 (0.13)	
1,3,5-Trimethylbenzene	4700	93	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0022)	U (0.0024)	U (0.002)	U (0.0021)	U (0.0023)	U (0.002)	U (0.0024)	U (0.0023)	U (0.002)	12 (0.11)	8.6 (0.13)	
Xylenes (total)	7900	1000	U (0.0024)	U (0.0024)	U (0.0022)	U (0.0022)	U (0.0024)	U (0.002)	U (0.0021)	0.0067 J (0.0023)	0.0087 J (0.002)	U (0.0024)	U (0.0023)	U (0.002)	67 J (11)	23.7 J (0.13)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-J01-c 202-J01	202-J01-c 202-J01	202-J01-c 202-J01	202-J02-c 202-J02	202-J02-d 202-J02	202-J02-d 202-J02	202-J02-d 202-J02	202-J02-d 202-J02	202-J03-c 202-J03	202-J03-c 202-J03	202-J03-c 202-J03	202-J04-a 202-J04	202-J04-a 202-J04	202-J04-a 202-J04
Field Sample ID	Numeric Value	Numeric Value	202-J01-C3-VOC	202-J01-C4-VOC	202-J01-CX-VOC	202-J02-C1-VOC	202-J02-C2-VOC	202-J02-C3-VOC	202-J02-C4-VOC	202-J02-CX-VOC	202-J03-C1-VOC	202-J03-C2-VOC	202-J03-CX-VOC	202-J04-C1-VOC	202-J04-C2-VOC	202-J04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		2.9 - 3.0	4.3 - 4.4	4.9 - 5.0	0.2 - 0.3	2.1 - 2.3	3.0 - 3.2	4.9 - 5.0	5.5 - 5.6	1.4 - 1.5	2.7 - 2.9	3.4 - 3.5	0.5 - 0.6	0.9 - 1.1	2.1 - 2.3
Sample Date	(mg/kg)	(mg/kg)	4/26/2022	4/26/2022	4/26/2022	4/21/2022	4/21/2022	4/21/2022	4/21/2022	4/21/2022	4/21/2022	4/21/2022	4/21/2022	4/26/2022	4/26/2022	4/26/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00054)	0.096 (0.074)	0.12 J (0.13)	U (0.00048)	U (0.00058)	0.00058 (0.00052)	2.8 (0.029)	11 (0.059)	1.2 (0.039)	36 (0.65)	17 (0.17)	U (0.03)	0.085 J (0.16)	0.0039 (0.00054)
1,2-Dibromoethane	3.7	0.005	U (0.00054)	U (0.074)	U (0.13)	U (0.00048)	U (0.00058)	U (0.00052)	U (0.029)	U (0.059)	U (0.039)	U (0.65)	U (0.17)	U (0.03)	U (0.16)	U (0.00054)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.15)	U (0.27)	U (0.00096)	U (0.0012)	U (0.001)	U (0.059)	U (0.12)	U (0.079)	U (1.3)	U (0.33)	U (0.06)	U (0.31)	U (0.0011)
Ethyl Benzene	880	70	U (0.0011)	4.6 (0.15)	7 (0.27)	U (0.00096)	U (0.0012)	U (0.001)	1.6 (0.059)	27 (0.12)	2.2 (0.079)	180 (1.3)	80 (0.33)	0.38 (0.06)	5.1 (0.31)	0.11 (0.0011)
Isopropylbenzene	10000	2500	0.00022 J (0.0011)	2.1 (0.15)	3.8 (0.27)	0.00036 J (0.00096)	U (0.0012)	U (0.001)	0.051 J (0.059)	1.4 (0.12)	0.28 (0.079)	32 (1.3)	8.8 (0.33)	0.3 (0.06)	8 (0.31)	0.16 (0.0011)
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.3)	U (0.53)	U (0.0019)	U (0.0023)	U (0.0021)	U (0.12)	U (0.24)	U (0.16)	U (2.6)	U (0.66)	U (0.12)	U (0.63)	U (0.0022)
Toluene	10000	100	U (0.0011)	1.1 (0.15)	0.64 (0.27)	U (0.00096)	U (0.0012)	U (0.001)	2.5 (0.059)	44 (0.59)	0.18 (0.079)	80 (1.3)	92 (0.33)	U (0.06)	0.36 (0.31)	0.011 (0.0011)
1,2,4-Trimethylbenzene	4700	300	0.0012 J (0.0022)	36 (0.3)	53 (0.53)	0.0069 (0.0019)	U (0.0023)	0.00038 J (0.0021)	3 (0.12)	51 (1.2)	1.5 (0.16)	270 (2.6)	190 (1.3)	0.72 (0.12)	2.9 (0.63)	0.012 (0.0022)
1,3,5-Trimethylbenzene	4700	93	0.00064 J (0.0022)	13 (0.3)	23 (0.53)	0.009 (0.0019)	0.00024 J (0.0023)	0.0003 J (0.0021)	1 (0.12)	20 (0.24)	0.74 (0.16)	100 (2.6)	61 (0.66)	0.38 (0.12)	2.2 (0.63)	0.017 (0.0022)
Xylenes (total)	7900	1000	U (0.0022)	30.3 J (0.3)	37.6 J (0.53)	U (0.0019)	U (0.0023)	U (0.0021)	8.7 J (0.12)	130 J (1.2)	7.8 J (0.16)	1060 J (130)	470 J (1.3)	0.84 J (0.12)	4.26 J (0.63)	0.0953 J (0.0022)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-J04-a 202-J04	202-J04-a 202-J04	202-J05-d 202-J05	202-J05-d 202-J05	202-J05-d 202-J05	202-J06-b 202-J06	202-J06-c 202-J06	202-J06-c 202-J06	202-J06-d 202-J06	202-J07-c 202-J07	202-J07-c 202-J07	202-J07-c 202-J07	202-J07-c 202-J07	202-J08-a 202-J08
Field Sample ID	Numeric Value	Numeric Value	202-J04-C4-VOC	202-J04-CX-VOC	202-J05-C1-VOC	202-J05-C2-VOC	202-J05-CX-VOC	202-J06-C1-VOC	202-J06-C3-VOC	202-J06-CX-VOC	202-J06-C2-VOC	202-J07-C1-VOC	202-J07-C2-VOC	202-J07-C3-VOC	202-J07-CX-VOC	202-J08-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		2.7 - 2.9	3.4 - 3.5	0.6 - 0.8	1.4 - 1.5	2.0 - 2.1	1.1 - 1.2	3.4 - 3.5	4.9 - 5.0	1.2 - 1.4	0.2 - 0.3	0.8 - 0.9	1.5 - 1.7	2.1 - 2.3	0.8 - 0.9
Sample Date	(mg/kg)	(mg/kg)	4/26/2022	4/26/2022	4/25/2022	4/25/2022	4/25/2022	4/20/2022	4/20/2022	4/20/2022	4/20/2022	4/26/2022	4/26/2022	4/26/2022	4/26/2022	4/25/2022
<b>VOCs</b>																
Benzene	280	0.5	0.042 (0.032)	U (0.00061)	U (0.00056)	U (0.0006)	U (0.0005)	U (0.00051)	U (0.00059)	U (0.00052)	U (0.00054)	0.0089 (0.00046)	0.39 (0.027)	0.0042 (0.00056)	1.6 (0.03)	U (0.001)
1,2-Dibromoethane	3.7	0.005	U (0.032)	U (0.00061)	U (0.00056)	U (0.0006)	U (0.0005)	U (0.00051)	U (0.00059)	U (0.00052)	U (0.00054)	U (0.00046)	U (0.027)	U (0.00056)	U (0.03)	U (0.001)
1,2-Dichloroethane	85	0.5	U (0.064)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.00099)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	U (0.00092)	U (0.055)	U (0.0011)	U (0.061)	U (0.002)
Ethyl Benzene	880	70	1.8 (0.064)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.00099)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	0.0015 (0.00092)	0.49 (0.055)	0.0042 (0.0011)	6 (0.061)	U (0.002)
Isopropylbenzene	10000	2500	3.4 (0.064)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.00099)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	0.00011 J (0.00092)	0.062 (0.055)	0.00049 J (0.0011)	1.3 (0.061)	0.027 (0.002)
Methyl tert-butyl ether	8500	2	U (0.13)	U (0.0024)	U (0.0022)	U (0.0024)	U (0.002)	U (0.002)	U (0.0024)	U (0.0021)	U (0.0022)	U (0.0018)	U (0.11)	U (0.0022)	U (0.12)	U (0.004)
Toluene	10000	100	0.18 (0.064)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.00099)	U (0.001)	U (0.0012)	U (0.001)	U (0.0011)	U (0.00092)	0.06 (0.055)	U (0.0011)	0.18 (0.061)	U (0.002)
1,2,4-Trimethylbenzene	4700	300	0.49 (0.13)	U (0.0024)	U (0.0022)	U (0.0024)	U (0.002)	U (0.002)	U (0.0024)	U (0.0021)	U (0.0022)	U (0.0018)	0.034 J (0.11)	0.0063 (0.0022)	2.5 (0.12)	0.0031 J (0.004)
1,3,5-Trimethylbenzene	4700	93	0.57 (0.13)	U (0.0024)	U (0.0022)	U (0.0024)	U (0.002)	U (0.002)	U (0.0024)	U (0.0021)	U (0.0022)	U (0.0018)	0.043 J (0.11)	0.0026 (0.0022)	2.2 (0.12)	U (0.004)
Xylenes (total)	7900	1000	1.35 J (0.13)	U (0.0024)	U (0.0022)	U (0.0024)	U (0.002)	U (0.002)	U (0.0024)	U (0.0021)	U (0.0022)	0.00278 J (0.0018)	1.03 J (0.11)	0.0145 J (0.0022)	10.3 J (0.12)	U (0.004)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-J08-a 202-J08	202-J08-a 202-J08	202-J08-a 202-J08	202-J09-c 202-J09	202-J09-c 202-J09	202-J09-c 202-J09	202-J09-c 202-J09	202-J09-c 202-J09	202-J09-c 202-J09	301-A01-d 301-A01	301-AA01-c 301-AA01	301-AA01-c 301-AA01	301-AA01-c 301-AA01	301-AA01-c 301-AA01	301-AA01-c 301-AA01	301-AA06-b 301-AA06
Field Sample ID	Numeric Value	Numeric Value	202-J08-C2-VOC	202-J08-C3-VOC	202-J08-CX-VOC	202-J09-C1-VOC	202-J09-C2-VOC	202-J09-C3-VOC	202-J09-C4-VOC	202-J09-CX-VOC	202-J09-CX-VOC	301-A01-C1-VOC	301-AA01-C1-VOC	301-AA01-C2-VOC	301-AA01-C3-VOC	301-AA01-C4-VOC	301-AA06-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.4 - 2.6	4.0 - 4.1	5.8 - 5.9	0.5 - 0.6	0.9 - 1.1	1.5 - 1.7	2.1 - 2.3	2.7 - 2.9	2.7 - 2.9	1.5 - 1.7	0.3 - 0.5	0.9 - 1.1	1.5 - 1.7	2.0 - 2.1	0.3 - 0.5	
Sample Date	(mg/kg)	(mg/kg)	4/25/2022	4/25/2022	4/25/2022	4/20/2022	4/20/2022	4/20/2022	4/20/2022	4/20/2022	4/20/2022	5/17/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	5/31/2022	
<b>VOCs</b>																		
Benzene	280	0.5	0.0024 (0.00054)	0.00068 (0.0005)	0.0064 (0.00047)	U (0.00067)	0.0091 (0.00092)	0.0004 J (0.0005)	U (0.00055)	U (0.00065)	0.0068 (0.00053)	U (0.00073)	U (0.00053)	U (0.023)	U (0.00046)	U (0.00049)		
1,2-Dibromoethane	3.7	0.005	U (0.00054)	U (0.0005)	U (0.00047)	U (0.00067)	U (0.00092)	U (0.0005)	U (0.00055)	U (0.00065)	U (0.00053)	U (0.00073)	U (0.00053)	U (0.023)	U (0.00046)	U (0.00049)		
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.00099)	U (0.00093)	U (0.0013)	U (0.0018)	U (0.001)	U (0.0011)	U (0.0013)	U (0.0011)	U (0.0015)	U (0.001)	U (0.046)	U (0.00093)	U (0.00097)		
Ethyl Benzene	880	70	U (0.0011)	U (0.00099)	0.00087 J (0.00093)	U (0.0013)	0.0042 (0.0018)	U (0.001)	U (0.0011)	U (0.0013)	0.003 (0.0011)	U (0.0015)	U (0.001)	0.028 J (0.046)	0.018 (0.00093)	U (0.00097)		
Isopropylbenzene	10000	2500	0.0071 (0.0011)	0.00058 J (0.00099)	0.00023 J (0.00093)	U (0.0013)	0.014 (0.0018)	U (0.001)	U (0.0011)	U (0.0013)	0.0025 (0.0011)	U (0.0015)	U (0.001)	0.037 J (0.046)	0.028 (0.00093)	U (0.00097)		
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.002)	U (0.0019)	U (0.0027)	U (0.0037)	U (0.002)	U (0.0022)	U (0.0026)	U (0.0021)	U (0.0029)	U (0.0021)	U (0.093)	U (0.0019)	U (0.0019)		
Toluene	10000	100	U (0.0011)	U (0.00099)	U (0.00093)	U (0.0013)	0.0034 (0.0018)	U (0.001)	U (0.0011)	U (0.0013)	0.0046 (0.0011)	U (0.0015)	U (0.001)	U (0.046)	U (0.00093)	U (0.00097)		
1,2,4-Trimethylbenzene	4700	300	U (0.0022)	U (0.002)	0.00057 J (0.0019)	0.0007 J (0.0027)	0.0074 (0.0037)	U (0.002)	U (0.0022)	U (0.0026)	0.028 (0.0021)	U (0.0029)	U (0.0021)	0.8 (0.093)	0.18 (0.0019)	U (0.0019)		
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	U (0.002)	U (0.0019)	0.00031 J (0.0027)	0.0028 J (0.0037)	U (0.002)	U (0.0022)	U (0.0026)	0.01 (0.0021)	U (0.0029)	U (0.0021)	0.12 (0.093)	0.038 (0.0019)	U (0.0019)		
Xylenes (total)	7900	1000	U (0.0022)	U (0.002)	0.00127 J (0.0019)	U (0.0027)	0.0093 J (0.0037)	U (0.002)	U (0.0022)	U (0.0026)	0.024 J (0.0021)	U (0.0029)	U (0.0021)	0.07 J (0.093)	0.0195 J (0.0019)	U (0.0019)		

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AA06-b 301-AA06	301-AA06-b 301-AA06	301-AA07-b 301-AA07	301-AA07-c 301-AA07	301-AA07-c 301-AA07	301-AA08-c 301-AA08	301-AA08-c 301-AA08	301-AA08-d 301-AA08	301-AA09-a 301-AA09	301-AA09-a 301-AA09	301-AA09-a 301-AA09	301-AA09-b 301-AA09	301-AA09-c 301-AA09	301-AB02-b 301-AB02
Field Sample ID	Numeric Value	Numeric Value	301-AA06-C2-VOC	301-AA06-C3-VOC	301-AA07-C1-VOC	301-AA07-C2-VOC	301-AA07-C3-VOC	301-AA08-C2-VOC	301-AA08-C3-VOC	301-AA08-C1-VOC	301-AA09-C3-VOC	301-AA09-C4-VOC	301-AA09-C5-VOC	301-AA09-C2-VOC	301-AA09-C1-VOC	301-AB02-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.9 - 1.1	1.5 - 1.7	0.3 - 0.5	2.0 - 2.1	2.4 - 2.6	2.7 - 2.9	4.0 - 4.1	1.2 - 1.4	1.4 - 1.5	2.1 - 2.3	2.7 - 2.9	0.6 - 0.8	0.2 - 0.3	0.2 - 0.3
Sample Date	(mg/kg)	(mg/kg)	5/31/2022	5/31/2022	5/31/2022	5/31/2022	5/31/2022	5/25/2022	5/25/2022	5/25/2022	6/24/2022	6/24/2022	6/24/2022	6/24/2022	6/24/2022	6/13/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.00054)	U (0.028)	U (0.062)	U (0.058)	U (0.031)	0.073 (0.034)	U (0.00062)	0.00018 J (0.00044)	0.00054 J (0.0011)	U (0.00091)	U (0.00084)	U (0.00076)	U (0.0011)	U (0.00055)
1,2-Dibromoethane	3.7	0.005	U (0.00054)	U (0.028)	U (0.062)	U (0.058)	U (0.031)	U (0.034)	U (0.00062)	U (0.00044)	U (0.0011)	U (0.00091)	U (0.00084)	U (0.00076)	U (0.0011)	U (0.00055)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.057)	U (0.12)	U (0.12)	U (0.062)	U (0.068)	U (0.0012)	U (0.00087)	U (0.0022)	U (0.0018)	U (0.0017)	U (0.0015)	U (0.0022)	U (0.0011)
Ethyl Benzene	880	70	U (0.0011)	0.019 J (0.057)	U (0.12)	U (0.12)	U (0.062)	1.4 (0.068)	U (0.0012)	U (0.00087)	U (0.0022)	0.0015 J (0.0018)	U (0.0017)	U (0.0015)	U (0.0022)	U (0.0011)
Isopropylbenzene	10000	2500	U (0.0011)	0.19 (0.057)	0.83 (0.12)	0.24 (0.12)	U (0.062)	4.2 (0.068)	U (0.0012)	U (0.00087)	U (0.0022)	0.0014 J (0.0018)	0.00047 J (0.0017)	0.0092 (0.0015)	0.00029 J (0.0022)	0.00018 J (0.0011)
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.11)	U (0.25)	U (0.23)	U (0.12)	0.032 J (0.14)	U (0.0025)	U (0.0017)	U (0.0044)	U (0.0036)	U (0.0034)	U (0.003)	U (0.0044)	U (0.0022)
Toluene	10000	100	U (0.0011)	U (0.057)	U (0.12)	U (0.12)	U (0.062)	U (0.068)	U (0.0012)	U (0.00087)	U (0.0022)	U (0.0018)	U (0.0017)	U (0.0015)	U (0.0022)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	U (0.0022)	0.05 J (0.11)	U (0.25)	U (0.23)	U (0.12)	26 (1.4)	U (0.0025)	U (0.0017)	U (0.0044)	0.011 (0.0036)	U (0.0034)	U (0.003)	U (0.0044)	U (0.0022)
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	0.016 J (0.11)	U (0.25)	U (0.23)	U (0.12)	9 (0.14)	U (0.0025)	U (0.0017)	U (0.0044)	0.0039 (0.0036)	U (0.0034)	U (0.003)	U (0.0044)	U (0.0022)
Xylenes (total)	7900	1000	U (0.0022)	0.076 J (0.11)	U (0.25)	U (0.23)	U (0.12)	3.77 J (0.14)	U (0.0025)	U (0.0017)	0.00287 J (0.0044)	0.0197 J (0.0036)	U (0.0034)	U (0.003)	U (0.0044)	U (0.0022)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AB02-b 301-AB02	301-AB02-b 301-AB02	301-AB02-b 301-AB02	301-AB03-c 301-AB03	301-AB03-c 301-AB03	301-AB03-c 301-AB03	301-AB03-c 301-AB03	301-AB03-c 301-AB03	301-AB03-c 301-AB03	301-AB04-a 301-AB04	301-AB04-a 301-AB04	301-AB04-d 301-AB04	301-AB04-d 301-AB04	301-AB06-d 301-AB06	301-AB06-d 301-AB06
Field Sample ID	Numeric Value	Numeric Value	301-AB02-C2-VOC	301-AB02-C3-VOC	301-AB02-C4-VOC	301-AB03-C1-VOC	301-AB03-C2-VOC	301-AB03-C3-VOC	301-AB03-C4-VOC	301-AB03-C5-VOC	301-AB04-C3-VOC	301-AB04-C4-VOC	301-AB04-C1-VOC	301-AB04-C2-VOC	301-AB06-C1-VOC	301-AB06-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.8 - 0.9	1.4 - 1.5	2.1 - 2.3	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	1.4 - 1.5	1.7 - 1.8	2.9 - 3.0	4.6 - 4.7	0.6 - 0.8	0.9 - 1.1	0.8 - 0.9	0.9 - 1.1	
Sample Date	(mg/kg)	(mg/kg)	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/2/2022	6/2/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00046)	0.00028 J (0.00055)	U (0.00055)	0.00036 J (0.00065)	0.0011 (0.00061)	0.00068 (0.0006)	0.01 (0.00066)	0.0018 (0.00066)	0.0028 (0.0006)	U (0.00053)	U (0.00073)	U (0.00059)	U (0.00085)	U (0.00058)	
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00055)	U (0.00055)	U (0.00065)	U (0.00061)	U (0.0006)	U (0.00066)	U (0.00066)	U (0.0006)	U (0.00053)	U (0.00073)	U (0.00059)	U (0.00085)	U (0.00058)	
1,2-Dichloroethane	85	0.5	U (0.00093)	U (0.0011)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0012)	U (0.0013)	U (0.0013)	U (0.0013)	U (0.0012)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0012)	
Ethyl Benzene	880	70	0.00046 J (0.00093)	0.00099 J (0.0011)	U (0.0011)	U (0.0013)	0.00028 J (0.0012)	U (0.0012)	0.0057 (0.0013)	0.00029 J (0.0013)	U (0.0012)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0017)	U (0.0012)	
Isopropylbenzene	10000	2500	0.032 (0.00093)	0.088 (0.0011)	0.015 (0.0011)	U (0.0013)	0.00022 J (0.0012)	0.00022 J (0.0012)	0.0027 (0.0013)	0.027 (0.0013)	U (0.0012)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0017)	0.00036 J (0.0012)	
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.0022)	U (0.0022)	U (0.0026)	U (0.0024)	U (0.0024)	U (0.0026)	U (0.0026)	U (0.0024)	U (0.0021)	U (0.0029)	U (0.0024)	U (0.0034)	U (0.0023)	
Toluene	10000	100	U (0.00093)	U (0.0011)	U (0.0011)	U (0.0013)	0.00066 J (0.0012)	U (0.0012)	0.002 (0.0013)	U (0.0013)	U (0.0012)	U (0.0011)	U (0.0014)	U (0.0012)	U (0.0017)	U (0.0012)	
1,2,4-Trimethylbenzene	4700	300	0.0023 (0.0018)	0.0037 (0.0022)	0.0006 J (0.0022)	U (0.0026)	0.0008 J (0.0024)	U (0.0024)	0.003 (0.0026)	0.0026 (0.0026)	U (0.0024)	U (0.0021)	U (0.0029)	U (0.0024)	U (0.0034)	U (0.0023)	
1,3,5-Trimethylbenzene	4700	93	0.0004 J (0.0018)	0.00052 J (0.0022)	U (0.0022)	U (0.0026)	0.00042 J (0.0024)	U (0.0024)	0.0016 J (0.0026)	0.00051 J (0.0026)	U (0.0024)	U (0.0021)	U (0.0029)	U (0.0024)	U (0.0034)	U (0.0023)	
Xylenes (total)	7900	1000	0.00137 J (0.0018)	0.00244 J (0.0022)	U (0.0022)	U (0.0026)	0.0013 J (0.0024)	U (0.0024)	0.0076 J (0.0026)	0.0036 J (0.0026)	U (0.0024)	U (0.0021)	U (0.0029)	U (0.0024)	U (0.0034)	U (0.0023)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AB06-d 301-AB06	301-AB06-d 301-AB06	301-AB06-d 301-AB06	301-AB07-b 301-AB07	301-AB07-c 301-AB07	301-AB07-d 301-AB07	301-AB08-a 301-AB08	301-AB08-b 301-AB08	301-AB08-b 301-AB08	301-AB08-b 301-AB08	301-AB09-b 301-AB09	301-AC04-a 301-AC04	301-AC04-a 301-AC04	301-AC04-a 301-AC04
Field Sample ID	Numeric Value	Numeric Value	301-AB06-C3-VOC	301-AB06-C4-VOC	301-AB06-C5-VOC	301-AB07-C1-VOC	301-AB07-C3-VOC	301-AB07-C2-VOC	301-AB08-C3-VOC	301-AB08-C1-VOC	301-AB08-C2-VOC	301-AB08-C4-VOC	301-AB09-C1-VOC	301-AC04-C1-VOC	301-AC04-C2-VOC	301-AC04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.8 - 2.0	2.7 - 2.9	3.7 - 3.8	1.4 - 1.5	4.1 - 4.3	2.3 - 2.4	3.0 - 3.2	0.2 - 0.3	0.6 - 0.8	1.4 - 1.5	1.4 - 1.5	0.2 - 0.3	0.4 - 0.5	0.8 - 0.9
Sample Date	(mg/kg)	(mg/kg)	6/2/2022	6/2/2022	6/2/2022	5/26/2022	5/26/2022	5/26/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	6/1/2022	6/13/2022	6/13/2022	6/13/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.0005)	U (0.00054)	U (0.00061)	U (0.00055)	U (0.00047)	U (0.024)	U (0.00044)	U (0.00041)	0.0011 (0.00049)	0.00019 J (0.00049)	U (0.00053)	U (0.00094)	U (0.00062)	U (0.0005)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00054)	U (0.00061)	U (0.00055)	U (0.00047)	U (0.024)	U (0.00044)	U (0.00041)	U (0.00049)	U (0.00049)	U (0.00053)	U (0.00094)	U (0.00062)	U (0.0005)
1,2-Dichloroethane	85	0.5	U (0.00099)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.00094)	U (0.048)	U (0.00087)	U (0.00083)	U (0.00098)	U (0.00097)	U (0.001)	U (0.0019)	U (0.0012)	U (0.001)
Ethyl Benzene	880	70	U (0.00099)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.00094)	U (0.048)	U (0.00087)	U (0.00083)	0.00061 J (0.00098)	0.00045 J (0.00097)	U (0.001)	U (0.0019)	U (0.0012)	U (0.001)
Isopropylbenzene	10000	2500	0.00022 J (0.00099)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.00094)	0.058 (0.048)	U (0.00087)	U (0.00083)	0.0012 (0.00098)	0.002 (0.00097)	U (0.001)	U (0.0019)	0.00013 J (0.0012)	0.00016 J (0.001)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0022)	U (0.0024)	U (0.0022)	U (0.0019)	U (0.096)	U (0.0017)	U (0.0016)	U (0.002)	U (0.0019)	U (0.0021)	U (0.0038)	U (0.0025)	U (0.002)
Toluene	10000	100	U (0.00099)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.00094)	U (0.048)	U (0.00087)	U (0.00083)	U (0.00098)	U (0.00097)	U (0.001)	U (0.0019)	U (0.0012)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.0022)	U (0.0024)	U (0.0022)	U (0.0019)	U (0.096)	U (0.0017)	U (0.0016)	0.0018 J (0.002)	0.005 (0.0019)	U (0.0021)	U (0.0038)	U (0.0025)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.0022)	U (0.0024)	U (0.0022)	U (0.0019)	U (0.096)	U (0.0017)	U (0.0016)	0.00053 J (0.002)	0.0012 J (0.0019)	U (0.0021)	U (0.0038)	U (0.0025)	U (0.002)
Xylenes (total)	7900	1000	U (0.002)	U (0.0022)	U (0.0024)	U (0.0022)	U (0.0019)	U (0.096)	U (0.0017)	U (0.0016)	0.00261 J (0.002)	0.0047 J (0.0019)	U (0.0021)	U (0.0038)	U (0.0025)	U (0.002)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AC04-a 301-AC04	301-AC04-a 301-AC04	301-AC05-c 301-AC05	301-AC05-c 301-AC05	301-AC05-c 301-AC05	301-AC05-c 301-AC05	301-AC05-c 301-AC05	301-AC05-c 301-AC05	301-AC06-b 301-AC06	301-AC06-b 301-AC06	301-AC06-c 301-AC06	301-AC06-d 301-AC06	301-AC06-d 301-AC06	301-AC07-d 301-AC07	301-AC07-d 301-AC07
Field Sample ID	Numeric Value	Numeric Value	301-AC04-C4-VOC	301-AC04-C5-VOC	301-AC05-C1-VOC	301-AC05-C2-VOC	301-AC05-C3-VOC	301-AC05-C4-VOC	301-AC05-C5-VOC	301-AC06-C1-VOC	301-AC06-C5-VOC	301-AC06-C2-VOC	301-AC06-C3-VOC	301-AC06-C4-VOC	301-AC07-C1-VOC	301-AC07-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		1.2 - 1.4	1.7 - 1.8	0.3 - 0.5	0.8 - 0.9	1.1 - 1.2	1.7 - 1.8	2.1 - 2.3	0.5 - 0.6	3.2 - 3.4	0.9 - 1.1	1.7 - 1.8	2.7 - 2.9	0.0 - 0.2	0.3 - 0.4	
Sample Date	(mg/kg)	(mg/kg)	6/13/2022	6/13/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	6/1/2022	6/1/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.062 J (0.13)	U (0.052)	U (0.00084)	U (0.00059)	U (0.00041)	U (0.00061)	U (0.00041)	U (0.00049)	0.00018 J (0.0005)	U (0.00044)	U (0.00048)	U (0.00046)	0.0019 (0.00056)	0.0035 (0.00056)	
1,2-Dibromoethane	3.7	0.005	U (0.13)	U (0.052)	U (0.00084)	U (0.00059)	U (0.00041)	U (0.00061)	U (0.00041)	U (0.00049)	U (0.0005)	U (0.00044)	U (0.00048)	U (0.00046)	U (0.00056)	U (0.00056)	
1,2-Dichloroethane	85	0.5	U (0.25)	U (0.1)	U (0.0017)	U (0.0012)	U (0.00082)	U (0.0012)	U (0.00083)	U (0.00098)	U (0.00099)	U (0.00089)	U (0.00097)	U (0.00092)	U (0.0011)	U (0.0011)	
Ethyl Benzene	880	70	0.059 J (0.25)	U (0.1)	0.00035 J (0.0017)	0.00061 J (0.0012)	U (0.00082)	U (0.0012)	U (0.00083)	U (0.00098)	U (0.00099)	U (0.00089)	U (0.00097)	U (0.00092)	U (0.0011)	0.00021 J (0.0011)	
Isopropylbenzene	10000	2500	4.5 (0.25)	2.8 (0.1)	U (0.0017)	0.00024 J (0.0012)	U (0.00082)	U (0.0012)	U (0.00083)	U (0.00098)	U (0.00099)	U (0.00089)	U (0.00097)	U (0.00092)	U (0.0011)	0.00029 J (0.0011)	
Methyl tert-butyl ether	8500	2	U (0.51)	U (0.21)	U (0.0033)	U (0.0024)	U (0.0016)	U (0.0024)	U (0.0016)	U (0.002)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0022)	U (0.0022)	
Toluene	10000	100	U (0.25)	U (0.1)	U (0.0017)	U (0.0012)	U (0.00082)	U (0.0012)	U (0.00083)	U (0.00098)	U (0.00099)	U (0.00089)	U (0.00097)	U (0.00092)	U (0.0011)	U (0.0011)	
1,2,4-Trimethylbenzene	4700	300	U (0.51)	U (0.21)	0.0007 J (0.0033)	0.0012 J (0.0024)	U (0.0016)	U (0.0024)	U (0.0016)	U (0.002)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0022)	U (0.0022)	
1,3,5-Trimethylbenzene	4700	93	U (0.51)	U (0.21)	0.00038 J (0.0033)	0.00057 J (0.0024)	U (0.0016)	U (0.0024)	U (0.0016)	U (0.002)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0022)	0.00027 J (0.0022)	
Xylenes (total)	7900	1000	0.265 J (0.51)	U (0.21)	0.00258 J (0.0033)	0.0027 J (0.0024)	U (0.0016)	U (0.0024)	U (0.0016)	U (0.002)	U (0.002)	U (0.0018)	U (0.0019)	U (0.0018)	U (0.0022)	0.00135 J (0.0022)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AC07-d 301-AC07	301-AC07-d 301-AC07	301-AC07-d 301-AC07	301-AC08-b 301-AC08	301-AC08-b 301-AC08	301-AC08-d 301-AC08	301-AC08-d 301-AC08	301-AC08-d 301-AC08	301-AC09-a 301-AC09	301-AC09-a 301-AC09	301-AC09-a 301-AC09	301-B01-c 301-B01	301-C01-b 301-C01	301-C02-a 301-C02
Field Sample ID	Numeric Value	Numeric Value	301-AC07-C3-VOC	301-AC07-C4-VOC	301-AC07-C5-VOC	301-AC08-C1-VOC	301-AC08-C2-VOC	301-AC08-C3-VOC	301-AC08-C4-VOC	301-AC08-C5-VOC	301-AC09-C1-VOC	301-AC09-C2-VOC	301-AC09-C3-VOC	301-B01-C1-VOC	301-C01-C1-VOC	301-C02-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.5 - 0.6	0.6 - 0.8	0.9 - 1.0	0.0 - 0.2	0.2 - 0.3	0.3 - 0.5	0.9 - 1.1	1.2 - 1.4	0.2 - 0.3	0.6 - 0.8	1.1 - 1.2	1.2 - 1.4	0.3 - 0.5	0.2 - 0.3
Sample Date	(mg/kg)	(mg/kg)	6/1/2022	6/1/2022	6/1/2022	6/3/2022	6/3/2022	6/3/2022	6/3/2022	6/3/2022	6/9/2022	6/9/2022	6/9/2022	5/17/2022	5/17/2022	6/3/2022
<b>VOCs</b>																
Benzene	280	0.5	0.0013 J (0.0015)	0.0058 (0.0063)	0.0092 (0.0005)	U (0.00063)	U (0.00056)	U (0.00064)	U (0.00058)	U (0.00084)	U (0.00052)	U (0.00049)	U (0.00052)	0.028 (0.025)	8.1 (0.089)	0.011 J (0.028)
1,2-Dibromoethane	3.7	0.005	U (0.0015)	U (0.00063)	U (0.0005)	U (0.00063)	U (0.00056)	U (0.00064)	U (0.00058)	U (0.00084)	U (0.00052)	U (0.00049)	U (0.00052)	U (0.025)	U (0.089)	U (0.028)
1,2-Dichloroethane	85	0.5	U (0.003)	U (0.0013)	U (0.001)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00099)	U (0.001)	U (0.051)	U (0.18)	U (0.056)
Ethyl Benzene	880	70	U (0.003)	U (0.0013)	0.00017 J (0.001)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00099)	U (0.001)	0.027 J (0.051)	3.9 (0.18)	0.012 J (0.056)
Isopropylbenzene	10000	2500	U (0.003)	0.00022 J (0.0013)	0.00041 J (0.001)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00099)	U (0.001)	0.48 (0.051)	79 (4.5)	0.14 (0.056)
Methyl tert-butyl ether	8500	2	U (0.0059)	U (0.0025)	U (0.002)	U (0.0025)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0034)	U (0.0021)	U (0.002)	U (0.0021)	U (0.1)	U (0.36)	U (0.11)
Toluene	10000	100	U (0.003)	U (0.0013)	0.00075 J (0.001)	U (0.0012)	U (0.0011)	U (0.0013)	U (0.0012)	U (0.0017)	U (0.001)	U (0.00099)	U (0.001)	U (0.051)	1.4 (0.18)	U (0.056)
1,2,4-Trimethylbenzene	4700	300	U (0.0059)	U (0.0025)	0.00036 J (0.002)	U (0.0025)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0034)	U (0.0021)	U (0.002)	U (0.0021)	0.086 J (0.1)	0.98 (0.36)	0.047 J (0.11)
1,3,5-Trimethylbenzene	4700	93	U (0.0059)	0.0003 J (0.0025)	0.00066 J (0.002)	U (0.0025)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0034)	U (0.0021)	U (0.002)	U (0.0021)	0.018 J (0.1)	0.15 J (0.36)	U (0.11)
Xylenes (total)	7900	1000	U (0.0059)	0.00153 J (0.0025)	0.00185 J (0.002)	U (0.0025)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0034)	U (0.0021)	U (0.002)	U (0.0021)	0.109 J (0.1)	6.27 J (0.36)	0.069 J (0.11)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-C02-d 301-C02	301-D01-c 301-D01	301-D01-c 301-D01	301-D01-c 301-D01	301-D01-c 301-D01	301-D01-c 301-D01	301-E01-a 301-E01	301-E02-a 301-E02	301-E02-a 301-E02	301-E02-a 301-E02	301-E02-d 301-E02	301-E02-d 301-E02	301-E03-b 301-E03	301-F01-c 301-F01	301-F01-c 301-F01
Field Sample ID	Numeric Value	Numeric Value	301-C02-C2-VOC	301-D01-C1-VOC	301-D01-C2-VOC	301-D01-C3-VOC	301-D01-C4-VOC	301-E01-C1-VOC	301-E02-C2-VOC	301-E02-C3-VOC	301-E02-C4-VOC	301-E02-C1-VOC	301-E02-C5-VOC	301-E03-C1-VOC	301-F01-C2-VOC	301-F01-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.3 - 2.4	0.0 - 0.2	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.7 - 1.8	0.3 - 0.5	0.5 - 0.6	0.8 - 0.9	0.3 - 0.5	2.9 - 3.0	1.1 - 1.2	0.8 - 0.9	1.7 - 1.8	
Sample Date	(mg/kg)	(mg/kg)	6/3/2022	6/6/2022	6/6/2022	6/6/2022	6/6/2022	5/17/2022	6/7/2022	6/7/2022	6/7/2022	6/7/2022	6/7/2022	6/6/2022	5/18/2022	5/18/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.39 J (0.55)	0.023 J (0.028)	0.00053 J (0.00057)	6.9 (0.046)	0.0099 J (0.029)	U (0.00046)	0.027 J (0.031)	0.086 (0.08)	0.021 J (0.031)	1.2 (0.095)	0.011 (0.00055)	0.012 J (0.03)	0.037 (0.033)	U (0.029)	
1,2-Dibromoethane	3.7	0.005	U (0.55)	U (0.028)	U (0.00057)	U (0.046)	U (0.029)	U (0.00046)	U (0.031)	U (0.08)	U (0.031)	U (0.095)	U (0.00055)	U (0.03)	U (0.033)	U (0.029)	
1,2-Dichloroethane	85	0.5	U (1.1)	U (0.057)	U (0.0011)	U (0.093)	U (0.058)	U (0.00093)	U (0.062)	U (0.16)	U (0.062)	U (0.19)	0.00037 J (0.0011)	U (0.06)	U (0.067)	U (0.059)	
Ethyl Benzene	880	70	4.2 (1.1)	0.16 (0.057)	0.0003 J (0.0011)	2.2 (0.093)	0.014 J (0.058)	U (0.00093)	0.04 J (0.062)	0.1 J (0.16)	0.32 (0.062)	0.43 (0.19)	0.002 (0.0011)	U (0.06)	0.27 (0.067)	U (0.059)	
Isopropylbenzene	10000	2500	56 (1.1)	0.21 (0.057)	0.00042 J (0.0011)	7.3 (0.093)	5.1 (0.058)	U (0.00093)	0.44 (0.062)	20 (0.16)	8.4 (0.062)	7.8 (0.19)	0.02 (0.0011)	2.4 (0.06)	0.22 (0.067)	U (0.059)	
Methyl tert-butyl ether	8500	2	U (2.2)	U (0.11)	0.0034 (0.0023)	0.31 (0.19)	U (0.12)	U (0.0019)	0.019 J (0.12)	U (0.32)	0.016 J (0.12)	U (0.38)	U (0.0022)	U (0.12)	U (0.13)	U (0.12)	
Toluene	10000	100	U (1.1)	0.097 (0.057)	U (0.0011)	7.6 (0.093)	0.031 J (0.058)	U (0.00093)	U (0.062)	U (0.16)	0.043 J (0.062)	0.79 (0.19)	0.00088 J (0.0011)	U (0.06)	0.1 (0.067)	U (0.059)	
1,2,4-Trimethylbenzene	4700	300	2 J (2.2)	9.2 (0.11)	0.00084 J (0.0023)	1.7 (0.19)	21 (0.46)	U (0.0019)	U (0.12)	0.23 J (0.32)	0.17 (0.12)	0.41 (0.38)	0.008 (0.0022)	0.023 J (0.12)	0.91 (0.13)	U (0.12)	
1,3,5-Trimethylbenzene	4700	93	0.72 J (2.2)	8 (0.11)	0.00036 J (0.0023)	0.48 (0.19)	6.4 (0.12)	U (0.0019)	U (0.12)	0.053 J (0.32)	0.098 J (0.12)	0.066 J (0.38)	0.0027 (0.0022)	U (0.12)	0.19 (0.13)	U (0.12)	
Xylenes (total)	7900	1000	U (2.2)	2.17 J (0.11)	0.00122 J (0.0023)	9.3 J (0.19)	0.37 J (0.12)	U (0.0019)	U (0.12)	0.46 J (0.32)	0.161 J (0.12)	1.1 J (0.38)	0.0076 J (0.0022)	0.067 J (0.12)	1.39 J (0.13)	U (0.12)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-F01-d 301-F01	301-F01-d 301-F01	301-F01-d 301-F01	301-F02-a 301-F02	301-F02-b 301-F02	301-G01-a 301-G01	301-G01-b 301-G01	301-G02-a 301-G02	301-G02-b 301-G02	301-G02-b 301-G02	301-G02-c 301-G02	301-G03-b 301-G03	301-G03-d 301-G03	301-G03-d 301-G03
Field Sample ID	Numeric Value	Numeric Value	301-F01-C1-VOC	301-F01-C4-VOC	301-F01-C5-VOC	301-F02-C2-VOC	301-F02-C1-VOC	301-G01-C1-VOC	301-G01-C2-VOC	301-G02-C4-VOC	301-G02-C1-VOC	301-G02-C2-VOC	301-G02-C3-VOC	301-G03-C3-VOC	301-G03-C1-VOC	301-G03-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.5 - 0.6	2.3 - 2.4	2.9 - 3.0	1.1 - 1.2	0.9 - 1.1	1.4 - 1.5	2.4 - 2.6	3.4 - 3.5	0.9 - 1.1	2.0 - 2.1	4.6 - 4.7	3.8 - 4.0	0.8 - 0.9	2.9 - 3.0
Sample Date	(mg/kg)	(mg/kg)	5/18/2022	5/18/2022	5/18/2022	6/6/2022	6/6/2022	5/18/2022	5/18/2022	5/19/2022	5/19/2022	5/19/2022	5/19/2022	5/20/2022	5/20/2022	5/20/2022
<b>VOCs</b>																
Benzene	280	0.5	2.2 (0.041)	0.034 (0.03)	0.002 (0.00066)	0.61 (0.031)	0.057 (0.00051)	76 (0.3)	0.45 (0.03)	2.4 (0.031)	10 (0.08)	5.6 (0.14)	5.1 (0.029)	8.4 (0.028)	5.2 (0.31)	11 (0.56)
1,2-Dibromoethane	3.7	0.005	U (0.041)	U (0.03)	U (0.00066)	U (0.031)	U (0.00051)	U (0.3)	U (0.03)	U (0.031)	U (0.08)	U (0.14)	U (0.029)	U (0.028)	U (0.31)	U (0.56)
1,2-Dichloroethane	85	0.5	U (0.083)	U (0.059)	U (0.0013)	U (0.062)	U (0.001)	U (0.6)	U (0.061)	U (0.062)	U (0.16)	U (0.28)	U (0.058)	U (0.057)	U (0.62)	U (1.1)
Ethyl Benzene	880	70	6.5 (0.083)	0.16 (0.059)	0.0068 (0.0013)	9 (0.062)	0.0077 (0.001)	260 (6)	0.036 J (0.061)	0.28 (0.062)	36 (0.16)	51 (0.28)	0.88 (0.058)	9.9 (0.057)	110 (0.62)	110 (1.1)
Isopropylbenzene	10000	2500	30 (0.83)	3.5 (0.059)	0.23 (0.0013)	4.6 (0.062)	0.017 (0.001)	38 (0.6)	2.2 (0.061)	0.066 (0.062)	4 (0.16)	5.4 (0.28)	1.2 (0.058)	0.81 (0.057)	9.7 (0.62)	14 (1.1)
Methyl tert-butyl ether	8500	2	U (0.16)	0.023 J (0.12)	0.0056 (0.0026)	U (0.12)	U (0.002)	U (1.2)	U (0.12)	0.013 J (0.12)	0.25 J (0.32)	U (0.56)	0.89 (0.12)	0.41 (0.11)	0.18 J (1.2)	0.28 J (2.2)
Toluene	10000	100	2.7 (0.083)	U (0.059)	0.001 J (0.0013)	U (0.062)	0.0044 (0.001)	130 (0.6)	U (0.061)	0.64 (0.062)	35 (0.16)	1.5 (0.28)	0.37 (0.058)	35 (0.28)	84 (0.62)	490 (5.6)
1,2,4-Trimethylbenzene	4700	300	17 (0.16)	0.18 (0.12)	0.0064 (0.0026)	22 (0.49)	0.0044 (0.002)	420 (12)	0.1 J (0.12)	0.59 (0.12)	98 (1.4)	120 (1.2)	5.2 (0.12)	23 (0.57)	240 (2.5)	620 (11)
1,3,5-Trimethylbenzene	4700	93	4.4 (0.16)	0.054 J (0.12)	0.002 J (0.0026)	12 (0.12)	0.0013 J (0.002)	100 (1.2)	0.04 J (0.12)	0.23 (0.12)	28 (0.32)	36 (0.56)	0.64 (0.12)	7 (0.11)	73 (1.2)	130 (2.2)
Xylenes (total)	7900	1000	28 J (0.16)	0.479 J (0.12)	0.0222 J (0.0026)	9.331 J (0.12)	0.0147 J (0.002)	1020 J (12)	0.3005 J (0.12)	1.58 J (0.12)	209 J (1.4)	251 J (1.2)	1.56 J (0.12)	58 J (0.57)	590 J (2.5)	720 J (2.2)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-G04-c 301-G04	301-H01-a 301-H01	301-H01-c 301-H01	301-H02-a 301-H02	301-H02-b 301-H02	301-H02-b 301-H02	301-H02-c 301-H02	301-H03-c 301-H03	301-H03-c 301-H03	301-H03-c 301-H03	301-I01-b 301-I01	301-I01-c 301-I01	301-I01-d 301-I01	301-I02-a 301-I02
Field Sample ID	Numeric Value	Numeric Value	301-G04-C1-VOC	301-H01-C1-VOC	301-H01-C2-VOC	301-H02-C1-VOC	301-H02-C2-VOC	301-H02-C4-VOC	301-H02-C3-VOC	301-H03-C1-VOC	301-H03-C2-VOC	301-H03-C3-VOC	301-I01-C3-VOC	301-I01-C1-VOC	301-I01-C2-VOC	301-I02-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		0.6 - 0.8	0.6 - 0.8	2.7 - 2.9	0.6 - 0.8	1.5 - 1.7	4.4 - 4.6	4.3 - 4.4	0.8 - 0.9	1.7 - 1.8	3.2 - 3.4	4.1 - 4.3	0.6 - 0.8	1.8 - 2.0	3.2 - 3.4
Sample Date	(mg/kg)	(mg/kg)	6/2/2022	5/19/2022	5/19/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/20/2022	5/20/2022	5/20/2022	5/24/2022
<b>VOCs</b>																
Benzene	280	0.5	0.028 J (0.041)	72 (0.75)	0.015 J (0.031)	0.00033 J (0.00048)	0.31 (0.03)	160 (1.4)	1.7 (0.029)	25 (1.4)	21 (0.17)	0.91 (0.3)	0.018 J (0.035)	0.26 (0.025)	12 (0.16)	31 (0.13)
1,2-Dibromoethane	3.7	0.005	U (0.041)	U (0.75)	U (0.031)	U (0.00048)	U (0.03)	U (1.4)	U (0.029)	U (1.4)	U (0.17)	U (0.3)	U (0.035)	U (0.025)	U (0.16)	U (0.13)
1,2-Dichloroethane	85	0.5	U (0.082)	U (1.5)	U (0.062)	U (0.00095)	U (0.06)	U (2.8)	U (0.058)	U (2.8)	U (0.35)	U (0.59)	U (0.071)	U (0.05)	U (0.33)	U (0.26)
Ethyl Benzene	880	70	0.091 (0.082)	160 (1.5)	0.34 (0.062)	0.00084 J (0.00095)	3.6 (0.06)	290 (2.8)	11 (0.058)	520 (2.8)	99 (0.35)	48 (0.59)	0.038 J (0.071)	0.051 (0.05)	63 (0.33)	59 (0.26)
Isopropylbenzene	10000	2500	0.42 (0.082)	38 (1.5)	2.6 (0.062)	0.00011 J (0.00095)	1.2 (0.06)	28 (2.8)	2.7 (0.058)	39 (2.8)	5.5 (0.35)	6.1 (0.59)	0.022 J (0.071)	0.49 (0.05)	6.8 (0.33)	4.3 (0.26)
Methyl tert-butyl ether	8500	2	U (0.16)	1.8 J (3)	U (0.12)	U (0.0019)	U (0.12)	U (5.6)	U (0.12)	U (5.6)	U (0.7)	U (1.2)	U (0.14)	U (0.1)	U (0.66)	0.29 J (0.52)
Toluene	10000	100	U (0.082)	U (1.5)	U (0.062)	U (0.00095)	0.48 (0.06)	1500 (5.4)	0.67 (0.058)	52 (2.8)	340 (3.5)	8.4 (0.59)	0.12 (0.071)	0.13 (0.05)	170 (0.66)	1.2 (0.26)
1,2,4-Trimethylbenzene	4700	300	0.13 J (0.16)	630 (12)	25 (12)	0.00094 J (0.0019)	9.4 (0.12)	500 (5.6)	28 (2.8)	1100 (11)	180 (7)	310 (12)	0.11 J (0.14)	0.057 J (0.1)	140 (1.3)	120 (1)
1,3,5-Trimethylbenzene	4700	93	0.028 J (0.16)	140 (3)	9 (0.12)	0.00041 J (0.0019)	3.7 (0.12)	160 (5.6)	9.4 (0.12)	400 (5.6)	62 (0.7)	60 (1.2)	0.031 J (0.14)	0.016 J (0.1)	36 (0.66)	36 (0.52)
Xylenes (total)	7900	1000	0.224 J (0.16)	506 J (3)	6.58 J (0.12)	0.003 J (0.0019)	13.8 J (0.12)	1380 J (5.6)	68 J (2.8)	3440 J (11)	570 J (7)	269 J (1.2)	0.18 J (0.14)	0.17 J (0.1)	375 J (1.3)	173.4 J (1)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-I02-d 301-I02	301-I02-d 301-I02	301-I02-d 301-I02	301-I02-d 301-I02	301-I03-a 301-I03	301-J01-b 301-J01	301-J01-c 301-J01	301-J01-c 301-J01	301-J01-c 301-J01	301-J02-c 301-J02	301-J02-c 301-J02	301-J02-d 301-J02	301-J02-d 301-J02	301-K01-a 301-K01
Field Sample ID	Numeric Value	Numeric Value	301-I02-C1-VOC	301-I02-C2-VOC	301-I02-C4-VOC	301-I02-C5-VOC	301-I03-C1-VOC	301-J01-C1-VOC	301-J01-C2-VOC	301-J01-C3-VOC	301-J01-C4-VOC	301-J02-C3-VOC	301-J02-C4-VOC	301-J02-C1-VOC	301-J02-C2-VOC	301-K01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		0.8 - 0.9	1.8 - 2.0	4.4 - 4.6	5.3 - 5.5	1.5 - 1.7	0.5 - 0.6	0.9 - 1.1	2.0 - 2.1	2.9 - 3.0	4.3 - 4.4	5.6 - 5.8	0.5 - 0.6	1.4 - 1.5	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	5/24/2022	5/24/2022	5/24/2022	5/24/2022	6/2/2022	6/3/2022	6/3/2022	6/3/2022	6/3/2022	5/25/2022	5/25/2022	5/25/2022	5/25/2022	5/25/2022
<b>VOCs</b>																
Benzene	280	0.5	0.43 (0.022)	5 (0.068)	0.056 (0.00048)	4.6 (0.31)	U (0.034)	0.027 J (0.029)	0.006 (0.00046)	0.0096 J (0.026)	6.4 (0.28)	0.54 (0.029)	0.78 (0.05)	0.046 J (0.057)	0.011 J (0.026)	0.0022 (0.00046)
1,2-Dibromoethane	3.7	0.005	U (0.022)	U (0.068)	U (0.00048)	U (0.31)	U (0.034)	U (0.029)	U (0.00046)	U (0.026)	U (0.28)	U (0.029)	U (0.05)	U (0.057)	U (0.026)	U (0.00046)
1,2-Dichloroethane	85	0.5	U (0.045)	U (0.14)	U (0.00095)	U (0.62)	U (0.068)	U (0.058)	U (0.00092)	U (0.052)	U (0.56)	U (0.058)	U (0.1)	U (0.11)	U (0.052)	U (0.00092)
Ethyl Benzene	880	70	0.085 (0.045)	4.2 (0.14)	0.05 (0.00095)	5.3 (0.62)	0.07 (0.068)	0.061 (0.058)	0.0017 (0.00092)	0.057 (0.052)	15 (0.56)	0.24 (0.058)	0.61 (0.1)	0.39 (0.11)	1.5 (0.052)	0.0029 (0.00092)
Isopropylbenzene	10000	2500	0.35 (0.045)	7.7 (0.14)	0.038 (0.00095)	15 (0.62)	0.12 (0.068)	0.33 (0.058)	0.032 (0.00092)	1.3 (0.052)	8.1 (0.56)	0.022 J (0.058)	1 (0.1)	0.31 (0.11)	1.9 (0.052)	0.0074 (0.00092)
Methyl tert-butyl ether	8500	2	U (0.09)	U (0.27)	0.006 (0.0019)	U (1.2)	U (0.14)	U (0.12)	U (0.0018)	U (0.1)	U (1.1)	0.022 J (0.12)	U (0.2)	U (0.23)	U (0.1)	0.0009 J (0.0018)
Toluene	10000	100	0.16 (0.045)	1.1 (0.14)	0.0012 (0.00095)	0.96 (0.62)	0.058 J (0.068)	U (0.058)	0.0014 (0.00092)	U (0.052)	U (0.56)	0.083 (0.058)	0.11 (0.1)	0.1 J (0.11)	U (0.052)	U (0.00092)
1,2,4-Trimethylbenzene	4700	300	0.056 J (0.09)	26 (0.27)	0.27 (0.0019)	18 (1.2)	0.17 (0.14)	0.23 (0.12)	0.0016 J (0.0018)	0.023 J (0.1)	120 (1.1)	0.59 (0.12)	5 (0.2)	U (0.23)	9 (0.1)	0.0072 (0.0018)
1,3,5-Trimethylbenzene	4700	93	0.021 J (0.09)	18 (0.27)	0.098 (0.0019)	9.4 (1.2)	0.054 J (0.14)	0.15 (0.12)	0.0021 (0.0018)	0.18 (0.1)	19 (1.1)	5.4 (0.12)	0.86 (0.2)	U (0.23)	2 (0.1)	0.0018 (0.0018)
Xylenes (total)	7900	1000	0.19 J (0.09)	68.5 J (0.27)	0.0924 J (0.0019)	5.92 J (1.2)	0.265 J (0.14)	0.158 J (0.12)	0.0093 J (0.0018)	0.576 J (0.1)	41.1 J (1.1)	0.271 J (0.12)	0.55 J (0.2)	U (0.23)	0.306 J (0.1)	0.0125 J (0.0018)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-K01-a 301-K01	301-K01-c 301-K01	301-K01-d 301-K01	301-K02-a 301-K02	301-K02-d 301-K02	301-K02-d 301-K02	301-L02-a 301-L02	301-L02-c 301-L02	301-L02-c 301-L02	301-L02-c 301-L02	301-L03-b 301-L03	301-L03-c 301-L03	301-L03-d 301-L03	301-M02-b 301-M02
Field Sample ID	Numeric Value	Numeric Value	301-K01-C3-VOC	301-K01-C2-VOC	301-K01-C4-VOC	301-K02-C1-VOC	301-K02-C2-VOC	301-K02-C3-VOC	301-L02-C3-VOC	301-L02-C1-VOC	301-L02-C2-VOC	301-L02-C4-VOC	301-L03-C2-VOC	301-L03-C3-VOC	301-L03-C1-VOC	301-M02-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.8 - 2.0	1.2 - 1.4	4.7 - 4.9	0.9 - 1.1	1.8 - 2.0	3.0 - 3.2	2.0 - 2.1	0.3 - 0.5	0.9 - 1.1	2.4 - 2.6	2.4 - 2.6	4.4 - 4.6	0.8 - 0.9	2.0 - 2.1
Sample Date	(mg/kg)	(mg/kg)	5/25/2022	5/25/2022	5/25/2022	5/26/2022	5/26/2022	5/26/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	5/31/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.062)	0.17 (0.026)	23 (0.66)	0.86 (0.027)	4.3 (0.025)	15 (0.39)	0.023 (0.00048)	0.041 J (0.054)	U (0.028)	U (0.00051)	U (0.00038)	0.6 (0.098)	0.027 (0.026)	0.58 (0.15)
1,2-Dibromoethane	3.7	0.005	U (0.062)	U (0.026)	U (0.026)	U (0.027)	U (0.025)	U (0.39)	U (0.00048)	U (0.054)	U (0.028)	U (0.00051)	U (0.00038)	U (0.098)	U (0.026)	U (0.15)
1,2-Dichloroethane	85	0.5	U (0.12)	U (0.051)	U (0.053)	U (0.054)	U (0.05)	U (0.77)	U (0.00095)	U (0.11)	U (0.055)	U (0.001)	U (0.00077)	U (0.2)	U (0.052)	U (0.3)
Ethyl Benzene	880	70	U (0.12)	0.019 J (0.051)	9.5 (0.053)	10 (0.054)	6.3 (0.05)	40 (0.77)	0.00018 J (0.00095)	0.12 (0.11)	U (0.055)	U (0.001)	0.00053 J (0.00077)	0.36 (0.2)	0.034 J (0.052)	2.1 (0.3)
Isopropylbenzene	10000	2500	0.56 (0.12)	0.25 (0.051)	3.8 (0.053)	3.7 (0.054)	1.8 (0.05)	26 (0.77)	0.0026 (0.00095)	4.3 (0.11)	1.5 (0.055)	0.0049 (0.001)	0.004 (0.00077)	4.4 (0.2)	1.5 (0.052)	5.8 (0.3)
Methyl tert-butyl ether	8500	2	U (0.25)	U (0.1)	U (0.11)	U (0.11)	U (0.1)	U (1.5)	0.006 (0.0019)	U (0.22)	U (0.11)	U (0.002)	0.00036 J (0.0015)	U (0.39)	U (0.1)	U (0.61)
Toluene	10000	100	0.12 (0.12)	0.051 (0.051)	0.59 (0.053)	0.062 (0.054)	0.38 (0.05)	1.4 (0.77)	U (0.00095)	0.093 J (0.11)	U (0.055)	U (0.001)	U (0.00077)	U (0.2)	0.036 J (0.052)	U (0.3)
1,2,4-Trimethylbenzene	4700	300	U (0.25)	U (0.1)	53 (2.6)	0.055 J (0.11)	30 (1)	540 (7.7)	0.00048 J (0.0019)	0.24 (0.22)	U (0.11)	U (0.002)	U (0.0015)	28 (0.39)	0.058 J (0.1)	0.22 J (0.61)
1,3,5-Trimethylbenzene	4700	93	U (0.25)	U (0.1)	13 (0.11)	0.018 J (0.11)	7.8 (0.1)	100 (1.5)	0.0016 J (0.0019)	0.043 J (0.22)	U (0.11)	U (0.002)	U (0.0015)	0.66 (0.39)	0.012 J (0.1)	U (0.61)
Xylenes (total)	7900	1000	U (0.25)	0.1855 J (0.1)	32.9 J (0.11)	0.46 J (0.11)	24.6 J (0.1)	112 J (1.5)	U (0.0019)	0.43 J (0.22)	0.071 J (0.11)	U (0.002)	0.0012 J (0.0015)	0.73 J (0.39)	0.097 J (0.1)	0.625 J (0.61)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-M02-d 301-M02	301-M02-d 301-M02	301-M02-d 301-M02	301-M03-d 301-M03	301-M03-d 301-M03	301-M03-d 301-M03	301-M04-a 301-M04	301-N02-a 301-N02	301-N02-b 301-N02	301-N02-c 301-N02	301-N02-d 301-N02	301-N03-b 301-N03	301-O02-b 301-O02	301-O02-b 301-O02	301-O02-b 301-O02
Field Sample ID	Numeric Value	Numeric Value	301-M02-C1-VOC	301-M02-C2-VOC	301-M02-C4-VOC	301-M03-C1-VOC	301-M03-C2-VOC	301-M04-C1-VOC	301-N02-C1-VOC	301-N02-C2-VOC	301-N02-C4-VOC	301-N02-C3-VOC	301-N03-C1-VOC	301-O02-C1-VOC	301-O02-C2-VOC	301-O02-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.6 - 0.8	1.8 - 2.0	3.8 - 4.0	0.6 - 0.8	2.6 - 2.7	0.5 - 0.6	0.3 - 0.5	1.8 - 2.0	4.3 - 4.4	2.0 - 2.1	1.5 - 1.7	0.3 - 0.5	0.9 - 1.1	1.5 - 1.7	
Sample Date	(mg/kg)	(mg/kg)	5/31/2022	5/31/2022	5/31/2022	5/31/2022	5/31/2022	6/2/2022	6/1/2022	6/1/2022	6/1/2022	6/1/2022	6/1/2022	6/1/2022	6/1/2022	6/1/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.034 J (0.036)	0.2 (0.026)	0.01 (0.00041)	0.00024 J (0.00044)	0.00053 (0.00049)	1.6 (0.073)	0.065 (0.029)	0.12 (0.027)	U (0.00051)	0.009 (0.00048)	0.0043 (0.00024)	0.00033 J (0.00058)	0.018 J (0.028)	0.52 (0.059)	
1,2-Dibromoethane	3.7	0.005	U (0.036)	U (0.026)	U (0.00041)	U (0.00044)	U (0.00049)	U (0.073)	U (0.029)	U (0.027)	U (0.00051)	U (0.00048)	U (0.00024)	U (0.00058)	U (0.028)	U (0.059)	
1,2-Dichloroethane	85	0.5	U (0.073)	U (0.053)	U (0.00081)	U (0.00088)	U (0.00098)	U (0.15)	U (0.059)	U (0.054)	U (0.001)	U (0.00095)	U (0.00047)	U (0.0012)	U (0.055)	U (0.12)	
Ethyl Benzene	880	70	0.087 (0.073)	0.48 (0.053)	0.001 (0.00081)	0.00045 J (0.00088)	0.00072 J (0.00098)	3.3 (0.15)	0.047 J (0.059)	0.043 J (0.054)	U (0.001)	0.0015 (0.00095)	0.00075 (0.00047)	U (0.0012)	0.23 (0.055)	0.51 (0.12)	
Isopropylbenzene	10000	2500	0.22 (0.073)	0.77 (0.053)	0.014 (0.00081)	0.0078 (0.00088)	0.037 (0.00098)	12 (0.15)	2.3 (0.059)	0.87 (0.054)	0.002 (0.001)	0.00052 J (0.00095)	0.00062 (0.00047)	0.00037 J (0.0012)	0.2 (0.055)	10 (0.12)	
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.11)	U (0.0016)	U (0.0018)	U (0.002)	U (0.29)	U (0.12)	U (0.11)	U (0.002)	U (0.0019)	U (0.00095)	U (0.0023)	U (0.11)	U (0.24)	
Toluene	10000	100	0.22 (0.073)	0.24 (0.053)	0.0066 (0.00081)	U (0.00088)	0.0011 (0.00098)	1.9 (0.15)	0.083 (0.059)	U (0.054)	U (0.001)	0.0044 (0.00095)	0.001 (0.00047)	U (0.0012)	U (0.055)	0.52 (0.12)	
1,2,4-Trimethylbenzene	4700	300	0.26 (0.14)	1.5 (0.11)	0.0058 (0.0016)	0.0056 (0.0018)	0.037 (0.002)	82 (1.2)	0.1 J (0.12)	0.24 (0.11)	U (0.002)	0.0043 (0.0019)	0.0018 (0.00095)	U (0.0023)	0.45 (0.11)	0.32 (0.24)	
1,3,5-Trimethylbenzene	4700	93	0.076 J (0.14)	0.54 (0.11)	0.0053 (0.0016)	0.00043 J (0.0018)	0.0086 (0.002)	19 (0.29)	0.13 (0.12)	0.12 (0.11)	U (0.002)	0.0013 J (0.0019)	0.00056 J (0.00095)	U (0.0023)	0.085 J (0.11)	0.099 J (0.24)	
Xylenes (total)	7900	1000	0.62 J (0.14)	0.97 J (0.11)	0.0185 J (0.0016)	0.00184 J (0.0018)	0.0069 J (0.002)	31.4 J (0.29)	0.6 J (0.12)	0.49 J (0.11)	0.00186 J (0.002)	0.0087 J (0.0019)	0.00268 J (0.00095)	U (0.0023)	0.518 J (0.11)	1.34 J (0.24)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-P02-a 301-P02	301-P02-b 301-P02	301-P02-b 301-P02	301-P02-c 301-P02	301-P02-d 301-P02	301-Q02-a 301-Q02	301-Q02-a 301-Q02	301-Q02-a 301-Q02	301-Q03-a 301-Q03	301-Q03-d 301-Q03	301-Q04-a 301-Q04	301-R02-d 301-R02	301-R02-d 301-R02	301-R02-d 301-R02
Field Sample ID	Numeric Value	Numeric Value	301-P02-C1-VOC	301-P02-C4-VOC	301-P02-C5-VOC	301-P02-C3-VOC	301-P02-C2-VOC	301-Q02-C1-VOC	301-Q02-C2-VOC	301-Q02-C3-VOC	301-Q03-C1-VOC	301-Q03-C2-VOC	301-Q04-C1-VOC	301-R02-C1-VOC	301-R02-C2-VOC	301-R02-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.2 - 0.3	1.1 - 1.2	1.4 - 1.5	1.2 - 1.4	1.1 - 1.2	0.5 - 0.6	1.1 - 1.2	1.5 - 1.7	1.7 - 1.8	0.9 - 1.1	2.3 - 2.4	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	6/2/2022	6/2/2022	6/2/2022	6/2/2022	6/2/2022	5/19/2022	5/19/2022	5/19/2022	5/18/2022	5/18/2022	6/10/2022	5/19/2022	5/19/2022	5/19/2022
<b>VOCs</b>																
Benzene	280	0.5	0.065 (0.057)	U (0.028)	4.4 (0.033)	U (0.027)	1.5 (0.024)	0.038 (0.0005)	0.81 (0.035)	0.19 (0.0004)	1.3 (0.041)	2.7 (0.22)	U (0.039)	U (0.00054)	U (0.06)	U (0.071)
1,2-Dibromoethane	3.7	0.005	U (0.057)	U (0.028)	U (0.033)	U (0.027)	U (0.024)	U (0.0005)	U (0.035)	U (0.0004)	U (0.041)	U (0.22)	U (0.039)	U (0.00054)	U (0.06)	U (0.071)
1,2-Dichloroethane	85	0.5	U (0.11)	U (0.057)	U (0.066)	U (0.054)	U (0.048)	U (0.001)	U (0.07)	U (0.00081)	U (0.082)	U (0.44)	U (0.078)	U (0.0011)	U (0.12)	U (0.14)
Ethyl Benzene	880	70	0.2 (0.11)	U (0.057)	3.3 (0.066)	0.02 J (0.054)	0.57 (0.048)	0.022 (0.001)	1.1 (0.07)	0.018 (0.00081)	11 (0.082)	0.59 (0.44)	U (0.078)	U (0.0011)	0.037 J (0.12)	U (0.14)
Isopropylbenzene	10000	2500	0.27 (0.11)	0.44 (0.057)	1.6 (0.066)	0.39 (0.054)	5.4 (0.048)	0.042 (0.001)	0.4 (0.07)	0.00086 (0.00081)	4.4 (0.082)	1.2 (0.44)	0.018 J (0.078)	0.00049 J (0.0011)	1.6 (0.12)	1.8 (0.14)
Methyl tert-butyl ether	8500	2	U (0.23)	U (0.11)	U (0.13)	U (0.11)	U (0.096)	0.0011 J (0.002)	0.14 (0.14)	0.026 (0.0016)	0.14 J (0.16)	U (0.87)	U (0.16)	U (0.0022)	U (0.24)	U (0.28)
Toluene	10000	100	0.18 (0.11)	U (0.057)	0.61 (0.066)	U (0.054)	0.11 (0.048)	0.012 (0.001)	0.54 (0.07)	0.23 (0.00081)	0.3 (0.082)	0.24 J (0.44)	U (0.078)	U (0.0011)	U (0.12)	U (0.14)
1,2,4-Trimethylbenzene	4700	300	2.1 (0.23)	U (0.11)	0.8 (0.13)	0.03 J (0.11)	0.25 (0.096)	0.0084 (0.002)	0.23 (0.14)	0.0022 (0.0016)	0.41 (0.16)	3.9 (0.87)	U (0.16)	U (0.0022)	0.11 J (0.24)	U (0.28)
1,3,5-Trimethylbenzene	4700	93	0.1 J (0.23)	0.058 J (0.11)	0.2 (0.13)	0.18 (0.11)	0.071 J (0.096)	0.0028 (0.002)	0.12 J (0.14)	0.00078 J (0.0016)	0.29 (0.16)	3 (0.87)	U (0.16)	U (0.0022)	U (0.24)	U (0.28)
Xylenes (total)	7900	1000	0.76 J (0.23)	0.0665 J (0.11)	2.55 J (0.13)	0.089 J (0.11)	0.858 J (0.096)	0.0162 J (0.002)	1.89 J (0.14)	0.079 J (0.0016)	0.94 J (0.16)	1.82 J (0.87)	U (0.16)	U (0.0022)	0.115 J (0.24)	U (0.28)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-R02-d 301-R02	301-R03-c 301-R03	301-R03-d 301-R03	301-S02-d 301-S02	301-S02-d 301-S02	301-S02-d 301-S02	301-S02-d 301-S02	301-S02-d 301-S02	301-S02-d 301-S02	301-S03-c 301-S03	301-T04-a 301-T04	301-T04-d 301-T04	301-T04-d 301-T04	301-U04-c 301-U04	301-U04-d 301-U04
Field Sample ID	Numeric Value	Numeric Value	301-R02-C4-VOC	301-R03-C2-VOC	301-R03-C1-VOC	301-S02-C1-VOC	301-S02-C2-VOC	301-S02-C3-VOC	301-S02-C4-VOC	301-S02-C5-VOC	301-S03-C1-VOC	301-T04-C3-VOC	301-T04-C1-VOC	301-T04-C2-VOC	301-U04-C2-VOC	301-U04-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		1.5 - 1.7	2.1 - 2.3	2.0 - 2.1	0.2 - 0.3	0.5 - 0.6	0.9 - 1.1	1.4 - 1.5	1.8 - 2.0	2.3 - 2.4	1.5 - 1.7	0.9 - 1.1	1.2 - 1.4	0.2 - 0.4	0.2 - 0.3	
Sample Date	(mg/kg)	(mg/kg)	5/19/2022	5/18/2022	5/18/2022	5/19/2022	5/19/2022	5/19/2022	5/19/2022	5/19/2022	5/17/2022	5/17/2022	5/17/2022	5/17/2022	5/20/2022	5/20/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.11)	87 (0.16)	0.011 (0.00068)	0.0016 (0.00055)	U (0.0012)	U (0.001)	U (0.00057)	U (0.00062)	1 (0.03)	0.0017 (0.00054)	U (0.0005)	U (0.03)	0.0013 (0.00057)	0.0016 (0.00084)	
1,2-Dibromoethane	3.7	0.005	U (0.11)	U (0.16)	U (0.00068)	U (0.00055)	U (0.0012)	U (0.001)	U (0.00057)	U (0.00062)	U (0.03)	U (0.00054)	U (0.0005)	U (0.03)	U (0.00057)	U (0.00084)	
1,2-Dichloroethane	85	0.5	U (0.23)	U (0.31)	U (0.0014)	U (0.0011)	U (0.0025)	U (0.0021)	U (0.0011)	U (0.0012)	U (0.059)	U (0.0011)	U (0.00099)	U (0.061)	U (0.0011)	U (0.0017)	
Ethyl Benzene	880	70	U (0.23)	62 (0.31)	0.00051 J (0.0014)	0.0003 J (0.0011)	0.00075 J (0.0025)	0.00084 J (0.0021)	U (0.0011)	U (0.0012)	1.5 (0.059)	U (0.0011)	U (0.00099)	U (0.061)	U (0.0011)	U (0.0017)	
Isopropylbenzene	10000	2500	2.1 (0.23)	4.7 (0.31)	0.0012 J (0.0014)	0.00028 J (0.0011)	U (0.0025)	0.00024 J (0.0021)	0.00045 J (0.0011)	0.00053 J (0.0012)	1.1 (0.059)	0.0043 (0.0011)	0.00099 (0.00099)	1.6 (0.061)	0.00045 J (0.0011)	U (0.0017)	
Methyl tert-butyl ether	8500	2	U (0.45)	0.33 J (0.62)	U (0.0027)	U (0.0022)	U (0.005)	U (0.0041)	U (0.0023)	U (0.0025)	U (0.12)	0.00084 J (0.0022)	U (0.002)	U (0.12)	U (0.0023)	U (0.0034)	
Toluene	10000	100	U (0.23)	200 (6.1)	0.0015 (0.0014)	0.00061 J (0.0011)	U (0.0025)	U (0.0021)	U (0.0011)	U (0.0012)	0.37 (0.059)	U (0.0011)	U (0.00099)	U (0.061)	U (0.0011)	U (0.0017)	
1,2,4-Trimethylbenzene	4700	300	U (0.45)	100 (12)	U (0.0027)	U (0.0022)	0.0018 J (0.005)	0.009 (0.0041)	U (0.0023)	U (0.0025)	1.7 (0.12)	U (0.0022)	0.00048 J (0.002)	U (0.12)	U (0.0023)	U (0.0034)	
1,3,5-Trimethylbenzene	4700	93	U (0.45)	34 (0.62)	U (0.0027)	U (0.0022)	0.00076 J (0.005)	0.0049 (0.0041)	U (0.0023)	U (0.0025)	3.5 (0.12)	U (0.0022)	U (0.002)	U (0.12)	0.00026 J (0.0023)	U (0.0034)	
Xylenes (total)	7900	1000	U (0.45)	287 J (12)	0.00146 J (0.0027)	0.00123 J (0.0022)	0.0038 J (0.005)	0.00422 J (0.0041)	U (0.0023)	U (0.0025)	2.26 J (0.12)	0.00188 J (0.0022)	U (0.002)	U (0.12)	U (0.0023)	U (0.0034)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-U04-d 301-U04	301-U04-d 301-U04	301-V04-d 301-V04	301-V04-d 301-V04	301-V04-d 301-V04	301-V04-d 301-V04	301-V04-d 301-V04	301-W03-d 301-W03	301-W03-d 301-W03	301-W03-d 301-W03	301-W04-c 301-W04	301-X03-c 301-X03	301-X03-c 301-X03	301-X03-c 301-X03	301-X03-c 301-X03
Field Sample ID	Numeric Value	Numeric Value	301-U04-C3-VOC	301-U04-C4-VOC	301-V04-C1-VOC	301-V04-C2-VOC	301-V04-C3-VOC	301-V04-C4-VOC	301-W03-C1-VOC	301-W03-C2-VOC	301-W03-C3-VOC	301-W04-C1-VOC	301-X03-C1-VOC	301-X03-C2-VOC	301-X03-C3-VOC	301-X03-C4-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.9 - 1.1	1.4 - 1.5	0.2 - 0.3	0.5 - 0.6	0.9 - 1.1	1.4 - 1.5	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2	0.9 - 1.1	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	
Sample Date	(mg/kg)	(mg/kg)	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/23/2022	5/23/2022	5/23/2022	6/10/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.11 (0.00042)	1.6 (0.029)	U (0.00085)	U (0.039)	U (0.035)	U (0.028)	0.021 (0.00063)	0.0084 (0.00054)	0.18 (0.032)	0.00052 J (0.00063)	U (0.00068)	U (0.00049)	U (0.00055)	U (0.00056)	
1,2-Dibromoethane	3.7	0.005	U (0.00042)	U (0.029)	U (0.00085)	U (0.039)	U (0.035)	U (0.028)	U (0.00063)	U (0.00054)	U (0.032)	U (0.00063)	U (0.00068)	U (0.00049)	U (0.00055)	U (0.00056)	
1,2-Dichloroethane	85	0.5	U (0.00084)	U (0.058)	U (0.0017)	U (0.079)	U (0.071)	U (0.055)	U (0.0013)	U (0.0011)	U (0.065)	U (0.0013)	U (0.0014)	U (0.00098)	U (0.0011)	U (0.0011)	
Ethyl Benzene	880	70	0.00061 J (0.00084)	0.14 (0.058)	U (0.0017)	0.013 J (0.079)	U (0.071)	0.0085 J (0.055)	0.1 (0.0013)	0.002 (0.0011)	0.066 (0.065)	U (0.0013)	0.61 (0.054)	U (0.00098)	U (0.0011)	U (0.0011)	
Isopropylbenzene	10000	2500	0.012 (0.00084)	5 (0.058)	U (0.0017)	0.65 (0.079)	1.8 (0.071)	3 (0.055)	0.055 (0.0013)	0.026 (0.0011)	1.7 (0.065)	U (0.0013)	0.024 J (0.054)	U (0.00098)	U (0.0011)	U (0.0011)	
Methyl tert-butyl ether	8500	2	0.00034 J (0.0017)	U (0.12)	U (0.0034)	U (0.16)	U (0.14)	U (0.11)	U (0.0025)	U (0.0022)	U (0.13)	U (0.0025)	U (0.0027)	U (0.002)	U (0.0022)	U (0.0023)	
Toluene	10000	100	0.0005 J (0.00084)	0.046 J (0.058)	U (0.0017)	0.08 (0.079)	U (0.071)	0.035 J (0.055)	0.015 (0.0013)	0.0028 (0.0011)	0.099 (0.065)	U (0.0013)	0.039 J (0.054)	U (0.00098)	U (0.0011)	U (0.0011)	
1,2,4-Trimethylbenzene	4700	300	U (0.0017)	U (0.12)	U (0.0034)	0.035 J (0.16)	U (0.14)	U (0.11)	0.014 (0.0025)	0.0019 J (0.0022)	U (0.13)	U (0.0025)	U (0.0027)	U (0.002)	U (0.0022)	U (0.0023)	
1,3,5-Trimethylbenzene	4700	93	0.00025 J (0.0017)	0.12 (0.12)	U (0.0034)	U (0.16)	U (0.14)	U (0.11)	0.0062 (0.0025)	0.00076 J (0.0022)	U (0.13)	U (0.0025)	U (0.0027)	U (0.002)	U (0.0022)	U (0.0023)	
Xylenes (total)	7900	1000	0.00154 J (0.0017)	0.307 J (0.12)	U (0.0034)	0.0885 J (0.16)	U (0.14)	U (0.11)	0.054 J (0.0025)	0.017 J (0.0022)	0.168 J (0.13)	U (0.0025)	3.7 J (0.11)	U (0.002)	U (0.0022)	U (0.0023)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-Y03-a 301-Y03	301-Y03-a 301-Y03	301-Y03-a 301-Y03	301-Y04-b 301-Y04	301-Y04-b 301-Y04	301-Y04-b 301-Y04	301-Y04-c 301-Y04	301-Y05-b 301-Y05	301-Y05-c 301-Y05	301-Z04-b 301-Z04	301-Z04-b 301-Z04	301-Z04-d 301-Z04	301-Z04-d 301-Z04	301-Z04-d 301-Z04
Field Sample ID	Numeric Value	Numeric Value	301-Y03-C1-VOC	301-Y03-C2-VOC	301-Y03-C3-VOC	301-Y04-C2-VOC	301-Y04-C3-VOC	301-Y04-C4-VOC	301-Y04-C1-VOC	301-Y05-C1-VOC	301-Y05-C2-VOC	301-Z04-C4-VOC	301-Z04-C5-VOC	301-Z04-C1-VOC	301-Z04-C2-VOC	301-Z04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		1.2 - 1.4	2.4 - 2.6	4.0 - 4.1	0.8 - 0.9	2.0 - 2.1	2.7 - 2.9	0.2 - 0.3	0.5 - 0.6	0.6 - 0.8	1.7 - 1.8	2.1 - 2.3	0.8 - 0.9	0.9 - 1.1	2.0 - 2.1
Sample Date	(mg/kg)	(mg/kg)	5/23/2022	5/23/2022	5/23/2022	5/25/2022	5/25/2022	5/25/2022	5/25/2022	6/9/2022	6/9/2022	5/26/2022	5/26/2022	5/26/2022	5/26/2022	5/26/2022
<b>VOCs</b>																
Benzene	280	0.5	0.00032 J (0.00043)	U (0.056)	U (0.033)	U (0.0006)	U (0.00043)	0.00024 J (0.00058)	U (0.00054)	U (0.00058)	U (0.00059)	U (0.03)	U (0.028)	U (0.059)	U (0.029)	U (0.029)
1,2-Dibromoethane	3.7	0.005	U (0.00043)	U (0.056)	U (0.033)	U (0.0006)	U (0.00043)	U (0.00058)	U (0.00054)	U (0.00058)	U (0.00059)	U (0.03)	U (0.028)	U (0.059)	U (0.029)	U (0.029)
1,2-Dichloroethane	85	0.5	U (0.00086)	U (0.11)	U (0.066)	U (0.0012)	U (0.00086)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.059)	U (0.057)	U (0.12)	U (0.058)	U (0.058)
Ethyl Benzene	880	70	U (0.00086)	U (0.11)	0.35 (0.066)	U (0.0012)	0.022 (0.00086)	0.0014 (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.059)	U (0.057)	U (0.12)	U (0.058)	U (0.058)
Isopropylbenzene	10000	2500	0.0068 (0.00086)	1.2 (0.11)	1.7 (0.066)	0.00026 J (0.0012)	0.0016 (0.00086)	0.00036 J (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	2.6 (0.059)	8.1 (0.057)	1.4 (0.12)	1 (0.058)	0.57 (0.058)
Methyl tert-butyl ether	8500	2	0.00033 J (0.0017)	U (0.22)	U (0.13)	U (0.0024)	U (0.0017)	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0024)	U (0.12)	U (0.11)	U (0.24)	U (0.12)	U (0.12)
Toluene	10000	100	U (0.00086)	0.085 J (0.11)	0.068 (0.066)	U (0.0012)	U (0.00086)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.059)	U (0.057)	U (0.12)	U (0.058)	U (0.058)
1,2,4-Trimethylbenzene	4700	300	U (0.0017)	U (0.22)	12 (0.13)	U (0.0024)	0.072 (0.0017)	0.0016 J (0.0023)	U (0.0022)	U (0.0023)	0.00053 J (0.0024)	U (0.12)	0.021 J (0.11)	0.13 J (0.24)	U (0.12)	U (0.12)
1,3,5-Trimethylbenzene	4700	93	0.00024 J (0.0017)	U (0.22)	3.1 (0.13)	U (0.0024)	0.0043 (0.0017)	0.0004 J (0.0023)	U (0.0022)	U (0.0023)	U (0.0024)	U (0.12)	U (0.11)	U (0.24)	U (0.12)	U (0.12)
Xylenes (total)	7900	1000	0.00115 J (0.0017)	U (0.22)	0.625 J (0.13)	U (0.0024)	0.061 J (0.0017)	0.0038 J (0.0023)	U (0.0022)	U (0.0023)	U (0.0024)	0.091 J (0.12)	0.165 J (0.11)	U (0.24)	0.063 J (0.12)	0.084 J (0.12)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-Z05-d 301-Z05	301-Z05-d 301-Z05	301-Z05-d 301-Z05	301-Z06-c 301-Z06	301-Z06-c 301-Z06	301-Z06-c 301-Z06	301-Z06-c 301-Z06	301-Z06-c 301-Z06	301-Z06-c 301-Z06	302-AD08-a 302-AD08	302-AD08-a 302-AD08	302-AD08-a 302-AD08	302-AD08-a 302-AD08	302-AD09-d 302-AD09	302-AD09-d 302-AD09
Field Sample ID	Numeric Value (0-2 ft bgs)	Numeric Value (mg/kg)	301-Z05-C1-VOC 1.1 - 1.2 5/24/2022	301-Z05-C2-VOC 2.7 - 2.9 5/24/2022	301-Z05-C3-VOC 4.0 - 4.1 5/24/2022	301-Z06-C1-VOC 0.6 - 0.8 5/24/2022	301-Z06-C2-VOC 1.2 - 1.4 5/24/2022	301-Z06-C3-VOC 1.8 - 2.0 5/24/2022	301-Z06-C4-VOC 3.0 - 3.2 5/24/2022	301-Z06-C5-VOC 3.4 - 3.5 5/24/2022	302-AD08-C1-VOC 0.0 - 0.2 6/2/2022	302-AD08-C2-VOC 1.4 - 1.5 6/2/2022	302-AD08-C3-VOC 2.4 - 2.6 6/2/2022	302-AD08-C4-VOC 3.7 - 3.8 6/2/2022	302-AD09-C1-VOC 1.1 - 1.2 6/1/2022	302-AD09-C2-VOC 2.3 - 2.4 6/1/2022	
Collection Depth (ft bgs)	Sample Date																
<b>VOCs</b>																	
Benzene	280	0.5	U (0.028)	U (0.041)	U (0.033)	U (0.029)	U (0.12)	U (0.15)	U (0.053)	U (0.033)	U (0.00056)	U (0.00054)	U (0.00048)	U (0.00061)	0.0038 (0.00051)	U (0.00052)	
1,2-Dibromoethane	3.7	0.005	U (0.028)	U (0.041)	U (0.033)	U (0.029)	U (0.12)	U (0.15)	U (0.053)	U (0.033)	U (0.00056)	U (0.00054)	U (0.00048)	U (0.00061)	U (0.00051)	U (0.00052)	
1,2-Dichloroethane	85	0.5	U (0.056)	U (0.082)	U (0.066)	U (0.059)	U (0.23)	U (0.29)	U (0.11)	U (0.065)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0012)	U (0.001)	U (0.001)	
Ethyl Benzene	880	70	0.012 J (0.056)	U (0.082)	U (0.066)	0.43 (0.059)	0.088 J (0.23)	U (0.29)	0.022 J (0.11)	0.051 J (0.065)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0012)	0.00051 J (0.001)	U (0.001)	
Isopropylbenzene	10000	2500	2.8 (0.056)	4.1 (0.082)	0.34 (0.066)	1.7 (0.059)	14 (0.23)	16 (0.29)	5.6 (0.11)	5.7 (0.065)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0012)	U (0.001)	U (0.001)	
Methyl tert-butyl ether	8500	2	U (0.11)	U (0.16)	U (0.13)	U (0.12)	U (0.46)	U (0.59)	U (0.21)	U (0.13)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0024)	U (0.002)	U (0.0021)	
Toluene	10000	100	0.048 J (0.056)	0.072 J (0.082)	0.058 J (0.066)	0.15 (0.059)	0.21 J (0.23)	0.22 J (0.29)	0.13 (0.11)	0.1 (0.065)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0012)	U (0.001)	U (0.001)	
1,2,4-Trimethylbenzene	4700	300	U (0.11)	U (0.16)	U (0.13)	0.077 J (0.12)	U (0.46)	U (0.59)	U (0.21)	U (0.13)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0024)	0.00068 J (0.002)	U (0.0021)	
1,3,5-Trimethylbenzene	4700	93	U (0.11)	U (0.16)	U (0.13)	0.028 J (0.12)	U (0.46)	U (0.59)	U (0.21)	U (0.13)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0024)	0.00033 J (0.002)	U (0.0021)	
Xylenes (total)	7900	1000	U (0.11)	0.137 J (0.16)	U (0.13)	0.46 J (0.12)	U (0.46)	U (0.59)	U (0.21)	0.102 J (0.13)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0024)	0.00199 J (0.002)	U (0.0021)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AD09-d 302-AD09	302-AD09-d 302-AD09	302-AD09-d 302-AD09	302-AD10-a 302-AD10	302-AD10-a 302-AD10	302-AD10-a 302-AD10	302-AD10-a 302-AD10	302-AD11-c 302-AD11	302-AD11-c 302-AD11	302-AD11-c 302-AD11	302-AD11-c 302-AD11	302-AD12-d 302-AD12	302-AD12-d 302-AD12	302-AD12-d 302-AD12
Field Sample ID	Numeric Value	Numeric Value	302-AD09-C3-VOC	302-AD09-C4-VOC	302-AD09-C5-VOC	302-AD10-C1-VOC	302-AD10-C2-VOC	302-AD10-C3-VOC	302-AD10-C4-VOC	302-AD11-C1-VOC	302-AD11-C2-VOC	302-AD11-C3-VOC	302-AD11-C4-VOC	302-AD12-C1-VOC	302-AD12-C2-VOC	302-AD12-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	3.7 - 3.8	4.6 - 4.7	5.8 - 5.9	0.2 - 0.3	0.3 - 0.5	0.6 - 0.8	0.9 - 1.1	0.6 - 0.8	1.4 - 1.5	2.6 - 2.7	3.7 - 3.8	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	6/1/2022	6/1/2022	6/1/2022	6/3/2022	6/3/2022	6/3/2022	6/3/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022
<b>VOCs</b>																
Benzene	280	0.5	0.00036 J (0.00074)	0.00081 (0.00059)	U (0.00052)	0.077 (0.034)	0.13 (0.039)	0.049 (0.037)	0.00081 (0.0005)	U (0.00044)	U (0.00048)	U (0.00048)	U (0.0005)	U (0.00053)	U (0.00058)	U (0.0005)
1,2-Dibromoethane	3.7	0.005	U (0.00074)	U (0.00059)	U (0.00052)	U (0.034)	U (0.039)	U (0.037)	U (0.0005)	U (0.00044)	U (0.00048)	U (0.00048)	U (0.0005)	U (0.00053)	U (0.00058)	U (0.0005)
1,2-Dichloroethane	85	0.5	U (0.0015)	U (0.0012)	U (0.001)	U (0.069)	U (0.078)	U (0.074)	U (0.001)	U (0.00087)	U (0.00095)	U (0.00096)	U (0.001)	U (0.001)	U (0.0012)	U (0.001)
Ethyl Benzene	880	70	U (0.0015)	U (0.0012)	U (0.001)	0.088 (0.069)	0.24 (0.078)	0.11 (0.074)	0.00067 J (0.001)	U (0.00087)	U (0.00095)	U (0.00096)	U (0.001)	U (0.001)	U (0.0012)	U (0.001)
Isopropylbenzene	10000	2500	U (0.0015)	U (0.0012)	U (0.001)	0.029 J (0.069)	0.22 (0.078)	0.65 (0.074)	0.0013 (0.001)	U (0.00087)	U (0.00095)	U (0.00096)	U (0.001)	U (0.001)	U (0.0012)	U (0.001)
Methyl tert-butyl ether	8500	2	U (0.0029)	U (0.0023)	U (0.0021)	U (0.14)	U (0.16)	U (0.15)	U (0.002)	U (0.0017)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0023)	U (0.002)
Toluene	10000	100	U (0.0015)	U (0.0012)	U (0.001)	0.064 J (0.069)	0.13 (0.078)	0.12 (0.074)	U (0.001)	U (0.00087)	U (0.00095)	U (0.00096)	U (0.001)	U (0.001)	U (0.0012)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	U (0.0029)	U (0.0023)	U (0.0021)	0.084 J (0.14)	0.11 J (0.16)	0.34 (0.15)	0.01 (0.002)	U (0.0017)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0023)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.0029)	U (0.0023)	U (0.0021)	0.023 J (0.14)	0.03 J (0.16)	0.097 J (0.15)	0.011 (0.002)	U (0.0017)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0023)	U (0.002)
Xylenes (total)	7900	1000	U (0.0029)	U (0.0023)	U (0.0021)	0.199 J (0.14)	0.316 J (0.16)	0.54 J (0.15)	0.0042 J (0.002)	U (0.0017)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0023)	U (0.002)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AD12-d 302-AD12	302-AD12-d 302-AD12	302-AD13-b 302-AD13	302-AD13-b 302-AD13	302-AD13-b 302-AD13	302-AD13-b 302-AD13	302-AE09-d 302-AE09	302-AE09-d 302-AE09	302-AE09-d 302-AE09	302-AE09-d 302-AE09	302-AE10-b 302-AE10	302-AE10-b 302-AE10	302-AE10-b 302-AE10	302-AE10-b 302-AE10	302-AE10-b 302-AE10	302-AF06-a 302-AF06
Field Sample ID	Numeric Value	Numeric Value	302-AD12-C4-VOC	302-AD12-C5-VOC	302-AD13-C1-VOC	302-AD13-C2-VOC	302-AD13-C3-VOC	302-AD13-C3-VOC	302-AE09-C1-VOC	302-AE09-C2-VOC	302-AE09-C3-VOC	302-AE09-C4-VOC	302-AE10-C1-VOC	302-AE10-C2-VOC	302-AE10-C3-VOC	302-AE10-C4-VOC	302-AE10-C4-VOC	302-AF06-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.5 - 1.7	2.1 - 2.3	0.3 - 0.5	0.6 - 0.8	1.2 - 1.4	1.2 - 1.4	0.0 - 0.2	0.3 - 0.5	0.6 - 0.8	0.9 - 1.1	0.3 - 0.5	0.9 - 1.1	1.7 - 1.8	2.4 - 2.6	2.4 - 2.6	0.3 - 0.5
Sample Date	(mg/kg)	(mg/kg)	6/8/2022	6/8/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/14/2022
<b>VOCs</b>																		
Benzene	280	0.5	U (0.0006)	U (0.00046)	U (0.00053)	U (0.00046)	U (0.00049)	U (0.00051)	U (0.00047)	U (0.00043)	U (0.00052)	U (0.00071)	U (0.00054)	U (0.00062)	0.00021 J (0.00057)	0.00029 J (0.00063)	0.00029 J (0.00063)	0.00029 J (0.00063)
1,2-Dibromoethane	3.7	0.005	U (0.0006)	U (0.00046)	U (0.00053)	U (0.00046)	U (0.00049)	U (0.00051)	U (0.00047)	U (0.00043)	U (0.00052)	U (0.00071)	U (0.00054)	U (0.00062)	U (0.00057)	U (0.00063)	U (0.00063)	U (0.00063)
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.00092)	U (0.0011)	U (0.00092)	U (0.00098)	U (0.001)	U (0.00094)	U (0.00086)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
Ethyl Benzene	880	70	U (0.0012)	U (0.00092)	U (0.0011)	U (0.00092)	U (0.00098)	U (0.001)	U (0.00094)	U (0.00086)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
Isopropylbenzene	10000	2500	U (0.0012)	U (0.00092)	U (0.0011)	U (0.00092)	U (0.00098)	U (0.001)	U (0.00094)	U (0.00086)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0011)	0.00029 J (0.0012)	0.00029 J (0.0012)	0.00029 J (0.0012)
Methyl tert-butyl ether	8500	2	U (0.0024)	U (0.0018)	U (0.0021)	U (0.0018)	U (0.002)	U (0.002)	U (0.0019)	U (0.0017)	U (0.0021)	U (0.0028)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0025)	U (0.0025)	U (0.0025)
Toluene	10000	100	U (0.0012)	U (0.00092)	U (0.0011)	U (0.00092)	U (0.00098)	U (0.001)	U (0.00094)	U (0.00086)	U (0.001)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	U (0.0024)	U (0.0018)	U (0.0021)	U (0.0018)	U (0.002)	U (0.002)	U (0.0019)	U (0.0017)	U (0.0021)	U (0.0028)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0025)	U (0.0025)	U (0.0025)
1,3,5-Trimethylbenzene	4700	93	U (0.0024)	U (0.0018)	U (0.0021)	U (0.0018)	U (0.002)	U (0.002)	U (0.0019)	U (0.0017)	U (0.0021)	U (0.0028)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0025)	U (0.0025)	U (0.0025)
Xylenes (total)	7900	1000	U (0.0024)	U (0.0018)	U (0.0021)	U (0.0018)	U (0.002)	U (0.002)	U (0.0019)	U (0.0017)	U (0.0021)	U (0.0028)	U (0.0022)	U (0.0025)	U (0.0023)	U (0.0025)	U (0.0025)	U (0.0025)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AF06-a 302-AF06	302-AF06-a 302-AF06	302-AF06-a 302-AF06	302-AF06-a 302-AF06	302-AG07-d 302-AG07	302-AG07-d 302-AG07	302-AG07-d 302-AG07	302-AJ09-c 302-AJ09	302-AJ09-d 302-AJ09	302-AJ09-d 302-AJ09	302-AJ09-d 302-AJ09	302-AJ09-d 302-AJ09	302-AJ09-d 302-AJ09	302-AK06-c 302-AK06	302-AK06-c 302-AK06
Field Sample ID	Numeric Value	Numeric Value	302-AF06-C2-VOC	302-AF06-C3-VOC	302-AF06-C4-VOC	302-AF06-C5-VOC	302-AG07-C1-VOC	302-AG07-C2-VOC	302-AG07-C3-VOC	302-AJ09-C5-VOC	302-AJ09-C1-VOC	302-AJ09-C2-VOC	302-AJ09-C3-VOC	302-AJ09-C4-VOC	302-AK06-C1-VOC	302-AK06-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		0.9 - 1.1	2.0 - 2.1	2.7 - 2.9	3.7 - 3.8	0.0 - 0.2	0.3 - 0.5	0.5 - 0.6	3.4 - 3.5	0.2 - 0.3	0.6 - 0.8	0.9 - 1.1	1.5 - 1.7	0.9 - 1.1	3.5 - 3.7	
Sample Date	(mg/kg)	(mg/kg)	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/7/2022	6/7/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00052)	0.2 (0.027)	U (0.12)	U (0.14)	0.0016 (0.00061)	0.0037 (0.00064)	0.00026 J (0.00055)	0.014 J (0.028)	U (0.00054)	U (0.056)	U (0.028)	U (0.029)	0.00024 J (0.00046)	0.00034 J (0.00042)	
1,2-Dibromoethane	3.7	0.005	U (0.00052)	U (0.027)	U (0.12)	U (0.14)	U (0.00061)	U (0.00064)	U (0.00055)	U (0.028)	U (0.00054)	U (0.056)	U (0.028)	U (0.029)	U (0.00046)	U (0.00042)	
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.054)	U (0.25)	U (0.27)	U (0.0012)	U (0.0013)	U (0.0011)	U (0.055)	U (0.0011)	U (0.11)	U (0.057)	U (0.058)	U (0.00093)	U (0.00084)	
Ethyl Benzene	880	70	U (0.001)	0.066 (0.054)	U (0.25)	U (0.27)	U (0.0012)	U (0.0013)	U (0.0011)	U (0.055)	U (0.0011)	0.043 J (0.11)	0.016 J (0.057)	U (0.058)	U (0.00093)	0.0065 (0.00084)	
Isopropylbenzene	10000	2500	0.00013 J (0.001)	0.044 J (0.054)	2.6 (0.25)	2.6 (0.27)	U (0.0012)	U (0.0013)	U (0.0011)	0.29 (0.055)	U (0.0011)	0.54 (0.11)	0.25 (0.057)	0.11 (0.058)	U (0.00093)	0.0068 (0.00084)	
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.11)	U (0.5)	U (0.55)	U (0.0024)	U (0.0025)	U (0.0022)	U (0.11)	U (0.0022)	U (0.22)	U (0.11)	U (0.12)	U (0.0018)	U (0.0017)	
Toluene	10000	100	U (0.001)	0.057 (0.054)	U (0.25)	U (0.27)	U (0.0012)	U (0.0013)	U (0.0011)	U (0.055)	U (0.0011)	U (0.11)	U (0.057)	U (0.058)	U (0.00093)	0.00074 J (0.00084)	
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	0.063 J (0.11)	U (0.5)	U (0.55)	U (0.0024)	U (0.0025)	U (0.0022)	1.3 (0.11)	U (0.0022)	0.96 (0.22)	0.17 (0.11)	0.068 J (0.12)	U (0.0018)	0.0073 (0.0017)	
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	0.016 J (0.11)	U (0.5)	U (0.55)	U (0.0024)	U (0.0025)	U (0.0022)	U (0.11)	U (0.0022)	0.12 J (0.22)	0.026 J (0.11)	U (0.12)	U (0.0018)	0.0011 J (0.0017)	
Xylenes (total)	7900	1000	U (0.0021)	0.288 J (0.11)	U (0.5)	U (0.55)	U (0.0024)	U (0.0025)	U (0.0022)	U (0.11)	U (0.0022)	0.165 J (0.22)	0.075 J (0.11)	U (0.12)	U (0.0018)	0.014 J (0.0017)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AK06-c 302-AK06 302-AK06-C4-VOC 4.9 - 5.0 6/7/2022	302-AK06-d 302-AK06 302-AK06-C2-VOC 2.1 - 2.3 6/7/2022	302-AL06-b 302-AL06 302-AL06-C1-VOC 0.3 - 0.5 6/7/2022	302-AL06-b 302-AL06 302-AL06-C3-VOC 1.2 - 1.4 6/7/2022	302-AL06-b 302-AL06 302-AL06-C4-VOC 1.8 - 2.0 6/7/2022	302-AL06-c 302-AL06 302-AL06-C2-VOC 0.9 - 1.1 6/7/2022	302-AL06-d 302-AL06 302-AL06-C5-VOC 2.0 - 2.1 6/7/2022	302-AN02-c 302-AN02 302-AN02-C1-VOC 0.2 - 0.3 6/8/2022	302-AN02-c 302-AN02 302-AN02-C2-VOC 0.6 - 0.8 6/8/2022	302-AN02-c 302-AN02 302-AN02-C3-VOC 1.2 - 1.4 6/8/2022	302-AN02-d 302-AN02 302-AN02-C4-VOC 2.0 - 2.1 6/8/2022	302-AN02-d 302-AN02 302-AN02-C5-VOC 2.3 - 2.4 6/8/2022	302-AO03-a 302-AO03 302-AO03-C1-VOC 0.0 - 0.2 6/8/2022	302-AO03-c 302-AO03 302-AO03-C2-VOC 1.5 - 1.7 6/8/2022
<b>VOCs</b>																
Benzene	280	0.5	0.0011 (0.00047)	0.00026 J (0.00041)	0.00032 J (0.00054)	0.0013 (0.00058)	0.001 (0.00045)	0.0011 (0.0005)	U (0.00054)	0.00021 J (0.00049)	U (0.29)	0.00024 J (0.00042)	U (0.029)	U (0.0005)	U (0.00048)	0.0029 (0.00046)
1,2-Dibromoethane	3.7	0.005	U (0.00047)	U (0.00041)	U (0.00054)	U (0.00058)	U (0.00045)	U (0.0005)	U (0.00054)	U (0.00049)	U (0.29)	U (0.00042)	U (0.029)	U (0.0005)	U (0.00048)	U (0.00046)
1,2-Dichloroethane	85	0.5	U (0.00094)	U (0.00082)	U (0.0011)	U (0.0012)	U (0.0009)	U (0.001)	U (0.0011)	U (0.00099)	U (0.58)	U (0.00085)	U (0.057)	U (0.00099)	U (0.00096)	U (0.00091)
Ethyl Benzene	880	70	0.0003 J (0.00094)	0.0012 (0.00082)	0.00015 J (0.0011)	0.00016 J (0.0012)	U (0.0009)	0.00036 J (0.001)	U (0.0011)	U (0.00099)	0.62 (0.58)	0.002 (0.00085)	U (0.057)	U (0.00099)	0.00023 J (0.00096)	U (0.00091)
Isopropylbenzene	10000	2500	0.00025 J (0.00094)	0.00077 J (0.00082)	0.00022 J (0.0011)	0.00013 J (0.0012)	0.00014 J (0.0009)	0.00045 J (0.001)	0.0005 J (0.0011)	0.00069 J (0.00099)	1.3 (0.58)	0.0021 (0.00085)	0.014 J (0.057)	0.00011 J (0.00099)	0.0003 J (0.00096)	0.00016 J (0.00091)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0016)	U (0.0021)	U (0.0023)	U (0.0018)	U (0.002)	U (0.0022)	U (0.002)	U (1.2)	0.00017 J (0.0017)	U (0.11)	U (0.002)	U (0.0019)	U (0.0018)
Toluene	10000	100	0.00086 J (0.00094)	0.00068 J (0.00082)	U (0.0011)	U (0.0012)	U (0.0009)	0.00092 J (0.001)	U (0.0011)	U (0.00099)	U (0.58)	U (0.00085)	U (0.057)	U (0.00099)	U (0.00096)	U (0.00091)
1,2,4-Trimethylbenzene	4700	300	0.0019 (0.0019)	0.004 (0.0016)	U (0.0021)	0.00049 J (0.0023)	U (0.0018)	0.00037 J (0.002)	U (0.0022)	U (0.002)	28 (1.2)	0.0069 (0.0017)	U (0.11)	U (0.002)	0.0019 (0.0019)	U (0.0018)
1,3,5-Trimethylbenzene	4700	93	0.00096 J (0.0019)	0.0059 (0.0016)	U (0.0021)	0.00024 J (0.0023)	U (0.0018)	U (0.002)	U (0.0022)	U (0.002)	14 (1.2)	0.0054 (0.0017)	U (0.11)	U (0.002)	0.0021 (0.0019)	0.00026 J (0.0018)
Xylenes (total)	7900	1000	0.00268 J (0.0019)	0.0043 J (0.0016)	U (0.0021)	U (0.0023)	U (0.0018)	0.00128 J (0.002)	U (0.0022)	U (0.002)	1.49 J (1.2)	0.001415 J (0.0017)	U (0.11)	U (0.002)	0.00106 J (0.0019)	U (0.0018)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AO03-c 302-AO03	302-AO03-d 302-AO03	302-AQ02-b 302-AQ02	302-AQ02-b 302-AQ02	302-AQ02-c 302-AQ02	302-AQ02-c 302-AQ02	302-AQ02-c 302-AQ02	302-AQ02-c 302-AQ02	302-AR02-b 302-AR02	302-AR02-b 302-AR02	302-AR02-b 302-AR02	302-AR02-b 302-AR02	302-AS03-d 302-AS03	302-AS03-d 302-AS03	302-AS03-d 302-AS03
Field Sample ID	Numeric Value	Numeric Value	302-AO03-C3-VOC	302-AO03-C4-VOC	302-AQ02-C1-VOC	302-AQ02-C5-VOC	302-AQ02-C2-VOC	302-AQ02-C3-VOC	302-AQ02-C4-VOC	302-AQ02-C1-VOC	302-AR02-C2-VOC	302-AR02-C3-VOC	302-AR02-C4-VOC	302-AR02-C1-VOC	302-AS03-C1-VOC	302-AS03-C2-VOC	302-AS03-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.9 - 3.0	4.4 - 4.6	0.2 - 0.3	1.7 - 1.8	1.2 - 1.4	2.4 - 2.6	3.7 - 3.8	0.5 - 0.6	0.8 - 0.9	1.4 - 1.5	2.1 - 2.3	0.6 - 0.8	0.9 - 1.1	1.8 - 2.0	
Sample Date	(mg/kg)	(mg/kg)	6/8/2022	6/8/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	
<b>VOCs</b>																	
Benzene	280	0.5	0.06 (0.028)	U (0.00046)	U (0.00059)	U (0.034)	U (0.00054)	0.013 J (0.03)	0.00099 (0.00048)	U (0.00071)	0.085 (0.033)	0.12 (0.077)	0.095 (0.064)	U (0.00096)	U (0.00055)	U (0.03)	
1,2-Dibromoethane	3.7	0.005	U (0.028)	U (0.00046)	U (0.00059)	U (0.034)	U (0.00054)	U (0.03)	U (0.00048)	U (0.00071)	U (0.033)	U (0.077)	U (0.064)	U (0.00096)	U (0.00055)	U (0.03)	
1,2-Dichloroethane	85	0.5	U (0.057)	U (0.00092)	U (0.0012)	U (0.068)	U (0.0011)	U (0.06)	U (0.00096)	U (0.0014)	U (0.067)	U (0.15)	U (0.13)	U (0.0019)	U (0.0011)	U (0.06)	
Ethyl Benzene	880	70	3.2 (0.057)	U (0.00092)	U (0.0012)	0.14 (0.068)	U (0.0011)	0.086 (0.06)	0.002 (0.00096)	0.00032 J (0.0014)	0.14 (0.067)	0.16 (0.15)	0.93 (0.13)	U (0.0019)	U (0.0011)	0.012 J (0.06)	
Isopropylbenzene	10000	2500	1.9 (0.057)	U (0.00092)	U (0.0012)	0.33 (0.068)	0.00019 J (0.0011)	0.14 (0.06)	0.066 (0.00096)	0.0017 (0.0014)	1.4 (0.067)	8.3 (0.15)	6.6 (0.13)	U (0.0019)	0.00016 J (0.0011)	0.095 (0.06)	
Methyl tert-butyl ether	8500	2	U (0.11)	U (0.0018)	0.00029 J (0.0024)	U (0.14)	0.00048 J (0.0022)	U (0.12)	0.00025 J (0.0019)	U (0.0028)	0.013 J (0.13)	U (0.31)	0.031 J (0.25)	U (0.0038)	U (0.0022)	U (0.12)	
Toluene	10000	100	0.068 (0.057)	U (0.00092)	U (0.0012)	U (0.068)	U (0.0011)	U (0.06)	0.0018 (0.00096)	U (0.0014)	0.041 J (0.067)	0.15 (0.15)	0.1 J (0.13)	U (0.0019)	U (0.0011)	U (0.06)	
1,2,4-Trimethylbenzene	4700	300	17 (0.11)	U (0.0018)	U (0.0024)	4.8 (0.14)	U (0.0022)	0.62 (0.12)	0.0078 (0.0019)	0.002 J (0.0028)	4.5 (0.13)	0.27 J (0.31)	9.9 (0.25)	U (0.0038)	U (0.0022)	0.48 (0.12)	
1,3,5-Trimethylbenzene	4700	93	6.7 (0.11)	U (0.0018)	U (0.0024)	2.4 (0.14)	U (0.0022)	0.68 (0.12)	0.00033 J (0.0019)	0.00058 J (0.0028)	0.35 (0.13)	0.042 J (0.31)	2.8 (0.25)	U (0.0038)	U (0.0022)	0.34 (0.12)	
Xylenes (total)	7900	1000	7.3 J (0.11)	U (0.0018)	U (0.0024)	0.133 J (0.14)	U (0.0022)	0.215 J (0.12)	0.0047 J (0.0019)	U (0.0028)	0.199 J (0.13)	0.46 J (0.31)	3.12 J (0.25)	U (0.0038)	U (0.0022)	U (0.12)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AV01-a 302-AV01	302-AV01-a 302-AV01	302-AV01-a 302-AV01	302-AV03-d 302-AV03	302-AV03-d 302-AV03	302-AV03-d 302-AV03	302-AV03-d 302-AV03	302-AV03-d 302-AV03	302-AW01-a 302-AW01	302-AW01-b 302-AW01	302-AW01-b 302-AW01	302-AW03-a 302-AW03	302-AW03-b 302-AW03	302-AW03-b 302-AW03	302-AW03-c 302-AW03
Field Sample ID	Numeric Value	Numeric Value	302-AV01-C1-VOC	302-AV01-C2-VOC	302-AV01-C3-VOC	302-AV03-C1-VOC	302-AV03-C2-VOC	302-AV03-C3-VOC	302-AV03-C4-VOC	302-AW01-C1-VOC	302-AW01-C2-VOC	302-AW01-C3-VOC	302-AW03-C3-VOC	302-AW03-C4-VOC	302-AW03-C5-VOC	302-AW03-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		0.0 - 0.2	0.6 - 0.8	1.2 - 1.4	0.3 - 0.5	0.8 - 0.9	1.4 - 1.5	2.0 - 2.1	0.6 - 0.8	1.5 - 1.7	2.3 - 2.4	1.4 - 1.5	0.8 - 0.9	0.9 - 1.1	0.6 - 0.8	
Sample Date	(mg/kg)	(mg/kg)	6/15/2022	6/15/2022	6/15/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/15/2022	6/15/2022	6/15/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.0007)	U (0.0008)	U (0.0011)	U (0.00066)	0.00021 J (0.00046)	0.002 (0.00048)	0.00068 (0.00048)	U (0.0007)	U (0.00079)	U (0.00071)	U (0.00045)	U (0.00041)	U (0.0004)	U (0.053)	
1,2-Dibromoethane	3.7	0.005	U (0.0007)	U (0.0008)	U (0.0011)	U (0.00066)	U (0.00046)	U (0.00048)	U (0.00048)	U (0.0007)	U (0.00079)	U (0.00071)	U (0.00045)	U (0.00041)	U (0.0004)	U (0.053)	
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.0016)	U (0.0021)	U (0.0013)	U (0.00092)	U (0.00095)	U (0.00097)	U (0.0014)	U (0.0016)	U (0.0014)	U (0.00089)	U (0.00082)	U (0.0008)	U (0.1)	
Ethyl Benzene	880	70	U (0.0014)	U (0.0016)	U (0.0021)	0.00041 J (0.0013)	0.0017 (0.00092)	0.026 (0.00095)	0.0054 (0.00097)	0.00026 J (0.0014)	0.00025 J (0.0016)	0.00038 J (0.0014)	0.00025 J (0.00089)	U (0.00082)	0.00011 J (0.0008)	U (0.1)	
Isopropylbenzene	10000	2500	0.00046 J (0.0014)	0.00068 J (0.0016)	0.0043 (0.0021)	0.00042 J (0.0013)	0.001 (0.00092)	0.016 (0.00095)	0.0035 (0.00097)	0.00088 J (0.0014)	0.0037 (0.0016)	0.0043 (0.0014)	U (0.00089)	0.00011 J (0.00082)	0.00019 J (0.0008)	0.06 J (0.1)	
Methyl tert-butyl ether	8500	2	U (0.0028)	U (0.0032)	U (0.0043)	U (0.0026)	U (0.0018)	U (0.0019)	U (0.0019)	U (0.0028)	U (0.0032)	U (0.0028)	U (0.0018)	U (0.0016)	U (0.0016)	U (0.21)	
Toluene	10000	100	U (0.0014)	U (0.0016)	U (0.0021)	U (0.0013)	U (0.00092)	0.01 (0.00095)	0.0016 (0.00097)	U (0.0014)	0.00087 J (0.0016)	0.0014 (0.0014)	U (0.00089)	U (0.00082)	U (0.0008)	U (0.1)	
1,2,4-Trimethylbenzene	4700	300	0.00088 J (0.0028)	0.0012 J (0.0032)	0.012 (0.0043)	0.00093 J (0.0026)	0.027 (0.0018)	0.26 (0.0019)	0.054 (0.0019)	0.0036 (0.0028)	0.0027 J (0.0032)	0.0047 (0.0028)	U (0.0018)	U (0.0016)	U (0.0016)	1.2 (0.21)	
1,3,5-Trimethylbenzene	4700	93	0.0007 J (0.0028)	U (0.0032)	0.002 J (0.0043)	0.0013 J (0.0026)	0.0082 (0.0018)	0.075 (0.0019)	0.016 (0.0019)	0.0036 (0.0028)	0.0013 J (0.0032)	0.0041 (0.0028)	U (0.0018)	U (0.0016)	U (0.0016)	0.98 (0.21)	
Xylenes (total)	7900	1000	U (0.0028)	U (0.0032)	0.0076 J (0.0043)	U (0.0026)	0.0039 J (0.0018)	0.127 J (0.0019)	0.024 J (0.0019)	0.00178 J (0.0028)	0.00212 J (0.0032)	0.0043 J (0.0028)	U (0.0018)	U (0.0016)	U (0.0016)	U (0.21)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AW03-d 302-AW03	302-AX01-a 302-AX01	302-AX01-a 302-AX01	302-AX01-b 302-AX01	302-AX01-c 302-AX01	302-AX04-a 302-AX04	302-AX04-a 302-AX04	302-AX04-a 302-AX04	302-AX04-a 302-AX04	302-AX04-a 302-AX04	302-AX05-d 302-AX05	302-AX05-d 302-AX05	302-AX05-d 302-AX05	302-AX05-d 302-AX05
Field Sample ID	Numeric Value	Numeric Value	302-AW03-C1-VOC	302-AX01-C2-VOC	302-AX01-C3-VOC	302-AX01-C4-VOC	302-AX01-C1-VOC	302-AX04-C1-VOC	302-AX04-C2-VOC	302-AX04-C3-VOC	302-AX04-C4-VOC	302-AX04-C5-VOC	302-AX05-C1-VOC	302-AX05-C2-VOC	302-AX05-C3-VOC	302-AX05-C4-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.3 - 0.5	1.4 - 1.5	2.1 - 2.3	2.3 - 2.4	0.3 - 0.5	0.6 - 0.8	1.4 - 1.5	2.3 - 2.4	4.0 - 4.1	4.9 - 5.0	0.3 - 0.5	0.8 - 0.9	1.2 - 1.4	1.7 - 1.8
Sample Date	(mg/kg)	(mg/kg)	6/14/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022
<b>VOCs</b>																
Benzene	280	0.5	0.0031 (0.00048)	U (0.0012)	U (0.0012)	U (0.0013)	0.023 J (0.048)	0.00059 (0.00059)	U (0.00056)	U (0.00047)	U (0.00054)	U (0.00052)	3.5 (0.28)	0.82 (0.031)	0.65 (0.082)	0.03 (0.0005)
1,2-Dibromoethane	3.7	0.005	U (0.00048)	U (0.0012)	U (0.0012)	U (0.0013)	U (0.048)	U (0.00059)	U (0.00056)	U (0.00047)	U (0.00054)	U (0.00052)	U (0.28)	U (0.031)	U (0.00055)	U (0.0005)
1,2-Dichloroethane	85	0.5	U (0.00095)	U (0.0024)	U (0.0023)	U (0.0025)	U (0.096)	U (0.0012)	U (0.0011)	U (0.00095)	U (0.0011)	U (0.001)	U (0.56)	U (0.061)	U (0.0011)	U (0.001)
Ethyl Benzene	880	70	0.015 (0.00095)	U (0.0024)	U (0.0023)	U (0.0025)	0.037 J (0.096)	0.0024 (0.0012)	U (0.0011)	U (0.00095)	U (0.0011)	U (0.001)	110 (0.56)	12 (0.061)	5.2 (0.16)	0.21 (0.001)
Isopropylbenzene	10000	2500	0.0011 (0.00095)	U (0.0024)	0.00038 J (0.0023)	0.00057 J (0.0025)	U (0.096)	0.0023 (0.0012)	U (0.0011)	U (0.00095)	0.00026 J (0.0011)	U (0.001)	15 (0.56)	0.99 (0.061)	0.11 J (0.16)	0.0036 (0.001)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0048)	U (0.0047)	U (0.0051)	U (0.19)	U (0.0024)	U (0.0022)	U (0.0019)	U (0.0022)	U (0.0021)	U (1.1)	U (0.12)	U (0.0022)	U (0.002)
Toluene	10000	100	U (0.00095)	U (0.0024)	U (0.0023)	U (0.0025)	0.39 (0.096)	0.00086 J (0.0012)	U (0.0011)	U (0.00095)	U (0.0011)	U (0.001)	11 (0.56)	0.17 (0.061)	0.0062 (0.0011)	0.0019 (0.001)
1,2,4-Trimethylbenzene	4700	300	0.12 (0.0019)	U (0.0048)	0.0011 J (0.0047)	0.0012 J (0.0051)	0.049 J (0.19)	0.02 (0.0024)	U (0.0022)	U (0.0019)	U (0.0022)	U (0.0021)	260 (11)	19 (1.2)	6.6 (0.33)	0.029 (0.002)
1,3,5-Trimethylbenzene	4700	93	0.043 (0.0019)	U (0.0048)	0.00074 J (0.0047)	0.0007 J (0.0051)	U (0.19)	0.0009 J (0.0024)	U (0.0022)	U (0.0019)	U (0.0022)	U (0.0021)	92 (1.1)	8 (0.12)	0.096 J (0.33)	0.0033 (0.002)
Xylenes (total)	7900	1000	0.08 J (0.0019)	U (0.0048)	0.00309 J (0.0047)	0.00385 J (0.0051)	0.126 J (0.19)	0.0044 J (0.0024)	U (0.0022)	U (0.0019)	U (0.0022)	U (0.0021)	590 J (11)	47.2 J (1.2)	0.675 J (0.33)	0.0152 J (0.002)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AY06-b 302-AY06	302-AY06-b 302-AY06	302-AY06-b 302-AY06	302-AY06-d 302-AY06	302-AZ05-a 302-AZ05	302-AZ05-b 302-AZ05	302-AZ05-c 302-AZ05	302-AZ05-d 302-AZ05	302-BA05-a 302-BA05	302-BA05-b 302-BA05	302-BA05-c 302-BA05	302-BA05-c 302-BA05	302-BB06-b 302-BB06	302-BB06-b 302-BB06
Field Sample ID	Numeric Value	Numeric Value	302-AY06-C2-VOC	302-AY06-C3-VOC	302-AY06-C4-VOC	302-AY06-C1-VOC	302-AZ05-C3-VOC	302-AZ05-C2-VOC	302-AZ05-C4-VOC	302-AZ05-C1-VOC	302-BA05-C3-VOC	302-BA05-C2-VOC	302-BA05-C1-VOC	302-BA05-C4-VOC	302-BB06-C1-VOC	302-BB06-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.8 - 0.9	1.2 - 1.4	1.8 - 2.0	0.3 - 0.5	2.6 - 2.7	1.7 - 1.8	1.7 - 1.8	0.3 - 0.5	2.1 - 2.3	1.1 - 1.2	0.6 - 0.8	4.4 - 4.6	0.9 - 1.1	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/9/2022	6/9/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.0005)	0.00018 J (0.00054)	0.00016 J (0.00049)	U (0.00045)	U (0.029)	U (0.00052)	U (0.031)	U (0.00055)	U (0.00056)	U (0.00048)	U (0.00054)	U (0.00053)	U (0.00056)	U (0.00049)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00054)	U (0.00049)	U (0.00045)	U (0.029)	U (0.00052)	U (0.031)	U (0.00055)	U (0.00056)	U (0.00048)	U (0.00054)	U (0.00053)	U (0.00056)	U (0.00049)
1,2-Dichloroethane	85	0.5	U (0.00099)	U (0.0011)	U (0.00097)	U (0.0009)	U (0.058)	U (0.001)	U (0.062)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0011)	U (0.001)	U (0.0011)	U (0.00097)
Ethyl Benzene	880	70	0.0011 (0.00099)	0.0054 (0.0011)	U (0.00097)	0.0026 (0.0009)	0.0095 J (0.058)	U (0.001)	0.038 J (0.062)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0011)	U (0.001)	U (0.0011)	U (0.00097)
Isopropylbenzene	10000	2500	0.056 (0.00099)	0.32 (0.0011)	0.012 (0.00097)	0.0048 (0.0009)	0.027 J (0.058)	U (0.001)	0.1 (0.062)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0011)	U (0.001)	U (0.0011)	U (0.00097)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0022)	U (0.0019)	U (0.0018)	U (0.12)	U (0.0021)	U (0.12)	U (0.0022)	U (0.0023)	U (0.0019)	U (0.0022)	U (0.0021)	U (0.0022)	U (0.0019)
Toluene	10000	100	U (0.00099)	0.0009 J (0.0011)	U (0.00097)	U (0.0009)	U (0.058)	U (0.001)	U (0.062)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0011)	U (0.001)	U (0.0011)	U (0.00097)
1,2,4-Trimethylbenzene	4700	300	0.0032 (0.002)	U (0.0022)	U (0.0019)	0.0013 J (0.0018)	0.023 J (0.12)	U (0.0021)	6.2 (0.12)	U (0.0022)	U (0.0023)	U (0.0019)	U (0.0022)	U (0.0021)	U (0.0022)	U (0.0019)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.0022)	U (0.0019)	0.00022 J (0.0018)	U (0.12)	U (0.0021)	1.5 (0.12)	U (0.0022)	U (0.0023)	U (0.0019)	U (0.0022)	U (0.0021)	U (0.0022)	U (0.0019)
Xylenes (total)	7900	1000	0.0023 J (0.002)	0.00355 J (0.0022)	0.00174 J (0.0019)	0.00128 J (0.0018)	U (0.12)	U (0.0021)	0.113 J (0.12)	U (0.0022)	U (0.0023)	U (0.0019)	U (0.0022)	U (0.0021)	U (0.0022)	U (0.0019)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-BB06-b 302-BB06	302-BB06-b 302-BB06	302-BC05-a 302-BC05	302-BC05-b 302-BC05	302-BC05-c 302-BC05	302-BC05-d 302-BC05	302-BC05-d 302-BC05	302-BC05-d 302-BC05	302-BD05-b 302-BD05	302-BD05-c 302-BD05	302-BD05-c 302-BD05	302-BD05-c 302-BD05	302-BE04-d 302-BE04	303-AY01-c 303-AY01	303-AY01-c 303-AY01
Field Sample ID	Numeric Value	Numeric Value	302-BB06-C3-VOC	302-BB06-C4-VOC	302-BC05-C3-VOC	302-BC05-C1-VOC	302-BC05-C2-VOC	302-BC05-C4-VOC	302-BC05-C5-VOC	302-BC05-C1-VOC	302-BD05-C2-VOC	302-BD05-C3-VOC	302-BD05-C4-VOC	302-BE04-C1-VOC	303-AY01-C1-VOC	303-AY01-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	2.7 - 2.9	4.1 - 4.3	2.3 - 2.4	0.2 - 0.3	0.5 - 0.6	1.1 - 1.2	1.4 - 1.5	0.5 - 0.6	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	0.3 - 0.5	0.3 - 0.5	1.1 - 1.2	
Sample Date	(mg/kg)	(mg/kg)	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/22/2022	6/22/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00049)	U (0.00055)	U (0.00054)	U (0.00048)	U (0.00044)	0.00033 J (0.00053)	0.00025 J (0.00058)	U (0.00049)	0.049 (0.04)	0.24 (0.029)	1.1 (0.031)	U (0.00048)	U (0.00062)	0.00031 J (0.00074)	
1,2-Dibromoethane	3.7	0.005	U (0.00049)	U (0.00055)	U (0.00054)	U (0.00048)	U (0.00044)	U (0.00053)	U (0.00058)	U (0.00049)	U (0.04)	U (0.029)	U (0.031)	U (0.00048)	U (0.00062)	U (0.00074)	
1,2-Dichloroethane	85	0.5	U (0.00097)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00088)	U (0.001)	U (0.0012)	U (0.00098)	U (0.079)	U (0.058)	U (0.062)	U (0.00097)	U (0.0012)	U (0.0015)	
Ethyl Benzene	880	70	U (0.00097)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00088)	U (0.001)	U (0.0012)	U (0.00098)	1.1 (0.079)	0.4 (0.058)	3.6 (0.062)	U (0.00097)	0.00028 J (0.0012)	0.00051 J (0.0015)	
Isopropylbenzene	10000	2500	U (0.00097)	U (0.0011)	U (0.0011)	0.0002 J (0.00097)	U (0.00088)	0.00024 J (0.001)	U (0.0012)	0.00024 J (0.00098)	3.1 (0.079)	1.1 (0.058)	1.6 (0.062)	U (0.00097)	0.00048 J (0.0012)	0.00055 J (0.0015)	
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0018)	U (0.0021)	U (0.0023)	U (0.002)	U (0.16)	U (0.12)	U (0.12)	U (0.0019)	U (0.0025)	U (0.0029)	
Toluene	10000	100	U (0.00097)	U (0.0011)	U (0.0011)	U (0.00097)	U (0.00088)	U (0.001)	U (0.0012)	U (0.00098)	0.098 (0.079)	0.099 (0.058)	0.54 (0.062)	U (0.00097)	U (0.0012)	0.0013 J (0.0015)	
1,2,4-Trimethylbenzene	4700	300	0.0005 J (0.0019)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0018)	0.00065 J (0.0021)	0.0012 J (0.0023)	U (0.002)	49 (1.6)	4.4 (0.12)	11 (0.12)	U (0.0019)	0.0051 (0.0025)	0.0025 J (0.0029)	
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0018)	0.00032 J (0.0021)	0.00059 J (0.0023)	U (0.002)	15 (0.16)	1.3 (0.12)	4 (0.12)	U (0.0019)	0.00072 J (0.0025)	0.0012 J (0.0029)	
Xylenes (total)	7900	1000	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0019)	U (0.0018)	U (0.0021)	U (0.0023)	U (0.002)	1.46 J (0.16)	0.57 J (0.12)	6.78 J (0.12)	U (0.0019)	0.00217 J (0.0025)	0.0025 J (0.0029)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-AY01-c 303-AY01	303-AZ01-a 303-AZ01	303-AZ01-a 303-AZ01	303-AZ01-a 303-AZ01	303-BA01-a 303-BA01	303-BA01-a 303-BA01	303-BA02-b 303-BA02	303-BB01-c 303-BB01	303-BB02-a 303-BB02	303-BB02-a 303-BB02	303-BB02-a 303-BB02	303-BC01-a 303-BC01	303-BC01-a 303-BC01	303-BD01-b 303-BD01
Field Sample ID	Numeric Value	Numeric Value	303-AY01-C3-VOC	303-AZ01-C1-VOC	303-AZ01-C2-VOC	303-AZ01-C3-VOC	303-BA01-C1-VOC	303-BA01-C2-VOC	303-BA02-C1-VOC	303-BB01-C1-VOC	303-BB02-C1-VOC	303-BB02-C2-VOC	303-BB02-C3-VOC	303-BC01-C1-VOC	303-BC01-C2-VOC	303-BD01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)		2.0 - 2.1	0.9 - 1.1	2.3 - 2.4	3.7 - 3.8	0.3 - 0.5	1.8 - 2.0	0.3 - 0.5	0.0 - 0.2	0.3 - 0.5	0.6 - 0.8	1.2 - 1.4	0.6 - 0.8	1.1 - 1.2	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	6/22/2022	6/21/2022	6/21/2022	6/21/2022	6/22/2022	6/22/2022	6/21/2022	6/23/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/17/2022
<b>VOCs</b>																
Benzene	280	0.5	U (0.0012)	U (0.00084)	U (0.00088)	U (0.00073)	0.47 J (0.63)	U (0.0007)	U (0.00077)	U (0.00057)	0.0056 (0.0007)	0.2 (0.078)	0.5 (0.03)	U (0.00075)	0.0028 (0.00082)	0.0013 (0.00062)
1,2-Dibromoethane	3.7	0.005	U (0.0012)	U (0.00084)	U (0.00088)	U (0.00073)	U (0.63)	U (0.0007)	U (0.00077)	U (0.00057)	U (0.0007)	U (0.039)	U (0.03)	U (0.00075)	U (0.00082)	U (0.00062)
1,2-Dichloroethane	85	0.5	U (0.0025)	U (0.0017)	U (0.0018)	U (0.0015)	U (1.3)	U (0.0014)	U (0.0015)	U (0.0011)	U (0.0014)	U (0.078)	U (0.06)	U (0.0015)	U (0.0016)	U (0.0012)
Ethyl Benzene	880	70	U (0.0025)	U (0.0017)	U (0.0018)	U (0.0015)	U (1.3)	U (0.0014)	0.00042 J (0.0015)	U (0.0011)	0.013 (0.0014)	0.96 (0.16)	0.46 (0.06)	U (0.0015)	0.013 (0.0016)	0.0011 J (0.0012)
Isopropylbenzene	10000	2500	0.00031 J (0.0025)	0.00026 J (0.0017)	U (0.0018)	U (0.0015)	420 (2.5)	0.0011 J (0.0014)	0.0025 (0.0015)	U (0.0011)	0.0041 (0.0014)	7.2 (0.078)	2 (0.06)	0.0021 (0.0015)	0.0063 (0.0016)	0.013 (0.0012)
Methyl tert-butyl ether	8500	2	U (0.005)	U (0.0033)	U (0.0035)	U (0.0029)	U (2.5)	U (0.0028)	U (0.0031)	U (0.0023)	U (0.0028)	U (0.16)	U (0.12)	U (0.003)	U (0.0033)	U (0.0025)
Toluene	10000	100	U (0.0025)	U (0.0017)	U (0.0018)	U (0.0015)	U (1.3)	U (0.0014)	U (0.0015)	U (0.0011)	0.012 (0.0014)	0.84 (0.16)	0.86 (0.06)	U (0.0015)	0.0095 (0.0016)	0.0023 (0.0012)
1,2,4-Trimethylbenzene	4700	300	0.001 J (0.005)	0.0029 J (0.0033)	0.00065 J (0.0035)	U (0.0029)	U (2.5)	U (0.0028)	0.0016 J (0.0031)	U (0.0023)	0.015 (0.0028)	0.7 (0.31)	0.38 (0.12)	0.00054 J (0.003)	0.039 (0.0033)	0.027 (0.0025)
1,3,5-Trimethylbenzene	4700	93	0.00058 J (0.005)	0.00089 J (0.0033)	0.00043 J (0.0035)	U (0.0029)	U (2.5)	U (0.0028)	0.0031 (0.0031)	U (0.0023)	0.005 (0.0028)	0.15 J (0.31)	0.11 J (0.12)	U (0.003)	0.02 (0.0033)	0.014 (0.0025)
Xylenes (total)	7900	1000	0.0037 J (0.005)	0.003 J (0.0033)	0.00238 J (0.0035)	U (0.0029)	U (2.5)	U (0.0028)	0.00225 J (0.0031)	U (0.0023)	0.0201 J (0.0028)	4.14 J (0.31)	2.26 J (0.12)	0.00202 J (0.003)	0.0422 J (0.0033)	0.0165 J (0.0025)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BD01-b 303-BD01	303-BD04-d 303-BD04	303-BD04-d 303-BD04	303-BE01-d 303-BE01	303-BE01-d 303-BE01	303-BE03-b 303-BE03	303-BE03-b 303-BE03	303-BF01-a 303-BF01	303-BF01-a 303-BF01	303-BF05-d 303-BF05	303-BF05-d 303-BF05	303-BF05-d 303-BF05	303-BF05-d 303-BF05	303-BG01-b 303-BG01
Field Sample ID	Numeric Value	Numeric Value	303-BD01-C2-VOC	303-BD04-C1-VOC	303-BD04-C2-VOC	303-BE01-C1-VOC	303-BE01-C2-VOC	303-BE03-C1-VOC	303-BE03-C2-VOC	303-BF01-C1-VOC	303-BF01-C2-VOC	303-BF05-C1-VOC	303-BF05-C2-VOC	303-BF05-C3-VOC	303-BF05-C4-VOC	303-BG01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.8 - 2.0	0.2 - 0.3	0.5 - 0.6	0.6 - 0.8	1.5 - 1.7	0.2 - 0.3	0.5 - 0.6	0.3 - 0.5	0.8 - 0.9	0.5 - 0.6	0.9 - 1.1	1.8 - 2.0	2.1 - 2.3	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	6/17/2022	6/20/2022	6/20/2022	6/24/2022	6/24/2022	6/20/2022	6/20/2022	6/24/2022	6/24/2022	6/20/2022	6/20/2022	6/20/2022	6/20/2022	6/24/2022
<b>VOCs</b>																
Benzene	280	0.5	0.0017 (0.00077)	U (0.0006)	0.00032 J (0.00079)	U (0.00056)	0.00021 J (0.0006)	0.00031 J (0.00044)	U (0.00089)	U (0.032)	0.14 (0.027)	0.00026 J (0.00076)	U (0.00089)	U (0.0009)	U (0.00087)	U (0.00063)
1,2-Dibromoethane	3.7	0.005	U (0.00077)	U (0.0006)	U (0.00072)	U (0.00056)	U (0.0006)	U (0.00044)	U (0.00089)	U (0.032)	U (0.027)	U (0.00076)	U (0.00089)	U (0.0009)	U (0.00087)	U (0.00063)
1,2-Dichloroethane	85	0.5	U (0.0015)	U (0.0012)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.00089)	U (0.0018)	U (0.063)	U (0.054)	U (0.0015)	U (0.0018)	U (0.0018)	U (0.0017)	U (0.0013)
Ethyl Benzene	880	70	0.00052 J (0.0015)	U (0.0012)	0.0003 J (0.0016)	U (0.0011)	U (0.0012)	U (0.00089)	0.00031 J (0.002)	0.012 J (0.063)	0.019 J (0.054)	0.00034 J (0.0015)	U (0.0018)	U (0.0018)	0.00041 J (0.0017)	0.00023 J (0.0013)
Isopropylbenzene	10000	2500	0.0046 (0.0015)	U (0.0012)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.00089)	0.0011 J (0.002)	3.2 (0.063)	3.6 (0.054)	0.00029 J (0.0017)	0.00035 J (0.0018)	0.0028 (0.0018)	0.0011 J (0.002)	U (0.0013)
Methyl tert-butyl ether	8500	2	U (0.0031)	U (0.0024)	U (0.0029)	U (0.0022)	U (0.0024)	U (0.0018)	U (0.0036)	U (0.13)	U (0.11)	U (0.003)	U (0.0036)	U (0.0036)	U (0.0035)	0.00029 J (0.0025)
Toluene	10000	100	0.0017 (0.0015)	U (0.0012)	0.0015 J (0.0016)	U (0.0011)	U (0.0012)	0.00068 J (0.00089)	U (0.0018)	U (0.063)	0.041 J (0.054)	0.0016 J (0.0017)	U (0.0018)	0.001 J (0.0018)	U (0.0017)	0.00075 J (0.0013)
1,2,4-Trimethylbenzene	4700	300	0.0054 (0.0031)	U (0.0024)	0.00058 J (0.0032)	U (0.0022)	0.0012 J (0.0024)	U (0.0018)	0.0057 (0.004)	U (0.13)	U (0.11)	0.0012 J (0.003)	0.0015 J (0.0036)	0.0064 (0.0036)	0.0074 (0.0035)	0.0014 J (0.0025)
1,3,5-Trimethylbenzene	4700	93	0.003 J (0.0031)	U (0.0024)	0.00038 J (0.0032)	U (0.0022)	U (0.0024)	U (0.0018)	0.0044 (0.004)	U (0.13)	U (0.11)	0.00094 J (0.003)	0.0015 J (0.0036)	0.0038 (0.0036)	0.0038 J (0.004)	0.00028 J (0.0025)
Xylenes (total)	7900	1000	0.0059 J (0.0031)	U (0.0024)	0.00229 J (0.0032)	U (0.0022)	U (0.0024)	0.00104 J (0.0018)	0.0046 J (0.004)	0.083 J (0.13)	0.075 J (0.11)	0.0023 J (0.003)	0.0028 J (0.0036)	0.005 J (0.0036)	0.0055 J (0.0035)	U (0.0025)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BG04-d 303-BG04	303-BG04-d 303-BG04	303-BG04-d 303-BG04	303-BG04-d 303-BG04	303-BH01-d 303-BH01	303-BH02-c 303-BH02	303-BH02-c 303-BH02	303-BH02-c 303-BH02	303-BH02-c 303-BH02	303-BH02-c 303-BH02	303-BH02-c 303-BH02	303-BI01-b 303-BI01	303-BI01-b 303-BI01	303-BI03-a 303-BI03	303-BI03-a 303-BI03
Field Sample ID	Numeric Value	Numeric Value	303-BG04-C1-VOC	303-BG04-C2-VOC	303-BG04-C3-VOC	303-BG04-C4-VOC	303-BH01-C1-VOC	303-BH02-C1-VOC	303-BH02-C2-VOC	303-BH02-C3-VOC	303-BH02-C4-VOC	303-BH02-C5-VOC	303-BI01-C1-VOC	303-BI01-C2-VOC	303-BI03-C1-VOC	303-BI03-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)		0.6 - 0.8	0.9 - 1.1	1.8 - 2.0	2.7 - 2.9	1.2 - 1.4	0.9 - 1.1	1.2 - 1.4	2.3 - 2.4	3.4 - 3.5	5.0 - 5.2	0.5 - 0.6	1.4 - 1.5	0.3 - 0.5	0.8 - 0.9	
Sample Date	(mg/kg)	(mg/kg)	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/23/2022	6/17/2022	6/17/2022	6/17/2022	6/17/2022	6/17/2022	6/23/2022	6/23/2022	6/17/2022	6/17/2022	
<b>VOCs</b>																	
Benzene	280	0.5	U (0.00055)	0.00025 J (0.0005)	U (0.00074)	U (0.00085)	U (0.0005)	0.00047 J (0.00086)	U (0.00071)	U (0.00082)	U (0.00088)	U (0.001)	U (0.00053)	U (0.00054)	U (0.00089)	0.00058 J (0.00076)	
1,2-Dibromoethane	3.7	0.005	U (0.00055)	U (0.0005)	U (0.00074)	U (0.00085)	U (0.0005)	U (0.00086)	U (0.00071)	U (0.00082)	U (0.00088)	U (0.001)	U (0.00053)	U (0.00054)	U (0.00089)	U (0.00076)	
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.001)	U (0.0015)	U (0.0017)	U (0.001)	U (0.0017)	U (0.0014)	U (0.0016)	U (0.0018)	U (0.0021)	U (0.001)	U (0.0011)	U (0.0018)	U (0.0015)	
Ethyl Benzene	880	70	U (0.0011)	U (0.001)	U (0.0015)	U (0.0017)	U (0.001)	0.00056 J (0.0017)	0.00028 J (0.0015)	0.00023 J (0.0016)	U (0.0018)	U (0.0021)	U (0.001)	U (0.0011)	0.0003 J (0.0018)	0.0082 (0.0015)	
Isopropylbenzene	10000	2500	U (0.0011)	U (0.001)	U (0.0015)	U (0.0017)	U (0.001)	0.00048 J (0.0017)	0.0023 (0.0014)	0.00052 J (0.0019)	0.00033 J (0.0018)	U (0.0021)	0.00021 J (0.0015)	U (0.0011)	0.0028 (0.0018)	0.0081 (0.0015)	
Methyl tert-butyl ether	8500	2	U (0.0022)	U (0.002)	U (0.003)	U (0.0034)	U (0.002)	U (0.0034)	U (0.0028)	U (0.0033)	U (0.0035)	U (0.0042)	U (0.0021)	U (0.0022)	U (0.0036)	U (0.003)	
Toluene	10000	100	U (0.0011)	U (0.001)	U (0.0015)	U (0.0017)	U (0.001)	0.0016 J (0.003)	0.0012 J (0.0015)	0.0011 J (0.0019)	U (0.0018)	U (0.0021)	0.00092 J (0.0015)	U (0.0011)	U (0.0018)	0.0058 (0.0015)	
1,2,4-Trimethylbenzene	4700	300	U (0.0022)	U (0.002)	U (0.003)	U (0.0034)	U (0.002)	0.0065 (0.0034)	0.0087 (0.0031)	0.0031 J (0.0038)	0.0028 J (0.0039)	0.00083 J (0.0042)	0.00071 J (0.0029)	0.0011 J (0.0022)	0.0049 (0.0036)	0.3 (0.003)	
1,3,5-Trimethylbenzene	4700	93	U (0.0022)	U (0.002)	U (0.003)	U (0.0034)	U (0.002)	0.0018 J (0.0034)	0.0053 (0.0031)	0.003 J (0.0038)	0.0026 J (0.0039)	0.00052 J (0.0042)	0.00035 J (0.0029)	0.00026 J (0.0022)	0.0036 (0.0036)	0.12 (0.003)	
Xylenes (total)	7900	1000	U (0.0022)	U (0.002)	U (0.003)	U (0.0034)	U (0.002)	0.0058 J (0.0034)	0.0062 J (0.0031)	0.0028 J (0.0038)	0.003 J (0.0039)	0.0026 J (0.0042)	U (0.0021)	0.00115 J (0.0022)	0.005 J (0.0036)	0.221 J (0.003)	

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BI03-a 303-BI03	303-BI03-a 303-BI03	303-BJ01-a 303-BJ01	303-BJ01-a 303-BJ01	303-BJ02-b 303-BJ02	303-BJ02-b 303-BJ02	303-BJ02-b 303-BJ02	303-BK01-c 303-BK01	303-BK03-d 303-BK03	303-BK03-d 303-BK03	303-BK03-d 303-BK03	303-BL02-b 303-BL02	303-BL02-c 303-BL02	303-BL02-d 303-BL02
Field Sample ID	Numeric Value	Numeric Value	303-BI03-C3-VOC	303-BI03-C4-VOC	303-BJ01-C1-VOC	303-BJ01-C2-VOC	303-BJ02-C1-VOC	303-BJ02-C2-VOC	303-BJ02-C3-VOC	303-BK01-C1-VOC	303-BK03-C1-VOC	303-BK03-C2-VOC	303-BK03-C3-VOC	303-BL02-C1-VOC	303-BL02-C3-VOC	303-BL02-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.5 - 1.7	2.1 - 2.3	0.5 - 0.6	2.0 - 2.1	1.1 - 1.2	1.4 - 1.5	2.6 - 2.7	1.4 - 1.5	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	0.3 - 0.5	2.1 - 2.3	0.9 - 1.1
Sample Date	(mg/kg)	(mg/kg)	6/17/2022	6/17/2022	6/23/2022	6/23/2022	6/17/2022	6/17/2022	6/17/2022	6/23/2022	6/17/2022	6/17/2022	6/17/2022	6/16/2022	6/16/2022	6/16/2022
<b>VOCs</b>																
Benzene	280	0.5	0.077 (0.072)	0.0021 (0.00061)	0.00023 J (0.00061)	0.00031 J (0.00062)	U (0.0005)	U (0.00043)	0.00046 J (0.0011)	1.7 (0.024)	0.066 (0.024)	U (0.4)	U (0.053)	U (0.00059)	0.00032 J (0.00081)	U (0.00057)
1,2-Dibromoethane	3.7	0.005	U (0.072)	U (0.00061)	U (0.00061)	U (0.00055)	U (0.0005)	U (0.00043)	U (0.0011)	U (0.024)	U (0.024)	U (0.4)	U (0.053)	U (0.00059)	U (0.00081)	U (0.00057)
1,2-Dichloroethane	85	0.5	U (0.14)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.001)	U (0.00086)	U (0.0022)	U (0.049)	U (0.047)	U (0.79)	U (0.1)	U (0.0012)	U (0.0016)	U (0.0011)
Ethyl Benzene	880	70	0.082 J (0.14)	0.00098 J (0.0012)	U (0.0012)	U (0.0011)	U (0.001)	U (0.00086)	0.00038 J (0.0022)	0.081 (0.049)	0.05 (0.047)	0.27 J (0.79)	0.064 J (0.1)	U (0.0012)	0.00085 J (0.0016)	U (0.0011)
Isopropylbenzene	10000	2500	0.12 J (0.14)	0.0013 (0.0012)	U (0.0012)	U (0.0011)	U (0.001)	U (0.00086)	0.017 (0.0022)	1.2 (0.049)	0.45 (0.047)	40 (0.79)	5.6 (0.1)	0.0004 J (0.0012)	0.11 (0.0016)	0.001 J (0.0011)
Methyl tert-butyl ether	8500	2	U (0.29)	0.00066 J (0.0024)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0017)	U (0.0044)	U (0.098)	U (0.094)	U (1.6)	U (0.21)	U (0.0024)	U (0.0032)	U (0.0023)
Toluene	10000	100	1.5 (0.14)	0.0015 (0.0012)	U (0.0012)	U (0.0011)	U (0.001)	U (0.00086)	0.0013 J (0.0022)	0.17 (0.049)	0.14 (0.047)	U (0.79)	U (0.1)	U (0.0012)	U (0.0016)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	0.28 J (0.29)	0.0077 (0.0024)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0017)	0.0053 (0.0044)	0.064 J (0.098)	0.08 J (0.094)	1.1 J (1.6)	0.29 (0.21)	U (0.0024)	0.026 (0.0032)	0.0012 J (0.0023)
1,3,5-Trimethylbenzene	4700	93	0.086 J (0.29)	0.003 (0.0024)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0017)	0.0043 J (0.0044)	0.057 J (0.098)	0.021 J (0.094)	0.2 J (1.6)	0.057 J (0.21)	U (0.0024)	0.025 (0.0032)	0.00031 J (0.0023)
Xylenes (total)	7900	1000	0.53 J (0.29)	0.0078 J (0.0024)	U (0.0024)	U (0.0022)	U (0.002)	U (0.0017)	0.006 J (0.0044)	0.387 J (0.098)	0.213 J (0.094)	1.66 J (1.6)	0.41 J (0.21)	U (0.0024)	0.0142 J (0.0032)	0.00137 J (0.0023)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BM02-d 303-BM02	303-BM02-d 303-BM02	303-BM02-d 303-BM02	303-BN02-b 303-BN02	303-BN02-b 303-BN02	303-BN02-b 303-BN02	303-BN03-b 303-BN03	303-BO02-d 303-BO02	303-BO02-d 303-BO02	303-BO02-d 303-BO02	303-BP02-a 303-BP02	303-BP02-c 303-BP02	303-BP02-c 303-BP02	303-BQ01-b 303-BQ01
Field Sample ID	Numeric Value	Numeric Value	303-BM02-C1-VOC	303-BM02-C2-VOC	303-BM02-C3-VOC	303-BN02-C1-VOC	303-BN02-C2-VOC	303-BN02-C3-VOC	303-BN03-C1-VOC	303-BO02-C1-VOC	303-BO02-C2-VOC	303-BO02-C3-VOC	303-BP02-C3-VOC	303-BP02-C1-VOC	303-BP02-C2-VOC	303-BQ01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	1.1 - 1.2	2.1 - 2.3	3.0 - 3.2	0.8 - 0.9	1.2 - 1.4	2.1 - 2.3	0.5 - 0.6	0.3 - 0.5	1.4 - 1.5	1.8 - 2.0	0.8 - 0.9	0.5 - 0.6	1.1 - 1.2	0.3 - 0.5
Sample Date	(mg/kg)	(mg/kg)	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/20/2022	6/16/2022	6/16/2022	6/16/2022	6/17/2022	6/17/2022	6/17/2022	6/23/2022
<b>VOCs</b>																
Benzene	280	0.5	0.0003 J (0.00083)	U (0.00062)	U (0.00069)	0.00063 J (0.001)	0.27 (0.031)	0.67 (0.05)	0.00073 (0.00063)	1.3 J (1.4)	10 (0.036)	4.7 (0.073)	2 (1.1)	11000 (60)	1300 (27)	0.016 J (0.036)
1,2-Dibromoethane	3.7	0.005	U (0.00083)	U (0.00062)	U (0.00069)	U (0.001)	U (0.00049)	U (0.00071)	U (0.00063)	U (1.4)	U (0.036)	U (0.073)	U (1.1)	U (3)	U (2.7)	U (0.036)
1,2-Dichloroethane	85	0.5	U (0.0017)	U (0.0012)	U (0.0014)	U (0.002)	U (0.00098)	U (0.0014)	U (0.0012)	U (2.9)	U (0.072)	U (0.15)	U (2.3)	U (6)	U (5.4)	U (0.072)
Ethyl Benzene	880	70	0.00055 J (0.0017)	0.00055 J (0.0012)	U (0.0014)	0.00069 J (0.002)	0.62 (0.062)	0.079 (0.0014)	0.0011 J (0.0012)	0.51 J (2.9)	0.029 J (0.072)	0.072 J (0.15)	U (2.3)	160 (6)	35 (5.4)	0.019 J (0.072)
Isopropylbenzene	10000	2500	0.083 (0.0017)	0.16 (0.0012)	U (0.0014)	0.007 (0.002)	0.1 (0.00098)	1.9 (0.1)	0.024 (0.0012)	1100 (5.8)	5.4 (0.072)	2.4 (0.15)	870 (4.6)	16000 (120)	4800 (54)	0.87 (0.072)
Methyl tert-butyl ether	8500	2	U (0.0033)	0.00042 J (0.0025)	U (0.0028)	U (0.004)	U (0.002)	U (0.0028)	U (0.0025)	U (5.8)	U (0.14)	U (0.29)	U (4.6)	U (12)	U (11)	U (0.14)
Toluene	10000	100	0.0012 J (0.0017)	0.00087 J (0.0012)	U (0.0014)	U (0.002)	1.4 (0.062)	0.2 (0.1)	0.0012 (0.0012)	U (2.9)	U (0.072)	0.28 (0.15)	U (2.3)	3400 (120)	1300 (5.4)	0.094 (0.072)
1,2,4-Trimethylbenzene	4700	300	0.0084 (0.0033)	0.026 (0.0025)	U (0.0028)	U (0.004)	0.33 (0.12)	0.27 (0.0028)	0.0021 J (0.0025)	3.2 J (5.8)	U (0.14)	0.061 J (0.29)	U (4.6)	130 (12)	38 (11)	0.081 J (0.14)
1,3,5-Trimethylbenzene	4700	93	0.0085 (0.0033)	0.014 (0.0025)	U (0.0028)	U (0.004)	0.22 (0.002)	0.11 (0.0028)	0.0011 J (0.0025)	3.1 J (5.8)	U (0.14)	U (0.29)	U (4.6)	45 (12)	15 (11)	0.031 J (0.14)
Xylenes (total)	7900	1000	0.0131 J (0.0033)	0.0152 J (0.0025)	U (0.0028)	0.003 J (0.004)	1.84 J (0.12)	0.263 J (0.0028)	0.0057 J (0.0025)	U (5.8)	U (0.14)	0.185 J (0.29)	U (4.6)	710 J (12)	159 J (11)	0.175 J (0.14)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BQ02-b 303-BQ02	303-BQ02-b 303-BQ02	303-BQ02-c 303-BQ02	303-BR02-c 303-BR02	303-BR02-c 303-BR02	303-BS02-c 303-BS02	303-BS02-c 303-BS02	303-BS03-b 303-BS03	303-BT01-d 303-BT01	303-BT01-d 303-BT01	303-BT01-d 303-BT01	303-BU01-d 303-BU01	303-BU01-d 303-BU01	303-BV01-d 303-BV01
Field Sample ID	Numeric Value	Numeric Value	303-BQ02-C1-VOC	303-BQ02-C2-VOC	303-BQ02-C3-VOC	303-BR02-C1-VOC	303-BR02-C2-VOC	303-BS02-C1-VOC	303-BS02-C2-VOC	303-BS03-C1-VOC	303-BT01-C1-VOC	303-BT01-C2-VOC	303-BT01-C3-VOC	303-BU01-C1-VOC	303-BU01-C2-VOC	303-BV01-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	(mg/kg)	0.3 - 0.5	0.8 - 0.9	2.0 - 2.1	0.8 - 0.9	1.8 - 2.0	0.6 - 0.8	1.8 - 2.0	0.6 - 0.8	0.3 - 0.5	1.1 - 1.2	1.7 - 1.8	0.6 - 0.8	1.7 - 1.8	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	6/17/2022	6/17/2022	6/17/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/14/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/15/2022
<b>VOCs</b>																
Benzene	280	0.5	1700 (6)	660 (3)	7.8 (0.18)	0.045 (0.029)	0.36 (0.35)	0.039 (0.038)	0.28 (0.037)	U (0.00055)	0.083 (0.026)	0.0025 (0.00065)	0.0035 (0.00052)	0.092 J (0.23)	0.42 (0.034)	0.3 (0.061)
1,2-Dibromoethane	3.7	0.005	U (0.12)	U (3)	U (0.18)	U (0.029)	U (0.35)	U (0.038)	U (0.037)	U (0.00055)	U (0.026)	U (0.00065)	U (0.00052)	U (0.23)	U (0.034)	U (0.061)
1,2-Dichloroethane	85	0.5	U (0.24)	U (6)	U (0.36)	U (0.058)	U (0.7)	U (0.076)	U (0.074)	U (0.0011)	U (0.052)	U (0.0013)	U (0.001)	U (0.46)	U (0.068)	U (0.12)
Ethyl Benzene	880	70	12 (0.24)	42 (6)	0.67 (0.36)	0.03 J (0.058)	0.27 J (0.7)	0.08 (0.076)	0.1 (0.074)	U (0.0011)	0.011 J (0.052)	0.0012 J (0.0013)	0.00029 J (0.001)	U (0.46)	0.11 (0.068)	0.071 J (0.12)
Isopropylbenzene	10000	2500	37 (0.24)	160 (6)	430 (3.6)	6.4 (0.058)	32 (0.7)	1.7 (0.076)	2.1 (0.074)	U (0.0011)	2.2 (0.052)	0.24 (0.0013)	0.042 (0.001)	2.3 (0.46)	0.61 (0.068)	2.2 (0.12)
Methyl tert-butyl ether	8500	2	U (0.48)	U (12)	U (0.73)	U (0.12)	U (1.4)	U (0.15)	U (0.15)	U (0.0022)	U (0.1)	0.00047 J (0.0026)	U (0.0021)	U (0.93)	U (0.14)	U (0.24)
Toluene	10000	100	500 (12)	1300 (15)	9.5 (0.36)	0.17 (0.058)	0.61 J (0.7)	0.043 J (0.076)	0.14 (0.074)	U (0.0011)	0.062 (0.052)	0.0043 (0.0013)	0.00096 J (0.001)	U (0.46)	0.21 (0.068)	0.31 (0.12)
1,2,4-Trimethylbenzene	4700	300	28 (0.48)	43 (12)	2.8 (0.73)	0.19 (0.12)	0.43 J (1.4)	0.14 J (0.15)	0.12 J (0.15)	U (0.0022)	0.02 J (0.1)	0.0016 J (0.0026)	0.0013 J (0.0021)	U (0.93)	0.07 J (0.14)	0.13 J (0.24)
1,3,5-Trimethylbenzene	4700	93	11 (0.48)	15 (12)	1 (0.73)	0.096 J (0.12)	0.59 J (1.4)	0.024 J (0.15)	0.024 J (0.15)	U (0.0022)	U (0.1)	0.00058 J (0.0026)	0.001 J (0.0021)	U (0.93)	0.5 (0.14)	0.45 (0.24)
Xylenes (total)	7900	1000	38.4 J (0.48)	169 J (12)	2.48 J (0.73)	0.46 J (0.12)	1.55 J (1.4)	0.314 J (0.15)	0.459 J (0.15)	U (0.0022)	0.108 J (0.1)	0.0174 J (0.0026)	0.00393 J (0.0021)	0.52 J (0.93)	0.23 J (0.14)	0.98 J (0.24)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1a**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1A)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BW01-c 303-BW01 303-BW01-C1-VOC
Field Sample ID	Numeric Value (0-2 ft bgs)	Numeric Value (mg/kg)	0.5 - 0.6
Collection Depth (ft bgs)	(mg/kg)	(mg/kg)	6/14/2022
Sample Date			
<b>VOCs</b>			
Benzene	280	0.5	0.059 (0.03)
1,2-Dibromoethane	3.7	0.005	U (0.03)
1,2-Dichloroethane	85	0.5	U (0.06)
Ethyl Benzene	880	70	0.057 J (0.06)
Isopropylbenzene	10000	2500	0.32 (0.06)
Methyl tert-butyl ether	8500	2	U (0.12)
Toluene	10000	100	0.11 (0.06)
1,2,4-Trimethylbenzene	4700	300	0.095 J (0.12)
1,3,5-Trimethylbenzene	4700	93	0.034 J (0.12)
Xylenes (total)	7900	1000	0.25 J (0.12)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-AA02-b	301-AA02-d	301-AA02-d	301-AA02-d	301-AA03-a	301-AA03-a	301-AA03-a	301-AA03-a	301-AA04-c	301-AA04-c	301-AA04-c
Cell	Soil Direct Contact	Soil to	301-AA02	301-AA02	301-AA02	301-AA02	301-AA03	301-AA03	301-AA03	301-AA03	301-AA04	301-AA04	301-AA04
Field Sample ID	Numeric Value	Groundwater	301-AA02-C1-VOC	301-AA02-C2-VOC	301-AA02-C3-VOC	301-AA02-C4-VOC	301-AA03-C1-VOC	301-AA03-C2-VOC	301-AA03-C3-VOC	301-AA03-C4-VOC	301-AA04-C1-VOC	301-AA04-C2-VOC	301-AA04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.3 - 0.5	1.1 - 1.2	2.1 - 2.3	2.7 - 2.9	0.3 - 0.5	0.6 - 0.8	1.2 - 1.4	1.7 - 1.8	0.2 - 0.3	1.1 - 1.2	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00048)	U (0.00048)	U (0.00093)	U (0.0005)	U (0.00047)	U (0.0006)	U (0.00062)	U (0.001)	U (0.00064)	0.00041 J (0.00064)	U (0.0005)
1,2-Dibromoethane	3.7	0.005	U (0.00048)	U (0.00048)	U (0.00093)	U (0.0005)	U (0.00047)	U (0.0006)	U (0.00062)	U (0.001)	U (0.00064)	U (0.00064)	U (0.0005)
1,2-Dichloroethane	85	0.5	U (0.00096)	U (0.00095)	U (0.0019)	U (0.001)	U (0.00094)	U (0.0012)	U (0.0012)	U (0.002)	U (0.0013)	U (0.0013)	U (0.001)
Ethyl Benzene	880	70	U (0.00096)	U (0.00095)	U (0.0019)	U (0.001)	U (0.00094)	U (0.0012)	U (0.0012)	U (0.002)	U (0.0013)	U (0.0013)	U (0.001)
Isopropylbenzene	10000	2500	U (0.00096)	U (0.00095)	U (0.0019)	0.00044 J (0.001)	U (0.00094)	0.00032 J (0.0012)	U (0.0012)	U (0.002)	U (0.0013)	U (0.0013)	U (0.001)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0019)	U (0.0037)	U (0.002)	U (0.0019)	U (0.0024)	U (0.0025)	U (0.0041)	U (0.0026)	U (0.0026)	U (0.002)
Toluene	10000	100	U (0.00096)	U (0.00095)	U (0.0019)	U (0.001)	U (0.00094)	U (0.0012)	U (0.0012)	U (0.002)	U (0.0013)	U (0.0013)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.0019)	U (0.0037)	U (0.002)	U (0.0019)	U (0.0024)	U (0.0025)	U (0.0041)	U (0.0026)	U (0.0026)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0019)	U (0.0037)	U (0.002)	U (0.0019)	U (0.0024)	U (0.0025)	U (0.0041)	U (0.0026)	U (0.0026)	U (0.002)
Xylenes (total)	7900	1000	U (0.0019)	U (0.0019)	U (0.0037)	U (0.002)	U (0.0019)	U (0.0024)	U (0.0025)	U (0.0041)	U (0.0026)	U (0.0026)	U (0.002)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-AA04-c	301-AA04-c	301-AA05-a	301-AA05-a	301-AA05-a	301-AA05-a	301-AA05-a	301-AA05-a	301-AB01-a	301-AB01-b	301-AB01-b	301-AB01-b
Cell	Soil Direct Contact	Soil to	301-AA04	301-AA04	301-AA05	301-AA05	301-AA05	301-AA05	301-AA05	301-AA05	301-AB01	301-AB01	301-AB01	301-AB01
Field Sample ID	Numeric Value	Groundwater	301-AA04-C4-VOC	301-AA04-C5-VOC	301-AA05-C1-VOC	301-AA05-C2-VOC	301-AA05-C3-VOC	301-AA05-C4-VOC	301-AA05-C5-VOC	301-AB01-C2-VOC	301-AB01-C1-VOC	301-AB01-C3-VOC	301-AB01-C4-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.0 - 2.1	2.6 - 2.7	0.5 - 0.6	1.2 - 1.4	2.4 - 2.6	3.7 - 3.8	5.5 - 5.6	0.6 - 0.8	0.6 - 0.8	2.0 - 2.1	3.0 - 3.2	
Sample Date	(mg/kg)	(mg/kg)	8/8/2022	8/8/2022	8/10/2022	8/11/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/15/2022	8/15/2022	8/15/2022	8/15/2022
<b>VOCs</b>														
Benzene	280	0.5	0.00016 J (0.00049)	U (0.00049)	U (0.00067)	0.00051 J (0.0006)	U (0.00053)	0.00054 J (0.00066)	U (0.00088)	U (0.00043)	U (0.00039)	U (0.00038)	U (0.00046)	
1,2-Dibromoethane	3.7	0.005	U (0.00049)	U (0.00049)	U (0.00067)	U (0.0006)	U (0.00053)	U (0.00066)	U (0.00088)	U (0.00043)	U (0.00039)	U (0.00038)	U (0.00046)	
1,2-Dichloroethane	85	0.5	U (0.00098)	U (0.00098)	U (0.0013)	U (0.0012)	U (0.001)	U (0.0013)	U (0.0018)	U (0.00085)	U (0.00079)	U (0.00076)	U (0.00091)	
Ethyl Benzene	880	70	U (0.00098)	U (0.00098)	U (0.0013)	0.00046 J (0.0012)	U (0.001)	U (0.0013)	U (0.0018)	U (0.00085)	U (0.00079)	U (0.00076)	U (0.00091)	
Isopropylbenzene	10000	2500	0.00014 J (0.00098)	0.001 (0.00098)	U (0.0013)	0.00021 J (0.0012)	U (0.001)	U (0.0013)	U (0.0018)	U (0.00085)	U (0.00079)	U (0.00076)	U (0.00091)	
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.002)	U (0.0027)	U (0.0024)	U (0.0021)	U (0.0026)	U (0.0035)	U (0.0017)	U (0.0016)	U (0.0015)	U (0.0018)	
Toluene	10000	100	U (0.00098)	U (0.00098)	U (0.0013)	0.00085 J (0.0012)	U (0.001)	U (0.0013)	U (0.0018)	U (0.00085)	U (0.00079)	U (0.00076)	U (0.00091)	
1,2,4-Trimethylbenzene	4700	300	0.0005 J (0.002)	U (0.002)	U (0.0027)	0.00043 J (0.0024)	U (0.0021)	U (0.0026)	U (0.0035)	U (0.0017)	U (0.0016)	U (0.0015)	U (0.0018)	
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.002)	U (0.0027)	0.00034 J (0.0024)	U (0.0021)	U (0.0026)	U (0.0035)	U (0.0017)	U (0.0016)	U (0.0015)	U (0.0018)	
Xylenes (total)	7900	1000	U (0.002)	0.00289 J (0.002)	U (0.0027)	0.00127 J (0.0024)	U (0.0021)	U (0.0026)	U (0.0035)	U (0.0017)	U (0.0016)	U (0.0015)	U (0.0018)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-AB05-a	301-AB05-a	301-AB05-a	301-AB05-a	301-AB05-a	301-AB05-a	301-AC02-a	301-AC02-a	301-AC02-a	301-AC02-a	301-AC02-a	301-AC03-b
Cell	Soil Direct Contact	Soil to	301-AB05	301-AB05	301-AB05	301-AB05	301-AB05	301-AB05	301-AC02	301-AC02	301-AC02	301-AC02	301-AC02	301-AC03
Field Sample ID	Numeric Value	Groundwater	301-AB05-C1-VOC	301-AB05-C2-VOC	301-AB05-C3-VOC	301-AB05-C4-VOC	301-AB05-C5-VOC	301-AB05-C5-VOC	301-AC02-C1-VOC	301-AC02-C2-VOC	301-AC02-C3-VOC	301-AC02-C4-VOC	301-AC02-C5-VOC	301-AC03-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	1.2 - 1.4	2.4 - 2.6	4.0 - 4.1	5.8 - 5.9	5.8 - 5.9	0.8 - 0.9	1.4 - 1.5	2.7 - 2.9	4.0 - 4.1	5.5 - 5.6	0.3 - 0.5
Sample Date	(mg/kg)	(mg/kg)	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/16/2022	8/16/2022	8/16/2022	8/16/2022	8/16/2022	8/17/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.00066)	0.012 J (0.03)	U (0.00072)	U (0.028)	U (0.029)	U (0.029)	U (0.00048)	U (0.00049)	U (0.0005)	U (0.00054)	U (0.00036)	U (0.00043)
1,2-Dibromoethane	3.7	0.005	U (0.00066)	U (0.03)	U (0.00072)	U (0.028)	U (0.029)	U (0.029)	U (0.00048)	U (0.00049)	U (0.0005)	U (0.00054)	U (0.00036)	U (0.00043)
1,2-Dichloroethane	85	0.5	U (0.0013)	U (0.06)	U (0.0014)	U (0.056)	U (0.058)	U (0.058)	U (0.00096)	U (0.00097)	U (0.001)	U (0.0011)	U (0.00073)	U (0.00085)
Ethyl Benzene	880	70	U (0.0013)	U (0.06)	U (0.0014)	U (0.056)	U (0.058)	U (0.058)	U (0.00096)	U (0.00097)	U (0.001)	U (0.0011)	U (0.00073)	U (0.00085)
Isopropylbenzene	10000	2500	U (0.0013)	0.01 J (0.06)	U (0.0014)	U (0.056)	U (0.058)	U (0.058)	U (0.00096)	U (0.00097)	U (0.001)	U (0.0011)	U (0.00073)	U (0.00085)
Methyl tert-butyl ether	8500	2	U (0.0026)	U (0.12)	U (0.0029)	U (0.11)	U (0.12)	U (0.12)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0022)	U (0.0015)	U (0.0017)
Toluene	10000	100	U (0.0013)	U (0.06)	U (0.0014)	0.037 J (0.056)	U (0.058)	U (0.058)	U (0.00096)	U (0.00097)	U (0.001)	U (0.0011)	U (0.00073)	U (0.00085)
1,2,4-Trimethylbenzene	4700	300	U (0.0026)	U (0.12)	U (0.0029)	U (0.11)	U (0.12)	U (0.12)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0022)	U (0.0015)	U (0.0017)
1,3,5-Trimethylbenzene	4700	93	U (0.0026)	U (0.12)	U (0.0029)	U (0.11)	U (0.12)	U (0.12)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0022)	U (0.0015)	U (0.0017)
Xylenes (total)	7900	1000	U (0.0026)	U (0.12)	U (0.0029)	U (0.11)	U (0.12)	U (0.12)	U (0.0019)	U (0.0019)	U (0.002)	U (0.0022)	U (0.0015)	U (0.0017)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-AC03-b	301-AC03-b	301-AC03-b	301-T01-a	301-T01-b	301-T01-b	301-T01-b	301-T01-b	301-T02-a	301-U01-b	301-U01-b
Cell	Soil Direct Contact	Soil to	301-AC03	301-AC03	301-AC03	301-T01	301-T01	301-T01	301-T01	301-T01	301-T02	301-U01	301-U01
Field Sample ID	Numeric Value	Groundwater	301-AC03-C2-VOC	301-AC03-C3-VOC	301-AC03-C4-VOC	301-T01-C4-VOC	301-T01-C1-VOC	301-T01-C2-VOC	301-T01-C3-VOC	301-T01-C5-VOC	301-T02-C1-VOC	301-U01-C4-VOC	301-U01-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.8 - 0.9	1.4 - 1.5	1.8 - 2.0	1.8 - 2.0	0.3 - 0.5	0.9 - 1.1	1.2 - 1.4	2.3 - 2.4	0.9 - 1.1	1.2 - 1.4	1.5 - 1.7
Sample Date	(mg/kg)	(mg/kg)	8/17/2022	8/17/2022	8/17/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00051)	U (0.00053)	U (0.00056)	0.00036 J (0.00058)	0.023 J (0.036)	0.0039 (0.00052)	0.0031 (0.00044)	0.00092 (0.00056)	0.5 (0.026)	0.39 (0.028)	0.43 (0.03)
1,2-Dibromoethane	3.7	0.005	U (0.00051)	U (0.00053)	U (0.00056)	U (0.00058)	0.0012 (0.00052)	U (0.00052)	U (0.00044)	U (0.00056)	U (0.026)	U (0.028)	U (0.03)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.0011)	U (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.00088)	U (0.0011)	U (0.053)	U (0.055)	U (0.06)
Ethyl Benzene	880	70	U (0.001)	U (0.0011)	U (0.0011)	U (0.0012)	0.08 (0.072)	0.0016 (0.001)	0.00052 J (0.00088)	U (0.0011)	0.1 (0.053)	1.5 (0.055)	2.1 (0.06)
Isopropylbenzene	10000	2500	U (0.001)	U (0.0011)	U (0.0011)	0.00023 J (0.0012)	1.5 (0.072)	0.013 (0.001)	0.0054 (0.00088)	0.00073 J (0.0011)	0.049 J (0.053)	3 (0.055)	3.3 (0.06)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0021)	U (0.0022)	U (0.0023)	U (0.0021)	U (0.0021)	U (0.0018)	U (0.0023)	U (0.1)	U (0.11)	U (0.12)
Toluene	10000	100	U (0.001)	U (0.0011)	U (0.0011)	U (0.0012)	0.0065 (0.001)	0.001 (0.001)	0.00056 J (0.00088)	U (0.0011)	0.11 (0.053)	0.072 (0.055)	0.066 (0.06)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.0021)	U (0.0022)	U (0.0023)	0.07 J (0.14)	0.0059 (0.0021)	0.0011 J (0.0018)	U (0.0023)	0.057 J (0.1)	1.3 (0.11)	1.8 (0.12)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.0021)	U (0.0022)	U (0.0023)	0.052 J (0.14)	0.00086 J (0.0021)	0.00029 J (0.0018)	U (0.0023)	0.031 J (0.1)	0.24 (0.11)	0.26 (0.12)
Xylenes (total)	7900	1000	U (0.002)	U (0.0021)	U (0.0022)	U (0.0023)	0.0708 J (0.14)	0.00337 J (0.0021)	0.00094 J (0.0018)	U (0.0023)	0.303 J (0.1)	0.088 J (0.11)	0.093 J (0.12)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**

**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential	Non-Residential	301-U01-d	301-U01-d	301-U01-d	301-U02-c	301-U02-c	301-U02-c	301-U02-c	301-U02-c	301-U03-b	301-U03-c	301-U03-c
Cell	Soil Direct Contact	Soil to	301-U01	301-U01	301-U01	301-U02	301-U02	301-U02	301-U02	301-U02	301-U03	301-U03	301-U03
Field Sample ID	Numeric Value	Groundwater	301-U01-C1-VOC	301-U01-C2-VOC	301-U01-C3-VOC	301-U02-C1-VOC	301-U02-C2-VOC	301-U02-C3-VOC	301-U02-C4-VOC	301-U02-C5-VOC	301-U03-C1-VOC	301-U03-C2-VOC	301-U03-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.2 - 0.3	0.3 - 0.5	0.6 - 0.8	0.2 - 0.3	0.5 - 0.6	0.9 - 1.1	1.2 - 1.4	1.7 - 1.8	0.0 - 0.2	0.8 - 0.9	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/5/2022	8/5/2022	8/5/2022
<b>VOCs</b>													
Benzene	280	0.5	0.0017 (0.0005)	1.5 (0.064)	5.4 (0.056)	U (0.00062)	0.00032 J (0.0005)	0.013 J (0.031)	0.027 (0.026)	0.00051 J (0.00058)	0.24 (0.039)	0.0077 (0.00099)	22 (0.063)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.064)	U (0.056)	U (0.00062)	U (0.0005)	U (0.031)	U (0.026)	U (0.00058)	U (0.039)	U (0.00099)	U (0.063)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.13)	U (0.11)	U (0.0012)	U (0.001)	U (0.063)	U (0.053)	U (0.0012)	U (0.078)	U (0.002)	U (0.12)
Ethyl Benzene	880	70	0.00029 J (0.001)	1 (0.13)	3.7 (0.11)	U (0.0012)	0.00016 J (0.001)	0.013 J (0.063)	0.037 J (0.053)	0.00024 J (0.0012)	0.12 (0.078)	0.00068 J (0.002)	35 (0.12)
Isopropylbenzene	10000	2500	0.00098 J (0.001)	2.5 (0.13)	5 (0.11)	U (0.0012)	0.00026 J (0.001)	0.088 (0.063)	3.8 (0.053)	0.059 (0.0012)	2.5 (0.078)	0.0023 (0.002)	6.7 (0.12)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.26)	U (0.22)	U (0.0025)	U (0.002)	U (0.12)	U (0.1)	U (0.0023)	U (0.16)	0.00041 J (0.004)	3.2 (0.25)
Toluene	10000	100	0.00065 JB (0.001)	1.3 (0.13)	3.4 (0.11)	U (0.0012)	U (0.001)	U (0.063)	0.032 J (0.053)	U (0.0012)	0.13 (0.078)	0.0018 J (0.002)	U (0.12)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	0.67 (0.26)	1.6 (0.22)	U (0.0025)	U (0.002)	0.022 J (0.12)	0.78 (0.1)	0.0049 (0.0023)	0.16 (0.16)	0.002 J (0.004)	66 (12)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	0.14 J (0.26)	0.31 (0.22)	U (0.0025)	U (0.002)	U (0.12)	0.26 (0.1)	0.0024 (0.0023)	0.028 J (0.16)	0.00063 J (0.004)	14 (0.25)
Xylenes (total)	7900	1000	0.00109 J (0.002)	2.65 J (0.26)	8.27 J (0.22)	U (0.0025)	U (0.002)	0.0755 J (0.12)	0.109 J (0.1)	0.00195 J (0.0023)	0.339 J (0.16)	0.00288 J (0.004)	43.087 J (0.25)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-U03-c	301-U03-c	301-V01-b	301-V01-b	301-V01-c	301-V01-c	301-V01-c	301-V02-b	301-V02-b	301-V02-b	301-V02-c	301-V02-c
Cell	Soil Direct Contact	Soil to	301-U03	301-U03	301-V01	301-V01	301-V01	301-V01	301-V01	301-V02	301-V02	301-V02	301-V02	301-V02
Field Sample ID	Numeric Value	Groundwater	301-U03-C4-VOC	301-U03-C5-VOC	301-V01-C1-VOC	301-V01-C2-VOC	301-V01-C3-VOC	301-V01-C4-VOC	301-V01-C4-VOC	301-V02-C3-VOC	301-V02-C4-VOC	301-V02-C5-VOC	301-V02-C1-VOC	301-V02-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.7 - 1.8	2.3 - 2.4	0.2 - 0.3	0.5 - 0.6	0.9 - 1.1	1.2 - 1.4	1.2 - 1.4	2.0 - 2.1	2.9 - 3.0	4.0 - 4.1	0.5 - 0.6	1.2 - 1.4
Sample Date	(mg/kg)	(mg/kg)	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022
<b>VOCs</b>														
Benzene	280	0.5	7.8 (0.029)	1.3 (0.064)	0.00046 (0.00032)	U (0.00078)	0.00045 J (0.00057)	U (0.031)	U (0.029)	U (0.032)	U (0.031)	0.047 (0.032)	U (0.16)	
1,2-Dibromoethane	3.7	0.005	U (0.029)	U (0.064)	U (0.00032)	U (0.00078)	U (0.00057)	U (0.031)	U (0.029)	U (0.032)	U (0.031)	U (0.032)	U (0.16)	
1,2-Dichloroethane	85	0.5	U (0.057)	U (0.13)	U (0.00063)	U (0.0016)	U (0.0011)	U (0.062)	U (0.057)	U (0.064)	U (0.062)	U (0.063)	U (0.32)	
Ethyl Benzene	880	70	8 (0.057)	0.88 (0.13)	U (0.00063)	U (0.0016)	0.00036 J (0.0011)	U (0.062)	U (0.057)	U (0.064)	0.0093 J (0.062)	0.056 J (0.063)	0.073 J (0.32)	
Isopropylbenzene	10000	2500	1.5 (0.057)	2.9 (0.13)	0.00008 J (0.00063)	U (0.0016)	0.00076 J (0.0011)	0.016 J (0.062)	U (0.057)	U (0.064)	U (0.062)	0.18 (0.063)	0.31 J (0.32)	
Methyl tert-butyl ether	8500	2	1.8 (0.11)	0.11 J (0.26)	U (0.0013)	U (0.0031)	U (0.0023)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.65)	
Toluene	10000	100	U (0.057)	U (0.13)	U (0.00063)	U (0.0016)	0.00066 J (0.0011)	U (0.062)	U (0.057)	U (0.064)	U (0.062)	0.046 J (0.063)	U (0.32)	
1,2,4-Trimethylbenzene	4700	300	9.7 (0.11)	1.6 (0.26)	U (0.0013)	U (0.0031)	0.0021 J (0.0023)	U (0.12)	U (0.11)	0.024 J (0.13)	U (0.12)	0.05 J (0.13)	U (0.65)	
1,3,5-Trimethylbenzene	4700	93	3 (0.11)	0.48 (0.26)	U (0.0013)	U (0.0031)	U (0.0023)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	0.014 J (0.13)	U (0.65)	
Xylenes (total)	7900	1000	9.522 J (0.11)	1.025 J (0.26)	U (0.0013)	U (0.0031)	0.0026 J (0.0023)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	0.1615 J (0.13)	U (0.65)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-V03-c	301-V03-c	301-V03-c	301-V03-c	301-V03-c	301-V03-c	301-W01-d	301-W01-d	301-W01-d	301-W01-d	301-W02-a	301-W02-a
Cell	Soil Direct Contact	Soil to	301-V03	301-V03	301-V03	301-V03	301-V03	301-V03	301-W01	301-W01	301-W01	301-W01	301-W02	301-W02
Field Sample ID	Numeric Value	Groundwater	301-V03-C1-VOC	301-V03-C2-VOC	301-V03-C3-VOC	301-V03-C4-VOC	301-V03-C5-VOC	301-V03-C5-VOC	301-W01-C1-VOC	301-W01-C2-VOC	301-W01-C3-VOC	301-W01-C4-VOC	301-W02-C1-VOC	301-W02-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.3 - 0.5	0.8 - 0.9	1.1 - 1.2	1.5 - 1.7	2.0 - 2.1	2.0 - 2.1	0.6 - 0.8	1.1 - 1.2	2.1 - 2.3	3.0 - 3.2	0.2 - 0.3	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	10/20/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.00068)	0.00024 J (0.00035)	U (0.032)	U (0.029)	U (0.045)	0.04 J (0.046)	U (0.00051)	U (0.00048)	U (0.00054)	U (0.00054)	U (0.00056)	U (0.00072)
1,2-Dibromoethane	3.7	0.005	U (0.00068)	U (0.00035)	U (0.032)	U (0.029)	U (0.045)	U (0.046)	U (0.00051)	U (0.00048)	U (0.00054)	U (0.00054)	U (0.00056)	U (0.00072)
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.00069)	U (0.065)	U (0.057)	U (0.09)	U (0.092)	U (0.001)	U (0.00097)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0014)
Ethyl Benzene	880	70	U (0.0014)	0.00018 J (0.00069)	0.15 (0.065)	0.14 (0.057)	0.027 J (0.09)	0.14 (0.092)	U (0.001)	U (0.00097)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0014)
Isopropylbenzene	10000	2500	U (0.0014)	0.00017 J (0.00069)	1.2 (0.065)	1.2 (0.057)	0.042 J (0.09)	0.36 (0.092)	0.01 (0.001)	0.0006 J (0.00097)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0014)
Methyl tert-butyl ether	8500	2	U (0.0027)	U (0.0014)	U (0.13)	U (0.11)	U (0.18)	U (0.18)	U (0.002)	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0029)
Toluene	10000	100	U (0.0014)	0.00054 J (0.00069)	U (0.065)	U (0.057)	U (0.09)	0.18 (0.092)	U (0.001)	U (0.00097)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0014)
1,2,4-Trimethylbenzene	4700	300	U (0.0027)	U (0.0014)	U (0.13)	U (0.11)	0.097 J (0.18)	0.7 (0.18)	0.00042 J (0.002)	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0029)
1,3,5-Trimethylbenzene	4700	93	U (0.0027)	U (0.0014)	U (0.13)	U (0.11)	U (0.18)	0.12 J (0.18)	U (0.002)	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0029)
Xylenes (total)	7900	1000	U (0.0027)	U (0.0014)	U (0.13)	U (0.11)	0.134 J (0.18)	1.42 J (0.18)	0.00335 J (0.002)	U (0.0019)	U (0.0022)	U (0.0022)	U (0.0022)	U (0.0029)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-W02-a	301-W02-a	301-W02-a	301-X01-b	301-X01-b	301-X01-b	301-X01-b	301-X02-c	301-X02-c	301-X02-c	301-X02-c
Cell	Soil Direct Contact	Soil to	301-W02	301-W02	301-W02	301-X01	301-X01	301-X01	301-X01	301-X02	301-X02	301-X02	301-X02
Field Sample ID	Numeric Value	Groundwater	301-W02-C3-VOC	301-W02-C4-VOC	301-W02-C5-VOC	301-X01-C1-VOC	301-X01-C2-VOC	301-X01-C3-VOC	301-X01-C4-VOC	301-X02-C2-VOC	301-X02-C3-VOC	301-X02-C4-VOC	301-X02-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.1 - 1.2	1.7 - 1.8	2.1 - 2.3	0.8 - 0.9	1.1 - 1.2	2.1 - 2.3	3.0 - 3.2	1.1 - 1.2	2.1 - 2.3	3.0 - 3.2	4.0 - 4.1
Sample Date	(mg/kg)	(mg/kg)	8/12/2022	8/12/2022	8/12/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	8/12/2022	8/12/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00052)	U (0.00047)	U (0.00054)	U (0.00082)	U (0.00048)	U (0.00045)	U (0.00064)	U (0.00053)	U (0.0005)	U (0.00052)	U (0.029)
1,2-Dibromoethane	3.7	0.005	U (0.00052)	U (0.00047)	U (0.00054)	U (0.00082)	U (0.00048)	U (0.00045)	U (0.00064)	U (0.00053)	U (0.0005)	U (0.00052)	U (0.029)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.00094)	U (0.0011)	U (0.0016)	U (0.00096)	U (0.0009)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	U (0.058)
Ethyl Benzene	880	70	U (0.001)	U (0.00094)	U (0.0011)	U (0.0016)	U (0.00096)	U (0.0009)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	U (0.058)
Isopropylbenzene	10000	2500	U (0.001)	U (0.00094)	U (0.0011)	0.0023 (0.0016)	0.0034 (0.00096)	0.00041 J (0.0009)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	0.12 (0.058)
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.0019)	U (0.0022)	U (0.0033)	U (0.0019)	U (0.0018)	U (0.0026)	U (0.0021)	U (0.002)	U (0.0021)	U (0.12)
Toluene	10000	100	U (0.001)	U (0.00094)	U (0.0011)	U (0.0016)	U (0.00096)	U (0.0009)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	U (0.058)
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	U (0.0019)	U (0.0022)	0.0054 (0.0033)	0.0068 (0.0019)	U (0.0018)	U (0.0026)	U (0.0021)	U (0.002)	U (0.0021)	U (0.12)
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	U (0.0019)	U (0.0022)	0.0024 J (0.0033)	0.0049 (0.0019)	U (0.0018)	U (0.0026)	U (0.0021)	U (0.002)	U (0.0021)	U (0.12)
Xylenes (total)	7900	1000	U (0.0021)	U (0.0019)	U (0.0022)	U (0.0033)	0.00124 J (0.0019)	U (0.0018)	U (0.0026)	U (0.0021)	U (0.002)	U (0.0021)	U (0.12)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-X02-d	301-Y01-c	301-Y01-c	301-Y01-c	301-Y01-c	301-Y01-c	301-Y02-b	301-Y02-b	301-Y02-b	301-Y02-b	301-Z01-c	301-Z01-c
Cell	Soil Direct Contact	Soil to	301-X02	301-Y01	301-Y01	301-Y01	301-Y01	301-Y01	301-Y02	301-Y02	301-Y02	301-Y02	301-Z01	301-Z01
Field Sample ID	Numeric Value	Groundwater	301-X02-C1-VOC	301-Y01-C1-VOC	301-Y01-C2-VOC	301-Y01-C3-VOC	301-Y01-C4-VOC	301-Y02-C1-VOC	301-Y02-C2-VOC	301-Y02-C3-VOC	301-Y02-C4-VOC	301-Z01-C1-VOC	301-Z01-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	0.2 - 0.3	0.3 - 0.5	0.7 - 0.9	1.1 - 1.2	0.5 - 0.6	1.2 - 1.4	2.1 - 2.3	3.0 - 3.2	0.2 - 0.3	0.5 - 0.6	
Sample Date	(mg/kg)	(mg/kg)	8/12/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	8/12/2022	8/12/2022	8/5/2022	8/5/2022	
<b>VOCs</b>														
Benzene	280	0.5	0.00053 J (0.00097)	U (0.00053)	U (0.00064)	U (0.0005)	U (0.00043)	0.001 (0.00052)	U (0.029)	U (0.029)	U (0.34)	U (0.00049)	U (0.00046)	
1,2-Dibromoethane	3.7	0.005	U (0.00097)	U (0.00053)	U (0.00064)	U (0.0005)	U (0.00043)	U (0.00052)	U (0.029)	U (0.029)	U (0.34)	U (0.00049)	U (0.00046)	
1,2-Dichloroethane	85	0.5	U (0.0019)	U (0.001)	U (0.0013)	U (0.00099)	U (0.00086)	U (0.001)	U (0.057)	U (0.058)	U (0.67)	U (0.00099)	U (0.00093)	
Ethyl Benzene	880	70	U (0.0019)	U (0.001)	U (0.0013)	U (0.00099)	U (0.00086)	0.00052 J (0.001)	0.014 J (0.057)	0.032 J (0.058)	0.1 J (0.67)	U (0.00099)	U (0.00093)	
Isopropylbenzene	10000	2500	U (0.0019)	0.00017 J (0.001)	U (0.0013)	0.00017 J (0.00099)	U (0.00086)	0.058 (0.001)	4.6 (0.057)	12 (0.058)	54 (0.67)	U (0.00099)	U (0.00093)	
Methyl tert-butyl ether	8500	2	U (0.0039)	U (0.0021)	U (0.0025)	U (0.002)	U (0.0017)	U (0.0021)	U (0.11)	U (0.12)	U (1.3)	U (0.002)	U (0.0018)	
Toluene	10000	100	U (0.0019)	U (0.001)	U (0.0013)	U (0.00099)	U (0.00086)	0.001 (0.001)	0.054 J (0.057)	0.094 (0.058)	U (0.67)	U (0.00099)	U (0.00093)	
1,2,4-Trimethylbenzene	4700	300	U (0.0039)	0.00044 J (0.0021)	0.00044 J (0.0025)	U (0.002)	U (0.0017)	0.0014 J (0.0021)	U (0.11)	U (0.12)	U (1.3)	U (0.002)	U (0.0018)	
1,3,5-Trimethylbenzene	4700	93	U (0.0039)	U (0.0021)	U (0.0025)	U (0.002)	U (0.0017)	U (0.0021)	U (0.11)	U (0.12)	U (1.3)	U (0.002)	U (0.0018)	
Xylenes (total)	7900	1000	U (0.0039)	U (0.0021)	U (0.0025)	U (0.002)	U (0.0017)	0.00188 J (0.0021)	U (0.11)	0.087 J (0.12)	U (1.3)	U (0.002)	U (0.0018)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	301-Z01-c	301-Z01-d	301-Z02-a	301-Z02-b	301-Z02-c	301-Z02-c	301-Z02-c	301-Z03-d	301-Z03-d	301-Z03-d	301-Z03-d
Cell	Soil Direct Contact	Soil to	301-Z01	301-Z01	301-Z02	301-Z02	301-Z02	301-Z02	301-Z02	301-Z03	301-Z03	301-Z03	301-Z03
Field Sample ID	Numeric Value	Groundwater	301-Z01-C3-VOC	301-Z01-C4-VOC	301-Z02-C1-VOC	301-Z02-C2-VOC	301-Z02-C3-VOC	301-Z02-C4-VOC	301-Z02-C5-VOC	301-Z03-C1-VOC	301-Z03-C2-VOC	301-Z03-C3-VOC	301-Z03-C4-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.8 - 0.9	1.2 - 1.4	0.2 - 0.3	0.3 - 0.5	0.6 - 0.8	0.9 - 1.1	1.2 - 1.4	0.5 - 0.6	1.1 - 1.2	2.4 - 2.6	3.0 - 3.2
Sample Date	(mg/kg)	(mg/kg)	8/5/2022	8/5/2022	8/9/2022	8/9/2022	8/9/2022	8/9/2022	8/9/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00048)	U (0.00062)	U (0.00049)	U (0.00056)	U (0.0005)	U (0.00049)	U (0.029)	U (0.0011)	U (0.0017)	U (0.00072)	U (0.035)
1,2-Dibromoethane	3.7	0.005	U (0.00048)	U (0.00062)	U (0.00049)	U (0.00056)	U (0.0005)	U (0.00049)	U (0.029)	U (0.0011)	U (0.0017)	U (0.00072)	U (0.035)
1,2-Dichloroethane	85	0.5	U (0.00097)	U (0.0012)	U (0.00098)	U (0.0011)	U (0.001)	U (0.00098)	U (0.059)	U (0.0022)	U (0.0035)	U (0.0014)	U (0.07)
Ethyl Benzene	880	70	U (0.00097)	U (0.0012)	U (0.00098)	U (0.0011)	U (0.001)	U (0.00098)	0.0083 J (0.059)	U (0.0022)	U (0.0035)	U (0.0014)	U (0.07)
Isopropylbenzene	10000	2500	U (0.00097)	U (0.0012)	U (0.00098)	U (0.0011)	U (0.001)	U (0.00098)	0.12 (0.059)	U (0.0022)	U (0.0035)	U (0.0014)	U (0.07)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0025)	U (0.002)	U (0.0022)	U (0.002)	U (0.002)	U (0.12)	U (0.0045)	U (0.007)	U (0.0029)	U (0.14)
Toluene	10000	100	U (0.00097)	U (0.0012)	U (0.00098)	U (0.0011)	U (0.001)	U (0.00098)	U (0.059)	U (0.0022)	U (0.0035)	U (0.0014)	U (0.07)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.0025)	U (0.002)	U (0.0022)	U (0.002)	U (0.002)	0.35 (0.12)	U (0.0045)	U (0.007)	U (0.0029)	U (0.14)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0025)	U (0.002)	U (0.0022)	U (0.002)	U (0.002)	0.26 (0.12)	U (0.0045)	U (0.007)	U (0.0029)	U (0.14)
Xylenes (total)	7900	1000	U (0.0019)	U (0.0025)	U (0.002)	U (0.0022)	U (0.002)	U (0.002)	U (0.12)	U (0.0045)	U (0.007)	U (0.0029)	U (0.14)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AD03-a	302-AD03-a	302-AD03-b	302-AD03-b	302-AD04-b	302-AD04-b	302-AD04-b	302-AD04-b	302-AD04-c	302-AD05-c	302-AD05-c
Cell	Soil Direct Contact	Soil to	302-AD03	302-AD03	302-AD03	302-AD03	302-AD04	302-AD04	302-AD04	302-AD04	302-AD04	302-AD05	302-AD05
Field Sample ID	Numeric Value	Groundwater	302-AD03-C3-VOC	302-AD03-C4-VOC	302-AD03-C1-VOC	302-AD03-C2-VOC	302-AD04-C1-VOC	302-AD04-C3-VOC	302-AD04-C4-VOC	302-AD04-C5-VOC	302-AD04-C2-VOC	302-AD05-C1-VOC	302-AD05-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	3.4 - 3.5	5.5 - 5.6	1.2 - 1.4	2.4 - 2.6	0.5 - 0.6	2.0 - 2.1	3.0 - 3.2	4.0 - 4.1	1.4 - 1.5	0.5 - 0.6	0.8 - 0.9
Sample Date	(mg/kg)	(mg/kg)	8/16/2022	8/16/2022	8/16/2022	8/16/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00068)	U (0.0005)	U (0.00056)	U (0.00051)	U (0.00086)	U (0.0007)	U (0.00048)	U (0.00055)	U (0.0006)	U (0.00051)	U (0.00054)
1,2-Dibromoethane	3.7	0.005	U (0.00068)	U (0.0005)	U (0.00056)	U (0.00051)	U (0.00086)	U (0.0007)	U (0.00048)	U (0.00055)	U (0.0006)	U (0.00051)	U (0.00054)
1,2-Dichloroethane	85	0.5	U (0.0014)	U (0.001)	U (0.0011)	U (0.001)	U (0.0017)	U (0.0014)	U (0.00096)	U (0.0011)	U (0.0012)	U (0.001)	U (0.0011)
Ethyl Benzene	880	70	U (0.0014)	U (0.001)	U (0.0011)	U (0.001)	U (0.0017)	U (0.0014)	U (0.00096)	U (0.0011)	U (0.0012)	0.00054 J (0.001)	U (0.0011)
Isopropylbenzene	10000	2500	U (0.0014)	U (0.001)	U (0.0011)	U (0.001)	U (0.0017)	U (0.0014)	U (0.00096)	U (0.0011)	U (0.0012)	0.047 (0.001)	0.0017 (0.0011)
Methyl tert-butyl ether	8500	2	U (0.0027)	U (0.002)	U (0.0022)	U (0.002)	U (0.0034)	U (0.0028)	U (0.0019)	U (0.0022)	U (0.0024)	U (0.002)	U (0.0022)
Toluene	10000	100	U (0.0014)	U (0.001)	U (0.0011)	U (0.001)	U (0.0017)	U (0.0014)	U (0.00096)	U (0.0011)	U (0.0012)	U (0.001)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	U (0.0027)	0.0007 J (0.002)	U (0.0022)	U (0.002)	U (0.0034)	U (0.0028)	U (0.0019)	U (0.0022)	U (0.0024)	0.0011 J (0.002)	U (0.0022)
1,3,5-Trimethylbenzene	4700	93	U (0.0027)	0.00025 J (0.002)	U (0.0022)	U (0.002)	U (0.0034)	U (0.0028)	U (0.0019)	U (0.0022)	U (0.0024)	U (0.002)	U (0.0022)
Xylenes (total)	7900	1000	U (0.0027)	0.0013 J (0.002)	U (0.0022)	U (0.002)	U (0.0034)	U (0.0028)	U (0.0019)	U (0.0022)	U (0.0024)	0.00141 J (0.002)	U (0.0022)

- Notes:**
- Concentrations are presented in mg/kg.
  - No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AD05-c	302-AD05-c	302-AD06-d	302-AD06-d	302-AD06-d	302-AD06-d	302-AD06-d	302-AD07-a	302-AD07-a	302-AD07-a	302-AD07-a	302-AD07-a
Cell	Soil Direct Contact	Soil to	302-AD05	302-AD05	302-AD06	302-AD06	302-AD06	302-AD06	302-AD06	302-AD07	302-AD07	302-AD07	302-AD07	302-AD07
Field Sample ID	Numeric Value	Groundwater	302-AD05-C3-VOC	302-AD05-C4-VOC	302-AD06-C1-VOC	302-AD06-C2-VOC	302-AD06-C3-VOC	302-AD06-C4-VOC	302-AD07-C1-VOC	302-AD07-C2-VOC	302-AD07-C3-VOC	302-AD07-C4-VOC	302-AD07-C5-VOC	302-AD07-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.5 - 1.7	2.1 - 2.3	0.2 - 0.3	0.5 - 0.6	0.9 - 1.1	1.4 - 1.5	0.5 - 0.6	0.9 - 1.1	1.7 - 1.8	2.4 - 2.6	3.4 - 3.5	3.4 - 3.5
Sample Date	(mg/kg)	(mg/kg)	8/17/2022	8/17/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.0005)	0.00042 J (0.00046)	0.00088 (0.00052)	0.0012 (0.0005)	U (0.034)	U (0.038)	U (0.00057)	U (0.00052)	U (0.00069)	U (0.00044)	U (0.00048)	U (0.00048)
1,2-Dibromoethane	3.7	0.005	U (0.0005)	U (0.00046)	U (0.00052)	U (0.0005)	U (0.034)	U (0.038)	U (0.00057)	U (0.00052)	U (0.00069)	U (0.00044)	U (0.00048)	U (0.00048)
1,2-Dichloroethane	85	0.5	U (0.00099)	U (0.00091)	U (0.001)	U (0.001)	U (0.068)	U (0.075)	U (0.0011)	U (0.001)	U (0.0014)	U (0.00088)	U (0.00096)	U (0.00096)
Ethyl Benzene	880	70	U (0.00099)	U (0.00091)	0.00049 J (0.001)	0.00016 J (0.001)	U (0.068)	U (0.075)	U (0.0011)	U (0.001)	U (0.0014)	U (0.00088)	U (0.00096)	U (0.00096)
Isopropylbenzene	10000	2500	0.0014 (0.00099)	0.0013 (0.00091)	0.00023 J (0.001)	0.0015 (0.001)	4.4 (0.068)	0.018 J (0.075)	U (0.0011)	0.00015 J (0.001)	U (0.0014)	U (0.00088)	U (0.00096)	U (0.00096)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0018)	U (0.0021)	U (0.002)	U (0.14)	U (0.15)	U (0.0023)	U (0.0021)	U (0.0028)	U (0.0018)	U (0.0019)	U (0.0019)
Toluene	10000	100	U (0.00099)	U (0.00091)	0.00072 J (0.001)	U (0.001)	0.037 J (0.068)	U (0.075)	U (0.0011)	U (0.001)	U (0.0014)	U (0.00088)	U (0.00096)	U (0.00096)
1,2,4-Trimethylbenzene	4700	300	U (0.002)	U (0.0018)	0.00085 J (0.0021)	0.0014 J (0.002)	U (0.14)	U (0.15)	U (0.0023)	U (0.0021)	U (0.0028)	U (0.0018)	U (0.0019)	U (0.0019)
1,3,5-Trimethylbenzene	4700	93	U (0.002)	U (0.0018)	0.00039 J (0.0021)	0.00064 J (0.002)	U (0.14)	U (0.15)	U (0.0023)	U (0.0021)	U (0.0028)	U (0.0018)	U (0.0019)	U (0.0019)
Xylenes (total)	7900	1000	U (0.002)	0.00143 J (0.0018)	0.0041 J (0.0021)	0.00153 J (0.002)	U (0.14)	U (0.15)	U (0.0023)	U (0.0021)	U (0.0028)	U (0.0018)	U (0.0019)	U (0.0019)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AE03-a	302-AE03-b	302-AE03-c	302-AE03-d	302-AE03-d	302-AE03-d	302-AE04-a	302-AE04-a	302-AE04-a	302-AE04-a	302-AE04-a	302-AE05-a
Cell	Soil Direct Contact	Soil to	302-AE03	302-AE03	302-AE03	302-AE03	302-AE03	302-AE03	302-AE04	302-AE04	302-AE04	302-AE04	302-AE04	302-AE05
Field Sample ID	Numeric Value	Groundwater	302-AE03-C1-VOC	302-AE03-C5-VOC	302-AE03-C3-VOC	302-AE03-C2-VOC	302-AE03-C4-VOC	302-AE03-C4-VOC	302-AE04-C1-VOC	302-AE04-C2-VOC	302-AE04-C3-VOC	302-AE04-C4-VOC	302-AE04-C5-VOC	302-AE05-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.5 - 0.6	1.4 - 1.5	0.8 - 0.9	1.7 - 1.8	3.0 - 3.2	3.0 - 3.2	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5	0.2 - 0.3
Sample Date	(mg/kg)	(mg/kg)	10/17/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/19/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.036)	U (0.00046)	U (0.028)	U (0.00052)	U (0.0005)	U (0.0005)	U (0.0004)	U (0.029)	U (0.028)	U (0.00046)	U (0.00057)	U (0.00049)
1,2-Dibromoethane	3.7	0.005	U (0.036)	U (0.00046)	U (0.028)	U (0.00052)	U (0.0005)	U (0.0005)	U (0.0004)	U (0.029)	U (0.028)	U (0.00046)	U (0.00057)	U (0.00049)
1,2-Dichloroethane	85	0.5	U (0.073)	U (0.00092)	U (0.055)	U (0.001)	U (0.001)	U (0.001)	U (0.0008)	U (0.058)	U (0.056)	U (0.00093)	U (0.0011)	U (0.00098)
Ethyl Benzene	880	70	0.012 J (0.073)	0.014 J (0.052)	0.034 J (0.055)	0.0032 (0.001)	U (0.001)	U (0.001)	U (0.0008)	0.14 (0.058)	0.038 J (0.056)	U (0.00093)	U (0.0011)	U (0.00098)
Isopropylbenzene	10000	2500	0.24 (0.073)	0.082 (0.052)	0.23 (0.055)	0.15 (0.0012)	U (0.001)	U (0.001)	U (0.0008)	1 (0.058)	0.28 (0.056)	U (0.00093)	U (0.0011)	U (0.00098)
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.0018)	U (0.11)	U (0.0021)	U (0.002)	U (0.002)	U (0.0016)	U (0.12)	U (0.11)	U (0.0018)	U (0.0023)	U (0.002)
Toluene	10000	100	U (0.073)	U (0.00092)	U (0.055)	U (0.001)	U (0.001)	U (0.001)	U (0.0008)	0.037 J (0.058)	0.032 J (0.056)	U (0.00093)	U (0.0011)	U (0.00098)
1,2,4-Trimethylbenzene	4700	300	0.042 J (0.14)	0.76 (0.1)	1.7 (0.11)	0.0014 J (0.0021)	U (0.002)	U (0.002)	U (0.0016)	0.063 J (0.12)	4.1 (0.11)	U (0.0018)	U (0.0023)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.14)	0.15 (0.1)	0.42 (0.11)	U (0.0021)	U (0.002)	U (0.002)	U (0.0016)	0.026 J (0.12)	2 (0.11)	U (0.0018)	U (0.0023)	U (0.002)
Xylenes (total)	7900	1000	0.089 J (0.14)	0.03246 J (0.1)	0.0975 J (0.11)	0.00205 J (0.0021)	U (0.002)	U (0.002)	U (0.0016)	0.16 J (0.12)	0.079 J (0.11)	U (0.0018)	U (0.0023)	U (0.002)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AE05-a	302-AE05-b	302-AE05-b	302-AE05-c	302-AE06-c	302-AE06-c	302-AE06-c	302-AE06-c	302-AE07-b	302-AE07-b	302-AE07-b
Cell	Soil Direct Contact	Soil to	302-AE05	302-AE05	302-AE05	302-AE05	302-AE06	302-AE06	302-AE06	302-AE06	302-AE07	302-AE07	302-AE07
Field Sample ID	Numeric Value	Groundwater	302-AE05-C2-VOC	302-AE05-C3-VOC	302-AE05-C5-VOC	302-AE05-C4-VOC	302-AE06-C1-VOC	302-AE06-C2-VOC	302-AE06-C3-VOC	302-AE06-C4-VOC	302-AE07-C1-VOC	302-AE07-C2-VOC	302-AE07-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.5 - 0.6	0.5 - 0.6	1.1 - 1.2	2.9 - 3.0	0.6 - 0.8	1.2 - 1.4	2.4 - 2.6	2.7 - 2.9	0.6 - 0.8	1.2 - 1.4	2.3 - 2.4
Sample Date	(mg/kg)	(mg/kg)	8/19/2022	8/19/2022	8/19/2022	8/19/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00046)	U (0.00067)	0.0027 (0.00047)	U (0.0004)	0.0011 (0.0008)	0.058 J (0.069)	21 (0.3)	0.0016 (0.00067)	17 (0.035)	0.00073 (0.00049)	5 (0.028)
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00067)	U (0.00047)	U (0.0004)	U (0.0008)	U (0.069)	U (0.03)	U (0.00067)	U (0.035)	U (0.00049)	U (0.028)
1,2-Dichloroethane	85	0.5	U (0.00092)	U (0.0013)	U (0.00095)	U (0.0008)	U (0.0016)	U (0.14)	U (0.061)	U (0.0013)	U (0.07)	U (0.00098)	U (0.057)
Ethyl Benzene	880	70	U (0.00092)	U (0.0013)	0.00044 J (0.00095)	U (0.0008)	0.00026 J (0.0016)	0.041 J (0.14)	15 (0.061)	0.00098 J (0.0013)	13 (0.07)	U (0.00098)	2.1 (0.057)
Isopropylbenzene	10000	2500	U (0.00092)	U (0.0013)	0.00051 J (0.00095)	0.00017 J (0.0008)	0.00018 J (0.0016)	U (0.14)	3 (0.061)	0.00099 J (0.0013)	2.8 (0.07)	U (0.00098)	0.58 (0.057)
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.0027)	U (0.0019)	U (0.0016)	U (0.0032)	U (0.28)	U (0.12)	U (0.0027)	U (0.14)	U (0.002)	U (0.11)
Toluene	10000	100	U (0.00092)	U (0.0013)	U (0.00095)	U (0.0008)	U (0.0016)	U (0.14)	2.1 (0.061)	U (0.0013)	0.46 (0.07)	U (0.00098)	0.042 J (0.057)
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	U (0.0027)	0.00052 J (0.0019)	U (0.0016)	U (0.0032)	0.062 J (0.28)	30 (1.2)	0.0025 J (0.0027)	35 (7)	U (0.002)	6.4 (0.11)
1,3,5-Trimethylbenzene	4700	93	U (0.0018)	U (0.0027)	0.00037 J (0.0019)	U (0.0016)	U (0.0032)	U (0.28)	10 (0.12)	0.00087 J (0.0027)	10 (0.14)	U (0.002)	2.2 (0.11)
Xylenes (total)	7900	1000	U (0.0018)	U (0.0027)	0.001875 J (0.0019)	U (0.0016)	U (0.0032)	0.25 J (0.28)	89 J (1.2)	0.0067 J (0.0027)	92 J (7)	U (0.002)	13.8 J (0.11)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AE07-b	302-AE07-b	302-AE08-a	302-AE08-a	302-AE08-a	302-AE08-a	302-AE08-a	302-AF03-c	302-AF03-c	302-AF03-c	302-AF03-c	302-AF03-c
Cell	Soil Direct Contact	Soil to	302-AE07	302-AE07	302-AE08	302-AE08	302-AE08	302-AE08	302-AE08	302-AF03	302-AF03	302-AF03	302-AF03	302-AF03
Field Sample ID	Numeric Value	Groundwater	302-AE07-C4-VOC	302-AE07-C5-VOC	302-AE08-C1-VOC	302-AE08-C2-VOC	302-AE08-C3-VOC	302-AE08-C4-VOC	302-AE08-C4-VOC	302-AF03-C1-VOC	302-AF03-C2-VOC	302-AF03-C3-VOC	302-AF03-C4-VOC	302-AF03-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	3.4 - 3.5	4.6 - 4.7	0.2 - 0.3	0.6 - 0.8	1.2 - 1.4	1.8 - 2.0	1.8 - 2.0	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.4 - 1.5
Sample Date	(mg/kg)	(mg/kg)	8/26/2022	8/26/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022
<b>VOCs</b>														
Benzene	280	0.5	0.039 (0.036)	7.4 (0.036)	U (0.0006)	U (0.00048)	0.0028 (0.00057)	U (0.00058)	U (0.00053)	0.00068 (0.00043)	U (0.00066)	U (0.00052)	U (0.00066)	U (0.00066)
1,2-Dibromoethane	3.7	0.005	U (0.036)	U (0.036)	U (0.0006)	U (0.00048)	U (0.00057)	U (0.00058)	U (0.00053)	U (0.00043)	U (0.00066)	U (0.00052)	U (0.00066)	U (0.00066)
1,2-Dichloroethane	85	0.5	U (0.072)	U (0.071)	U (0.0012)	U (0.00096)	U (0.0011)	U (0.0012)	U (0.001)	U (0.00086)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0013)
Ethyl Benzene	880	70	0.033 J (0.072)	3 (0.071)	U (0.0012)	U (0.00096)	U (0.0011)	U (0.0012)	U (0.001)	0.00019 J (0.00086)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0013)
Isopropylbenzene	10000	2500	0.17 (0.072)	0.81 (0.071)	U (0.0012)	U (0.00096)	U (0.0011)	U (0.0012)	U (0.001)	0.0015 (0.00086)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0013)
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.14)	U (0.0024)	U (0.0019)	U (0.0023)	U (0.0023)	U (0.0021)	U (0.0017)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0026)
Toluene	10000	100	U (0.072)	0.042 J (0.071)	U (0.0012)	U (0.00096)	U (0.0011)	U (0.0012)	U (0.001)	U (0.00086)	U (0.0013)	U (0.001)	U (0.0013)	U (0.0013)
1,2,4-Trimethylbenzene	4700	300	0.32 (0.14)	8.6 (0.14)	U (0.0024)	U (0.0019)	0.0014 J (0.0023)	U (0.0023)	U (0.0021)	0.0065 (0.0017)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0026)
1,3,5-Trimethylbenzene	4700	93	0.13 J (0.14)	3.1 (0.14)	U (0.0024)	U (0.0019)	0.0011 J (0.0023)	U (0.0023)	U (0.0021)	0.00078 J (0.0017)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0026)
Xylenes (total)	7900	1000	0.223 J (0.14)	20.5 J (0.14)	U (0.0024)	U (0.0019)	0.00175 J (0.0023)	U (0.0023)	U (0.0021)	0.00092 J (0.0017)	U (0.0026)	U (0.0021)	U (0.0026)	U (0.0026)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AF04-c	302-AF04-c	302-AF04-c	302-AF04-c	302-AF04-c	302-AF04-c	302-AF05-a	302-AF05-b	302-AF05-b	302-AF05-b	302-AF05-b	302-AF07-b
Cell	Soil Direct Contact	Soil to	302-AF04	302-AF04	302-AF04	302-AF04	302-AF04	302-AF04	302-AF05	302-AF05	302-AF05	302-AF05	302-AF05	302-AF07
Field Sample ID	Numeric Value	Groundwater	302-AF04-C1-VOC	302-AF04-C2-VOC	302-AF04-C3-VOC	302-AF04-C4-VOC	302-AF04-C5-VOC	302-AF05-C1-VOC	302-AF05-C2-VOC	302-AF05-C3-VOC	302-AF05-C4-VOC	302-AF05-C5-VOC	302-AF07-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.5 - 0.6	1.1 - 1.2	2.3 - 2.4	3.0 - 3.2	3.7 - 3.8	0.6 - 0.8	0.6 - 0.8	0.9 - 1.1	1.4 - 1.5	1.8 - 2.0	0.3 - 0.5	
Sample Date	(mg/kg)	(mg/kg)	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	8/19/2022	8/19/2022	8/19/2022	8/19/2022	8/19/2022	8/29/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.00048)	U (0.00049)	U (0.028)	U (0.00047)	U (0.00063)	0.00027 J (0.00057)	0.019 (0.00093)	U (0.00051)	0.00034 J (0.00047)	U (0.00044)	U (0.063)	
1,2-Dibromoethane	3.7	0.005	U (0.00048)	U (0.00049)	U (0.028)	U (0.00047)	U (0.00063)	U (0.00057)	U (0.00093)	U (0.00051)	U (0.00047)	U (0.00044)	U (0.063)	
1,2-Dichloroethane	85	0.5	U (0.00097)	U (0.00098)	U (0.056)	U (0.00095)	U (0.0013)	U (0.0011)	U (0.0019)	U (0.001)	U (0.00095)	U (0.00089)	U (0.12)	
Ethyl Benzene	880	70	U (0.00097)	U (0.00098)	U (0.056)	U (0.00095)	U (0.0013)	U (0.0011)	0.0011 J (0.0019)	U (0.001)	U (0.00095)	U (0.00089)	U (0.12)	
Isopropylbenzene	10000	2500	U (0.00097)	U (0.00098)	0.8 (0.056)	0.0045 (0.00095)	0.00099 J (0.0013)	U (0.0011)	0.017 (0.0019)	U (0.001)	0.00019 J (0.00095)	U (0.00089)	3 (0.12)	
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.002)	U (0.11)	U (0.0019)	U (0.0025)	U (0.0023)	U (0.0037)	U (0.002)	U (0.0019)	U (0.0018)	U (0.25)	
Toluene	10000	100	U (0.00097)	U (0.00098)	U (0.056)	U (0.00095)	U (0.0013)	U (0.0011)	0.002 (0.0019)	U (0.001)	U (0.00095)	U (0.00089)	U (0.12)	
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.002)	U (0.11)	U (0.0019)	U (0.0025)	U (0.0023)	0.0018 J (0.0037)	U (0.002)	U (0.0019)	U (0.0018)	U (0.25)	
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.002)	U (0.11)	U (0.0019)	U (0.0025)	U (0.0023)	0.00056 J (0.0037)	U (0.002)	U (0.0019)	U (0.0018)	U (0.25)	
Xylenes (total)	7900	1000	U (0.0019)	U (0.002)	U (0.11)	0.00126 J (0.0019)	U (0.0025)	U (0.0023)	0.0074 J (0.0037)	U (0.002)	U (0.0019)	U (0.0018)	U (0.25)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AF07-b	302-AF07-b	302-AF07-b	302-AF07-b	302-AF08-c	302-AF08-c	302-AF08-c	302-AF08-c	302-AF09-b	302-AF09-b	302-AF09-b
Cell	Soil Direct Contact	Soil to	302-AF07	302-AF07	302-AF07	302-AF07	302-AF08	302-AF08	302-AF08	302-AF08	302-AF09	302-AF09	302-AF09
Field Sample ID	Numeric Value	Groundwater	302-AF07-C2-VOC	302-AF07-C3-VOC	302-AF07-C4-VOC	302-AF07-C5-VOC	302-AF08-C1-VOC	302-AF08-C2-VOC	302-AF08-C3-VOC	302-AF08-C4-VOC	302-AF09-C1-VOC	302-AF09-C2-VOC	302-AF09-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	1.1 - 1.2	1.5 - 1.7	2.0 - 2.1	0.0 - 0.1	0.1 - 0.2	0.2 - 0.3	0.3 - 0.4	0.0 - 0.2	0.2 - 0.4	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/31/2022	8/31/2022	8/31/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.052)	U (0.00054)	U (0.00053)	U (0.00048)	U (0.00052)	U (0.00048)	U (0.071)	U (0.063)	U (0.00048)	U (0.0005)	U (0.00054)
1,2-Dibromoethane	3.7	0.005	U (0.052)	U (0.00054)	U (0.00053)	U (0.00048)	U (0.00052)	U (0.00048)	U (0.071)	U (0.063)	U (0.00048)	U (0.0005)	U (0.00054)
1,2-Dichloroethane	85	0.5	U (0.1)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.001)	U (0.00097)	U (0.14)	U (0.13)	U (0.00095)	U (0.001)	U (0.0011)
Ethyl Benzene	880	70	U (0.1)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.001)	U (0.00097)	U (0.14)	U (0.13)	U (0.00095)	U (0.001)	U (0.0011)
Isopropylbenzene	10000	2500	6.4 (0.1)	U (0.0011)	0.01 (0.0011)	0.00014 J (0.00096)	0.00015 J (0.001)	0.015 (0.00097)	8 (0.14)	2.9 (0.13)	U (0.00095)	U (0.001)	U (0.0011)
Methyl tert-butyl ether	8500	2	U (0.21)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.0021)	U (0.0019)	U (0.28)	U (0.25)	U (0.0019)	U (0.002)	U (0.0022)
Toluene	10000	100	U (0.1)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.001)	U (0.00097)	U (0.14)	U (0.13)	U (0.00095)	U (0.001)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	U (0.21)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.0021)	U (0.0019)	U (0.28)	U (0.25)	U (0.0019)	U (0.002)	U (0.0022)
1,3,5-Trimethylbenzene	4700	93	0.34 (0.21)	U (0.0022)	0.00033 J (0.0021)	U (0.0019)	U (0.0021)	0.0016 J (0.0019)	U (0.28)	U (0.25)	U (0.0019)	U (0.002)	U (0.0022)
Xylenes (total)	7900	1000	0.122 J (0.21)	U (0.0022)	U (0.0021)	U (0.0019)	U (0.0021)	U (0.0019)	U (0.28)	U (0.25)	U (0.0019)	U (0.002)	U (0.0022)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AG03-a	302-AG03-a	302-AG03-a	302-AG03-a	302-AG03-a	302-AG03-a	302-AG04-a	302-AG04-a	302-AG04-a	302-AG04-b	302-AG05-b	302-AG05-b
Cell	Soil Direct Contact	Soil to	302-AG03	302-AG03	302-AG03	302-AG03	302-AG03	302-AG03	302-AG04	302-AG04	302-AG04	302-AG04	302-AG05	302-AG05
Field Sample ID	Numeric Value	Groundwater	302-AG03-C1-VOC	302-AG03-C2-VOC	302-AG03-C3-VOC	302-AG03-C4-VOC	302-AG03-C5-VOC	302-AG04-C1-VOC	302-AG04-C2-VOC	302-AG04-C4-VOC	302-AG04-C3-VOC	302-AG05-C1-VOC	302-AG05-C4-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	2.3 - 2.4	3.7 - 3.8	4.9 - 5.0	5.5 - 5.6	0.6 - 0.8	1.5 - 1.7	3.7 - 3.8	0.8 - 0.9	0.3 - 0.5	1.8 - 2.0	
Sample Date	(mg/kg)	(mg/kg)	10/18/2022	10/18/2022	10/18/2022	10/18/2022	10/18/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.03)	0.021 J (0.024)	U (0.032)	0.024 J (0.03)	U (0.033)	U (0.00064)	0.00075 J (0.00076)	U (0.03)	0.013 J (0.03)	0.052 (0.032)	0.00072 (0.00046)	
1,2-Dibromoethane	3.7	0.005	U (0.03)	U (0.024)	U (0.032)	U (0.03)	U (0.033)	U (0.00064)	U (0.00076)	U (0.03)	U (0.03)	U (0.032)	U (0.00046)	
1,2-Dichloroethane	85	0.5	U (0.06)	U (0.049)	U (0.063)	U (0.06)	U (0.066)	U (0.0013)	U (0.0015)	U (0.06)	U (0.059)	U (0.064)	U (0.00093)	
Ethyl Benzene	880	70	U (0.06)	1.8 (0.049)	U (0.063)	0.05 J (0.06)	U (0.066)	U (0.0013)	0.00032 J (0.0015)	0.12 (0.06)	0.46 (0.059)	0.033 J (0.064)	0.00022 J (0.00093)	
Isopropylbenzene	10000	2500	0.82 (0.06)	0.6 (0.049)	1 (0.063)	0.66 (0.06)	0.54 (0.066)	U (0.0013)	0.0086 (0.0015)	2.7 (0.06)	4 (0.059)	0.44 (0.064)	0.032 (0.00093)	
Methyl tert-butyl ether	8500	2	U (0.12)	U (0.097)	U (0.13)	U (0.12)	U (0.13)	U (0.0026)	U (0.003)	U (0.12)	U (0.12)	U (0.13)	U (0.0019)	
Toluene	10000	100	U (0.06)	U (0.049)	U (0.063)	0.042 J (0.06)	U (0.066)	U (0.0013)	U (0.0015)	0.054 J (0.06)	0.087 (0.059)	U (0.064)	0.00052 J (0.00093)	
1,2,4-Trimethylbenzene	4700	300	U (0.12)	5.2 (0.097)	U (0.13)	0.039 J (0.12)	0.026 J (0.13)	U (0.0026)	0.00095 J (0.003)	1.6 (0.12)	11 (0.12)	0.039 J (0.13)	0.0031 (0.0019)	
1,3,5-Trimethylbenzene	4700	93	U (0.12)	1.5 (0.097)	U (0.13)	U (0.12)	U (0.13)	U (0.0026)	0.00052 J (0.003)	0.18 (0.12)	1.7 (0.12)	0.014 J (0.13)	0.0013 J (0.0019)	
Xylenes (total)	7900	1000	U (0.12)	3.92 J (0.097)	0.088 J (0.13)	0.127 J (0.12)	U (0.13)	U (0.0026)	0.00202 J (0.003)	U (0.12)	0.081 J (0.12)	0.091 J (0.13)	0.00123 J (0.0019)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AG05-c	302-AG05-d	302-AG06-a	302-AG06-a	302-AG06-a	302-AG06-a	302-AG06-a	302-AG08-b	302-AG08-b	302-AG08-b	302-AG08-b	302-AG08-b
Cell	Soil Direct Contact	Soil to	302-AG05	302-AG05	302-AG06	302-AG06	302-AG06	302-AG06	302-AG06	302-AG08	302-AG08	302-AG08	302-AG08	302-AG08
Field Sample ID	Numeric Value	Groundwater	302-AG05-C3-VOC	302-AG05-C2-VOC	302-AG06-C1-VOC	302-AG06-C2-VOC	302-AG06-C3-VOC	302-AG06-C4-VOC	302-AG08-C1-VOC	302-AG08-C2-VOC	302-AG08-C3-VOC	302-AG08-C4-VOC	302-AG08-C5-VOC	302-AG08-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.2 - 1.4	1.4 - 1.5	0.9 - 1.1	1.4 - 1.5	2.7 - 2.9	4.0 - 4.1	0.3 - 0.5	1.5 - 1.7	2.6 - 2.7	3.8 - 4.0	5.5 - 5.6	
Sample Date	(mg/kg)	(mg/kg)	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.031)	U (0.033)	0.00025 J (0.00061)	0.00068 (0.00058)	0.00021 J (0.00048)	0.00025 J (0.00048)	U (0.00051)	0.74 (0.059)	0.45 (0.029)	0.38 (0.027)	2 (0.054)	
1,2-Dibromoethane	3.7	0.005	U (0.031)	U (0.033)	U (0.00061)	U (0.00058)	U (0.00048)	U (0.00048)	U (0.00051)	U (0.059)	U (0.029)	U (0.027)	U (0.054)	
1,2-Dichloroethane	85	0.5	U (0.062)	U (0.065)	U (0.0012)	U (0.0012)	U (0.00096)	U (0.00096)	U (0.001)	U (0.12)	U (0.059)	U (0.054)	U (0.11)	
Ethyl Benzene	880	70	U (0.062)	U (0.065)	U (0.0012)	U (0.0012)	U (0.00096)	U (0.00096)	U (0.001)	4.8 (0.12)	2.7 (0.059)	3.5 (0.054)	0.7 (0.11)	
Isopropylbenzene	10000	2500	0.67 (0.062)	1.7 (0.065)	0.00015 J (0.0012)	0.00038 J (0.0012)	0.0003 J (0.00096)	0.00011 J (0.00096)	U (0.001)	9.2 (0.12)	4.7 (0.059)	4.8 (0.054)	17 (0.11)	
Methyl tert-butyl ether	8500	2	U (0.12)	U (0.13)	U (0.0024)	U (0.0023)	U (0.0019)	U (0.0019)	U (0.002)	U (0.24)	U (0.12)	U (0.11)	U (0.22)	
Toluene	10000	100	U (0.062)	U (0.065)	U (0.0012)	U (0.0012)	U (0.00096)	U (0.00096)	U (0.001)	0.85 (0.12)	0.32 (0.059)	0.1 (0.054)	1.2 (0.11)	
1,2,4-Trimethylbenzene	4700	300	U (0.12)	U (0.13)	U (0.0024)	U (0.0023)	U (0.0019)	U (0.0019)	U (0.002)	49 (2.4)	18 (2.4)	11 (0.11)	12 (0.22)	
1,3,5-Trimethylbenzene	4700	93	U (0.12)	U (0.13)	U (0.0024)	0.00058 J (0.0023)	0.00023 J (0.0019)	U (0.0019)	U (0.002)	22 (0.24)	9.5 (0.12)	4.2 (0.11)	0.95 (0.22)	
Xylenes (total)	7900	1000	U (0.12)	U (0.13)	U (0.0024)	U (0.0023)	U (0.0019)	U (0.0019)	U (0.002)	8.4 J (0.24)	2.56 J (0.12)	0.598 J (0.11)	3.23 J (0.22)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AG09-a	302-AG10-d	302-AH04-c	302-AH04-c	302-AH04-c	302-AH04-c	302-AH04-c	302-AH05-d	302-AH05-d	302-AH05-d	302-AH05-d
Cell	Soil Direct Contact	Soil to	302-AG09	302-AG10	302-AH04	302-AH04	302-AH04	302-AH04	302-AH04	302-AH05	302-AH05	302-AH05	302-AH05
Field Sample ID	Numeric Value	Groundwater	302-AG09-C1-VOC	302-AG10-C1-VOC	302-AH04-C1-VOC	302-AH04-C2-VOC	302-AH04-C3-VOC	302-AH04-C4-VOC	302-AH04-C5-VOC	302-AH05-C1-VOC	302-AH05-C2-VOC	302-AH05-C3-VOC	302-AH05-C4-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	0.9 - 1.1	0.3 - 0.5	0.8 - 0.9	1.2 - 1.4	2.0 - 2.1	2.6 - 2.7	0.5 - 0.6	0.9 - 1.1	2.1 - 2.3	2.7 - 2.9
Sample Date	(mg/kg)	(mg/kg)	8/30/2022	8/31/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022
<b>VOCs</b>													
Benzene	280	0.5	0.00054 J (0.00067)	U (0.00064)	U (0.00048)	U (0.034)	U (0.03)	U (0.00046)	U (0.00051)	U (0.00053)	U (0.00054)	U (0.00049)	U (0.0005)
1,2-Dibromoethane	3.7	0.005	U (0.00067)	U (0.00064)	U (0.00048)	U (0.034)	U (0.03)	U (0.00046)	U (0.00051)	U (0.00053)	U (0.00054)	U (0.00049)	U (0.0005)
1,2-Dichloroethane	85	0.5	U (0.0013)	U (0.0013)	U (0.00097)	U (0.067)	U (0.059)	U (0.00091)	U (0.001)	U (0.001)	U (0.0011)	U (0.00099)	U (0.001)
Ethyl Benzene	880	70	0.00023 J (0.0013)	U (0.0013)	0.00028 J (0.00097)	U (0.067)	0.072 (0.059)	0.00035 J (0.00091)	U (0.001)	U (0.001)	U (0.0011)	U (0.00099)	U (0.001)
Isopropylbenzene	10000	2500	0.0015 (0.0013)	U (0.0013)	U (0.00097)	0.61 (0.067)	0.44 (0.059)	0.017 (0.00091)	0.015 (0.001)	U (0.001)	U (0.0011)	U (0.00099)	U (0.001)
Methyl tert-butyl ether	8500	2	U (0.0027)	U (0.0026)	U (0.0019)	U (0.13)	U (0.12)	U (0.0018)	U (0.002)	U (0.0021)	U (0.0022)	U (0.002)	U (0.002)
Toluene	10000	100	U (0.0013)	U (0.0013)	U (0.00097)	U (0.067)	U (0.059)	U (0.00091)	U (0.001)	U (0.001)	U (0.0011)	U (0.00099)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	0.0023 J (0.0027)	U (0.0026)	U (0.0019)	U (0.13)	0.16 (0.12)	0.0068 (0.0018)	0.0082 (0.002)	U (0.0021)	U (0.0022)	U (0.002)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	0.001 J (0.0027)	U (0.0026)	U (0.0019)	U (0.13)	0.27 (0.12)	0.006 (0.0018)	0.005 (0.002)	U (0.0021)	U (0.0022)	U (0.002)	U (0.002)
Xylenes (total)	7900	1000	0.00176 J (0.0027)	U (0.0026)	0.001385 J (0.0019)	U (0.13)	U (0.12)	U (0.0018)	0.0014 J (0.002)	U (0.0021)	U (0.0022)	U (0.002)	U (0.002)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AH06-d	302-AH06-d	302-AH06-d	302-AH06-d	302-AH06-d	302-AH06-d	302-AH07-b	302-AH07-b	302-AH07-b	302-AH07-b	302-AH08-b	302-AH08-b
Cell	Soil Direct Contact	Soil to	302-AH06	302-AH06	302-AH06	302-AH06	302-AH06	302-AH06	302-AH07	302-AH07	302-AH07	302-AH07	302-AH08	302-AH08
Field Sample ID	Numeric Value	Groundwater	302-AH06-C1-VOC	302-AH06-C2-VOC	302-AH06-C3-VOC	302-AH06-C4-VOC	302-AH06-C5-VOC	302-AH07-C1-VOC	302-AH07-C2-VOC	302-AH07-C3-VOC	302-AH07-C4-VOC	302-AH08-C1-VOC	302-AH08-C2-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	1.1 - 1.2	2.1 - 2.3	2.7 - 2.9	3.7 - 3.8	0.6 - 0.8	1.4 - 1.5	2.6 - 2.7	3.7 - 3.8	0.2 - 0.3	0.5 - 0.6	
Sample Date	(mg/kg)	(mg/kg)	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	10/20/2022	10/20/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.1)	0.014 J (0.031)	U (0.0004)	U (0.00093)	U (0.00064)	U (0.00075)	0.0002 J (0.00039)	U (0.00065)	U (0.00052)	U (0.00053)	U (0.00051)	
1,2-Dibromoethane	3.7	0.005	U (0.1)	U (0.031)	U (0.0004)	U (0.00093)	U (0.00064)	U (0.00075)	U (0.00039)	U (0.00065)	U (0.00052)	U (0.00053)	U (0.00051)	
1,2-Dichloroethane	85	0.5	U (0.2)	U (0.061)	U (0.00081)	U (0.0018)	U (0.0013)	U (0.0015)	U (0.00079)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	
Ethyl Benzene	880	70	U (0.2)	0.021 J (0.061)	U (0.00081)	U (0.0018)	U (0.0013)	U (0.0015)	0.00017 J (0.00079)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	
Isopropylbenzene	10000	2500	0.27 (0.2)	6.4 (0.061)	0.027 (0.00081)	0.0068 (0.0018)	0.076 (0.0013)	U (0.0015)	U (0.00079)	U (0.0013)	0.00012 J (0.001)	U (0.001)	U (0.001)	
Methyl tert-butyl ether	8500	2	U (0.41)	U (0.12)	0.00033 J (0.0016)	U (0.0037)	0.00056 J (0.0026)	U (0.003)	U (0.0016)	U (0.0026)	U (0.0021)	U (0.0021)	U (0.002)	
Toluene	10000	100	U (0.2)	0.16 (0.061)	U (0.00081)	U (0.0018)	U (0.0013)	U (0.0015)	U (0.00079)	U (0.0013)	U (0.001)	U (0.001)	U (0.001)	
1,2,4-Trimethylbenzene	4700	300	U (0.41)	0.28 (0.12)	0.00035 J (0.0016)	U (0.0037)	0.00047 J (0.0026)	U (0.003)	0.00032 J (0.0016)	U (0.0026)	U (0.0021)	U (0.0021)	U (0.002)	
1,3,5-Trimethylbenzene	4700	93	U (0.41)	0.12 (0.12)	U (0.0016)	U (0.0037)	U (0.0026)	U (0.003)	U (0.0016)	U (0.0026)	U (0.0021)	U (0.0021)	U (0.002)	
Xylenes (total)	7900	1000	U (0.41)	0.44 J (0.12)	0.00196 J (0.0016)	U (0.0037)	0.00275 J (0.0026)	U (0.003)	U (0.0016)	U (0.0026)	U (0.0021)	U (0.0021)	U (0.002)	

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AH08-b	302-AH09-a	302-AI05-a	302-AI05-b	302-AI05-c	302-AI05-c	302-AI05-c	302-AI06-c	302-AI06-c	302-AI06-d	302-AI06-d
Cell	Soil Direct Contact	Soil to	302-AH08	302-AH09	302-AI05	302-AI05	302-AI05	302-AI05	302-AI05	302-AI06	302-AI06	302-AI06	302-AI06
Field Sample ID	Numeric Value	Groundwater	302-AH08-C3-VOC	302-AH09-C1-VOC	302-AI05-C1-VOC	302-AI05-C2-VOC	302-AI05-C3-VOC	302-AI05-C4-VOC	302-AI05-C5-VOC	302-AI06-C1-VOC	302-AI06-C4-VOC	302-AI06-C2-VOC	302-AI06-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.8 - 0.9	3.0 - 3.2	0.2 - 0.3	0.6 - 0.8	1.1 - 1.2	1.8 - 2.0	2.1 - 2.3	0.6 - 0.8	3.7 - 3.8	0.6 - 0.8	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	10/20/2022	8/31/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00049)	0.00063 (0.00047)	U (0.00059)	U (0.00052)	U (0.00054)	U (0.00096)	U (0.00071)	U (0.00046)	0.00057 (0.00051)	0.00075 (0.00045)	0.0003 J (0.00045)
1,2-Dibromoethane	3.7	0.005	U (0.00049)	U (0.00047)	U (0.00059)	U (0.00052)	U (0.00054)	U (0.00096)	U (0.00071)	U (0.00046)	U (0.00051)	U (0.00045)	U (0.00045)
1,2-Dichloroethane	85	0.5	U (0.00097)	U (0.00094)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0019)	U (0.0014)	U (0.00092)	U (0.001)	U (0.0009)	U (0.0009)
Ethyl Benzene	880	70	U (0.00097)	U (0.00094)	U (0.0012)	U (0.001)	0.0017 (0.0011)	0.00058 J (0.0019)	U (0.0014)	0.0063 (0.00092)	U (0.001)	U (0.0009)	U (0.0009)
Isopropylbenzene	10000	2500	U (0.00097)	U (0.00094)	U (0.0012)	U (0.001)	0.0072 (0.0011)	0.0045 (0.0019)	0.00048 J (0.0014)	0.24 (0.00092)	0.017 (0.001)	0.003 (0.0009)	0.0028 (0.0009)
Methyl tert-butyl ether	8500	2	U (0.0019)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0022)	U (0.0038)	U (0.0028)	0.0005 J (0.0018)	0.00027 J (0.002)	U (0.0018)	0.00022 J (0.0018)
Toluene	10000	100	U (0.00097)	0.00051 J (0.00094)	U (0.0012)	U (0.001)	U (0.0011)	U (0.0019)	U (0.0014)	0.00066 J (0.00092)	U (0.001)	U (0.0009)	U (0.0009)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0022)	U (0.0038)	U (0.0028)	U (0.0018)	U (0.002)	U (0.0018)	U (0.0018)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0019)	U (0.0024)	U (0.0021)	U (0.0022)	U (0.0038)	U (0.0028)	U (0.0018)	0.00031 J (0.002)	U (0.0018)	U (0.0018)
Xylenes (total)	7900	1000	U (0.0019)	U (0.0019)	U (0.0024)	U (0.0021)	0.00148 J (0.0022)	U (0.0038)	U (0.0028)	0.002 J (0.0018)	U (0.002)	0.00115 J (0.0018)	U (0.0018)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AI07-b	302-AI07-b	302-AI07-b	302-AI07-b	302-AI07-b	302-AI07-b	302-AI08-c	302-AI09-c	302-AJ05-a	302-AJ05-c	302-AJ05-c	302-AJ05-c
Cell	Soil Direct Contact	Soil to	302-AI07	302-AI07	302-AI07	302-AI07	302-AI07	302-AI07	302-AI08	302-AI09	302-AJ05	302-AJ05	302-AJ05	302-AJ05
Field Sample ID	Numeric Value	Groundwater	302-AI07-C1-VOC	302-AI07-C2-VOC	302-AI07-C3-VOC	302-AI07-C4-VOC	302-AI07-C5-VOC	302-AI07-C5-VOC	302-AI08-C1-VOC	302-AI09-C1-VOC	302-AJ05-C3-VOC	302-AJ05-C2-VOC	302-AJ05-C4-VOC	302-AJ05-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	1.1 - 1.2	2.1 - 2.3	3.7 - 3.8	4.3 - 4.4	4.3 - 4.4	2.1 - 2.3	0.5 - 0.6	2.4 - 2.6	0.6 - 0.8	1.7 - 1.8	2.1 - 2.3
Sample Date	(mg/kg)	(mg/kg)	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	9/26/2022	9/1/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022
<b>VOCs</b>														
Benzene	280	0.5	0.00032 J (0.00048)	U (0.00054)	U (0.00051)	U (0.00051)	U (0.00043)	U (0.00066)	U (0.00052)	U (0.00079)	U (0.00058)	U (0.0006)	U (0.00043)	U (0.00043)
1,2-Dibromoethane	3.7	0.005	U (0.00048)	U (0.00054)	U (0.00051)	U (0.00051)	U (0.00043)	U (0.00066)	U (0.00052)	U (0.00079)	U (0.00058)	U (0.0006)	U (0.00043)	U (0.00043)
1,2-Dichloroethane	85	0.5	U (0.00097)	U (0.0011)	U (0.001)	U (0.001)	U (0.00087)	U (0.0013)	U (0.001)	U (0.0016)	U (0.0012)	U (0.0012)	U (0.00085)	U (0.00085)
Ethyl Benzene	880	70	U (0.00097)	U (0.0011)	U (0.001)	U (0.001)	U (0.00087)	U (0.0013)	U (0.001)	U (0.0016)	U (0.0012)	0.00049 J (0.0012)	0.00012 J (0.00085)	0.00012 J (0.00085)
Isopropylbenzene	10000	2500	U (0.00097)	U (0.0011)	U (0.001)	U (0.001)	U (0.00087)	U (0.0013)	U (0.001)	0.0056 (0.0016)	0.0077 (0.0012)	0.0071 (0.0012)	0.0028 (0.00085)	0.0028 (0.00085)
Methyl tert-butyl ether	8500	2	0.00082 J (0.0019)	U (0.0022)	U (0.002)	U (0.002)	U (0.0017)	U (0.0026)	U (0.0021)	U (0.0032)	U (0.0023)	U (0.0024)	U (0.0017)	U (0.0017)
Toluene	10000	100	U (0.00097)	U (0.0011)	U (0.001)	U (0.001)	U (0.00087)	U (0.0013)	U (0.001)	U (0.0016)	U (0.0012)	U (0.0012)	U (0.00085)	U (0.00085)
1,2,4-Trimethylbenzene	4700	300	U (0.0019)	U (0.0022)	U (0.002)	U (0.002)	U (0.0017)	0.00056 J (0.0026)	U (0.0021)	0.001 J (0.0032)	U (0.0023)	0.0022 J (0.0024)	0.00065 J (0.0017)	0.00065 J (0.0017)
1,3,5-Trimethylbenzene	4700	93	U (0.0019)	U (0.0022)	U (0.002)	U (0.002)	U (0.0017)	U (0.0026)	U (0.0021)	U (0.0032)	U (0.0023)	0.00031 J (0.0024)	U (0.0017)	U (0.0017)
Xylenes (total)	7900	1000	U (0.0019)	U (0.0022)	U (0.002)	U (0.002)	U (0.0017)	U (0.0026)	U (0.0021)	U (0.0032)	0.00178 J (0.0023)	0.00161 J (0.0024)	U (0.0017)	U (0.0017)

- Notes:**
- 1 Concentrations are presented in mg/kg.
  - 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AJ05-d	302-AJ06-d	302-AJ06-d	302-AJ06-d	302-AJ06-d	302-AJ07-b	302-AJ07-b	302-AJ07-b	302-AJ07-b	302-AJ08-a	302-AJ08-a	302-AJ08-a
Cell	Soil Direct Contact	Soil to	302-AJ05	302-AJ06	302-AJ06	302-AJ06	302-AJ06	302-AJ07	302-AJ07	302-AJ07	302-AJ07	302-AJ08	302-AJ08	302-AJ08
Field Sample ID	Numeric Value	Groundwater	302-AJ05-C1-VOC	302-AJ06-C1-VOC	302-AJ06-C2-VOC	302-AJ06-C3-VOC	302-AJ07-C1-VOC	302-AJ07-C2-VOC	302-AJ07-C3-VOC	302-AJ07-C4-VOC	302-AJ08-C1-VOC	302-AJ08-C2-VOC	302-AJ08-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.3 - 0.5	0.8 - 0.9	2.4 - 2.6	4.0 - 4.1	0.9 - 1.1	1.5 - 1.7	3.0 - 3.2	4.3 - 4.4	0.3 - 0.5	1.2 - 1.4	1.7 - 1.8	
Sample Date	(mg/kg)	(mg/kg)	10/5/2022	10/5/2022	10/5/2022	10/5/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.00057)	U (0.00061)	U (0.00052)	U (0.0005)	U (0.00056)	U (0.0006)	U (0.00062)	U (0.00053)	0.00018 J (0.00049)	U (0.00051)	0.00059 (0.00052)	
1,2-Dibromoethane	3.7	0.005	U (0.00057)	U (0.00061)	U (0.00052)	U (0.0005)	U (0.00056)	U (0.0006)	U (0.00062)	U (0.00053)	U (0.00049)	U (0.00051)	U (0.00052)	
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.00097)	U (0.001)	U (0.001)	
Ethyl Benzene	880	70	U (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.00097)	U (0.001)	U (0.001)	
Isopropylbenzene	10000	2500	U (0.0011)	0.00054 J (0.0012)	0.00055 J (0.001)	0.0002 J (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.00097)	U (0.001)	U (0.001)	
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	U (0.0022)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0021)	
Toluene	10000	100	U (0.0011)	U (0.0012)	U (0.001)	U (0.001)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0011)	U (0.00097)	U (0.001)	U (0.001)	
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	0.0005 J (0.0024)	0.00065 J (0.0021)	U (0.002)	U (0.0022)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0021)	
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	U (0.0022)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0021)	
Xylenes (total)	7900	1000	U (0.0023)	U (0.0024)	U (0.0021)	U (0.002)	U (0.0022)	U (0.0024)	U (0.0025)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0021)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AK03-c	302-AK03-c	302-AK03-c	302-AK03-c	302-AK03-c	302-AK03-c	302-AK04-c	302-AK04-c	302-AK04-c	302-AK05-a	302-AK05-a	302-AK05-a
Cell	Soil Direct Contact	Soil to	302-AK03	302-AK03	302-AK03	302-AK03	302-AK03	302-AK03	302-AK04	302-AK04	302-AK04	302-AK05	302-AK05	302-AK05
Field Sample ID	Numeric Value	Groundwater	302-AK03-C1-VOC	302-AK03-C2-VOC	302-AK03-C3-VOC	302-AK03-C4-VOC	302-AK03-C5-VOC	302-AK04-C1-VOC	302-AK04-C2-VOC	302-AK04-C3-VOC	302-AK05-C1-VOC	302-AK05-C2-VOC	302-AK05-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.5 - 0.6	1.2 - 1.4	2.0 - 2.1	2.4 - 2.6	3.2 - 3.4	0.0 - 0.2	0.3 - 0.5	0.5 - 0.6	0.2 - 0.3	0.6 - 0.8	1.4 - 1.5	
Sample Date	(mg/kg)	(mg/kg)	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	8/25/2022	8/25/2022	8/25/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.00045)	U (0.0004)	0.00019 J (0.00051)	U (0.00054)	0.00035 J (0.00042)	U (0.00061)	0.00017 J (0.00051)	U (0.00052)	U (0.00087)	U (0.0015)	U (0.00072)	
1,2-Dibromoethane	3.7	0.005	U (0.00045)	U (0.0004)	U (0.00051)	U (0.00054)	U (0.00042)	U (0.00061)	U (0.00051)	U (0.00052)	U (0.00087)	U (0.0015)	U (0.00072)	
1,2-Dichloroethane	85	0.5	U (0.0009)	U (0.0008)	U (0.001)	U (0.0011)	U (0.00085)	U (0.0012)	U (0.001)	U (0.001)	U (0.0017)	U (0.0031)	U (0.0014)	
Ethyl Benzene	880	70	U (0.0009)	U (0.0008)	U (0.001)	U (0.0011)	U (0.00085)	U (0.0012)	U (0.001)	U (0.001)	U (0.0017)	U (0.0031)	U (0.0014)	
Isopropylbenzene	10000	2500	U (0.0009)	U (0.0008)	U (0.001)	U (0.0011)	U (0.00085)	U (0.0012)	U (0.001)	U (0.001)	U (0.0017)	U (0.0031)	U (0.0014)	
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.0016)	U (0.002)	U (0.0022)	U (0.0017)	U (0.0024)	U (0.002)	U (0.0021)	U (0.0035)	U (0.0062)	U (0.0029)	
Toluene	10000	100	U (0.0009)	U (0.0008)	U (0.001)	U (0.0011)	U (0.00085)	U (0.0012)	U (0.001)	0.00076 J (0.001)	U (0.0017)	U (0.0031)	U (0.0014)	
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	U (0.0016)	U (0.002)	U (0.0022)	U (0.0017)	U (0.0024)	U (0.002)	U (0.0021)	U (0.0035)	U (0.0062)	U (0.0029)	
1,3,5-Trimethylbenzene	4700	93	U (0.0018)	U (0.0016)	U (0.002)	U (0.0022)	U (0.0017)	U (0.0024)	U (0.002)	U (0.0021)	U (0.0035)	U (0.0062)	U (0.0029)	
Xylenes (total)	7900	1000	U (0.0018)	U (0.0016)	U (0.002)	U (0.0022)	U (0.0017)	U (0.0024)	U (0.002)	U (0.0021)	U (0.0035)	U (0.0062)	U (0.0029)	

- Notes:**
- 1 Concentrations are presented in mg/kg.
  - 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
  - 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**  
 VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AK05-a	302-AK05-a	302-AK07-a	302-AK07-a	302-AK07-a	302-AK07-a	302-AK08-d	302-AL03-d	302-AL03-d	302-AL03-d	302-AL05-b	302-AL05-b
Cell	Soil Direct Contact	Soil to	302-AK05	302-AK05	302-AK07	302-AK07	302-AK07	302-AK07	302-AK08	302-AL03	302-AL03	302-AL03	302-AL05	302-AL05
Field Sample ID	Numeric Value	Groundwater	302-AK05-C4-VOC	302-AK05-C5-VOC	302-AK07-C1-VOC	302-AK07-C2-VOC	302-AK07-C3-VOC	302-AK07-C3-VOC	302-AK08-C1-VOC	302-AL03-C1-VOC	302-AL03-C2-VOC	302-AL03-C3-VOC	302-AL05-C2-VOC	302-AL05-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	2.6 - 2.7	0.6 - 0.8	2.9 - 3.0	4.6 - 4.7	4.6 - 4.7	0.5 - 0.6	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2	0.8 - 0.9	1.5 - 1.7
Sample Date	(mg/kg)	(mg/kg)	8/25/2022	8/25/2022	10/14/2022	10/14/2022	10/14/2022	10/14/2022	9/1/2022	10/4/2022	10/4/2022	10/4/2022	8/25/2022	8/25/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.03)	0.00019 J (0.00045)	U (0.00056)	0.0011 (0.00053)	0.00038 J (0.00053)	U (0.00051)	U (0.00043)	0.0019 (0.00068)	U (0.00053)	U (0.0006)	U (0.00062)	U (0.00062)
1,2-Dibromoethane	3.7	0.005	U (0.03)	U (0.00045)	U (0.00056)	U (0.00053)	U (0.00053)	U (0.00051)	U (0.00043)	U (0.00068)	U (0.00053)	U (0.0006)	U (0.00062)	U (0.00062)
1,2-Dichloroethane	85	0.5	U (0.06)	U (0.00089)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.001)	U (0.00087)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
Ethyl Benzene	880	70	0.23 (0.06)	0.0032 (0.00089)	U (0.0011)	0.00033 J (0.0011)	U (0.0011)	U (0.001)	U (0.00087)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
Isopropylbenzene	10000	2500	1.1 (0.06)	0.016 (0.00089)	U (0.0011)	0.002 (0.0011)	0.00016 J (0.0011)	U (0.001)	U (0.00087)	0.00027 J (0.0014)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
Methyl tert-butyl ether	8500	2	U (0.12)	U (0.0018)	U (0.0022)	U (0.0021)	U (0.0021)	U (0.002)	U (0.0017)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.0025)	U (0.0025)
Toluene	10000	100	0.052 J (0.06)	U (0.00089)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.001)	U (0.00087)	U (0.0014)	U (0.0011)	U (0.0012)	U (0.0012)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	U (0.12)	0.00039 J (0.0018)	U (0.0022)	U (0.0021)	U (0.0021)	U (0.002)	U (0.0017)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.0025)	U (0.0025)
1,3,5-Trimethylbenzene	4700	93	U (0.12)	U (0.0018)	U (0.0022)	U (0.0021)	U (0.0021)	U (0.002)	U (0.0017)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.0025)	U (0.0025)
Xylenes (total)	7900	1000	U (0.12)	0.00121 J (0.0018)	U (0.0022)	U (0.0021)	U (0.0021)	U (0.002)	U (0.0017)	U (0.0027)	U (0.0021)	U (0.0024)	U (0.0025)	U (0.0025)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AL05-b	302-AL05-d	302-AL07-c	302-AL07-c	302-AL07-c	302-AL07-c	302-AL08-a	302-AM02-b	302-AM02-b	302-AM02-b	302-AM02-b	302-AM02-b
Cell	Soil Direct Contact	Soil to	302-AL05	302-AL05	302-AL07	302-AL07	302-AL07	302-AL07	302-AL08	302-AM02	302-AM02	302-AM02	302-AM02	302-AM02
Field Sample ID	Numeric Value	Groundwater	302-AL05-C4-VOC	302-AL05-C1-VOC	302-AL07-C1-VOC	302-AL07-C2-VOC	302-AL07-C3-VOC	302-AL07-C3-VOC	302-AL08-C1-VOC	302-AM02-C1-VOC	302-AM02-C2-VOC	302-AM02-C3-VOC	302-AM02-C4-VOC	302-AM02-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	0.6 - 0.8	0.6 - 0.8	1.7 - 1.8	2.7 - 2.9	2.7 - 2.9	2.4 - 2.6	0.3 - 0.5	0.6 - 0.8	1.5 - 1.7	2.0 - 2.1	2.3 - 2.4
Sample Date	(mg/kg)	(mg/kg)	8/25/2022	8/25/2022	10/14/2022	10/14/2022	10/14/2022	10/14/2022	9/1/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.00056)	U (0.00046)	0.019 J (0.03)	0.019 J (0.032)	0.013 J (0.032)	0.013 J (0.032)	U (0.00049)	U (0.0004)	0.00031 J (0.00049)	0.00046 J (0.00057)	0.00069 (0.00056)	0.0004 J (0.00059)
1,2-Dibromoethane	3.7	0.005	U (0.00056)	U (0.00046)	U (0.03)	U (0.032)	U (0.032)	U (0.032)	U (0.00049)	U (0.0004)	U (0.00049)	U (0.00057)	U (0.00056)	U (0.00059)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.00092)	U (0.06)	U (0.065)	U (0.064)	U (0.064)	U (0.00099)	U (0.00081)	U (0.00098)	U (0.0011)	U (0.0011)	U (0.0012)
Ethyl Benzene	880	70	U (0.0011)	U (0.00092)	0.056 J (0.06)	0.054 J (0.065)	0.036 J (0.064)	0.036 J (0.064)	U (0.00099)	U (0.00081)	U (0.00098)	U (0.0011)	U (0.0011)	U (0.0012)
Isopropylbenzene	10000	2500	U (0.0011)	U (0.00092)	0.87 (0.06)	2.1 (0.065)	0.94 (0.064)	0.94 (0.064)	U (0.00099)	U (0.00081)	U (0.00098)	U (0.0011)	U (0.0011)	U (0.0012)
Methyl tert-butyl ether	8500	2	U (0.0023)	0.00049 J (0.0018)	U (0.12)	U (0.13)	U (0.13)	U (0.13)	U (0.002)	U (0.0016)	U (0.002)	U (0.0023)	U (0.0022)	U (0.0024)
Toluene	10000	100	U (0.0011)	U (0.00092)	0.089 (0.06)	0.04 J (0.065)	0.056 J (0.064)	0.056 J (0.064)	U (0.00099)	U (0.00081)	U (0.00098)	U (0.0011)	U (0.0011)	U (0.0012)
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	U (0.0018)	0.44 (0.12)	0.13 (0.13)	0.13 (0.13)	0.13 (0.13)	U (0.002)	U (0.0016)	0.00035 J (0.002)	U (0.0023)	U (0.0022)	U (0.0024)
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0018)	0.16 (0.12)	0.13 (0.13)	0.1 J (0.13)	0.1 J (0.13)	U (0.002)	U (0.0016)	0.00027 J (0.002)	U (0.0023)	U (0.0022)	U (0.0024)
Xylenes (total)	7900	1000	U (0.0023)	U (0.0018)	0.53 J (0.12)	0.216 J (0.13)	0.229 J (0.13)	0.229 J (0.13)	U (0.002)	U (0.0016)	U (0.002)	U (0.0023)	U (0.0022)	U (0.0024)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AM03-a	302-AM03-a	302-AM03-c	302-AM03-d	302-AM04-b	302-AM04-b	302-AM04-b	302-AM04-b	302-AM04-b	302-AM05-c	302-AM05-c
Cell	Soil Direct Contact	Soil to	302-AM03	302-AM03	302-AM03	302-AM03	302-AM04	302-AM04	302-AM04	302-AM04	302-AM04	302-AM05	302-AM05
Field Sample ID	Numeric Value	Groundwater	302-AM03-C3-VOC	302-AM03-C4-VOC	302-AM03-C2-VOC	302-AM03-C1-VOC	302-AM04-C1-VOC	302-AM04-C2-VOC	302-AM04-C3-VOC	302-AM04-C4-VOC	302-AM04-C5-VOC	302-AM05-C1-VOC	302-AM05-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.4 - 2.6	3.4 - 3.5	1.2 - 1.4	0.2 - 0.3	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2	1.5 - 1.7	2.0 - 2.1	0.3 - 0.5	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	8/25/2022	8/25/2022	8/25/2022	8/25/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.024)	U (0.48)	U (0.00045)	U (0.00048)	0.00084 (0.00058)	U (0.05)	U (0.031)	0.041 (0.032)	0.24 (0.032)	0.00038 J (0.00062)	0.00047 J (0.00057)
1,2-Dibromoethane	3.7	0.005	U (0.024)	U (0.48)	U (0.00045)	U (0.00048)	U (0.00058)	U (0.05)	U (0.031)	U (0.032)	U (0.032)	U (0.00062)	U (0.00057)
1,2-Dichloroethane	85	0.5	U (0.049)	U (0.97)	U (0.0009)	U (0.00096)	U (0.0012)	U (0.1)	U (0.062)	U (0.065)	U (0.064)	U (0.0012)	U (0.0011)
Ethyl Benzene	880	70	U (0.049)	U (0.97)	U (0.0009)	U (0.00096)	0.0011 J (0.0012)	0.024 J (0.1)	0.025 J (0.062)	0.078 (0.065)	0.11 (0.064)	0.00038 J (0.0012)	0.011 (0.0011)
Isopropylbenzene	10000	2500	1 (0.049)	13 (0.97)	U (0.0009)	U (0.00096)	0.02 (0.0012)	1.1 (0.1)	2.2 (0.062)	8.9 (0.065)	6.2 (0.064)	0.0034 (0.0012)	0.04 (0.0011)
Methyl tert-butyl ether	8500	2	U (0.098)	U (1.9)	U (0.0018)	U (0.0019)	0.0012 J (0.0023)	U (0.2)	U (0.12)	U (0.13)	U (0.13)	U (0.0025)	U (0.0023)
Toluene	10000	100	U (0.049)	U (0.97)	U (0.0009)	U (0.00096)	0.00073 J (0.0012)	U (0.1)	U (0.062)	0.12 (0.065)	0.11 (0.064)	U (0.0012)	0.00084 J (0.0011)
1,2,4-Trimethylbenzene	4700	300	U (0.098)	U (1.9)	U (0.0018)	U (0.0019)	0.00063 J (0.0023)	U (0.2)	U (0.12)	U (0.13)	U (0.13)	0.00094 J (0.0025)	U (0.0023)
1,3,5-Trimethylbenzene	4700	93	U (0.098)	U (1.9)	U (0.0018)	U (0.0019)	U (0.0023)	U (0.2)	U (0.12)	U (0.13)	U (0.13)	0.00033 J (0.0025)	0.00026 J (0.0023)
Xylenes (total)	7900	1000	U (0.098)	U (1.9)	U (0.0018)	U (0.0019)	0.0028 J (0.0023)	0.094 J (0.2)	0.154 J (0.12)	0.545 J (0.13)	0.485 J (0.13)	0.00123 J (0.0025)	0.00189 J (0.0023)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AM05-c	302-AM06-c	302-AN01-c	302-AN01-c	302-AN01-c	302-AN01-c	302-AN01-c	302-AN01-c	302-AN03-a	302-AN03-a	302-AN03-b	302-AN03-b
Cell	Soil Direct Contact	Soil to	302-AM05	302-AM06	302-AN01	302-AN01	302-AN01	302-AN01	302-AN01	302-AN01	302-AN03	302-AN03	302-AN03	302-AN03
Field Sample ID	Numeric Value	Groundwater	302-AM05-C3-VOC	302-AM06-C1-VOC	302-AN01-C1-VOC	302-AN01-C2-VOC	302-AN01-C3-VOC	302-AN01-C4-VOC	302-AN01-C5-VOC	302-AN03-C1-VOC	302-AN03-C4-VOC	302-AN03-C2-VOC	302-AN03-C3-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	1.5 - 1.7	0.0 - 0.2	0.2 - 0.3	0.3 - 0.5	0.5 - 0.7	0.7 - 0.8	0.5 - 0.6	2.4 - 2.6	0.8 - 0.9	1.4 - 1.5	
Sample Date	(mg/kg)	(mg/kg)	10/13/2022	9/2/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	
<b>VOCs</b>														
Benzene	280	0.5	3.5 (0.034)	U (0.00044)	0.0012 (0.00075)	0.037 (0.00051)	1 (0.022)	3 (0.026)	7.8 (0.028)	U (0.00058)	U (0.00058)	U (0.0005)	U (0.00055)	
1,2-Dibromoethane	3.7	0.005	U (0.034)	U (0.00044)	U (0.00075)	U (0.00051)	U (0.00047)	U (0.026)	U (0.028)	U (0.00058)	U (0.00058)	U (0.0005)	U (0.00055)	
1,2-Dichloroethane	85	0.5	U (0.068)	U (0.00088)	U (0.0015)	U (0.001)	U (0.00093)	U (0.052)	U (0.055)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0011)	
Ethyl Benzene	880	70	18 (0.068)	U (0.00088)	U (0.0015)	U (0.001)	0.00026 J (0.00093)	U (0.052)	0.036 J (0.055)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0011)	
Isopropylbenzene	10000	2500	4.6 (0.068)	U (0.00088)	U (0.0015)	U (0.001)	0.00029 J (0.00093)	U (0.052)	0.034 J (0.055)	U (0.0012)	0.00043 J (0.0012)	U (0.001)	U (0.0011)	
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.0018)	U (0.003)	U (0.002)	U (0.0019)	U (0.1)	U (0.11)	U (0.0023)	U (0.0023)	U (0.002)	U (0.0022)	
Toluene	10000	100	0.23 (0.068)	U (0.00088)	U (0.0015)	0.00056 J (0.001)	0.0012 (0.00093)	U (0.052)	0.61 (0.055)	U (0.0012)	U (0.0012)	U (0.001)	U (0.0011)	
1,2,4-Trimethylbenzene	4700	300	23 (0.27)	U (0.0018)	U (0.003)	U (0.002)	U (0.0019)	U (0.1)	U (0.11)	U (0.0023)	U (0.0023)	U (0.002)	U (0.0022)	
1,3,5-Trimethylbenzene	4700	93	15 (0.14)	U (0.0018)	U (0.003)	U (0.002)	U (0.0019)	U (0.1)	U (0.11)	U (0.0023)	0.00025 J (0.0023)	U (0.002)	U (0.0022)	
Xylenes (total)	7900	1000	18.65 J (0.14)	U (0.0018)	U (0.003)	U (0.002)	U (0.0019)	U (0.1)	0.0585 J (0.11)	U (0.0023)	U (0.0023)	U (0.002)	U (0.0022)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**

**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential	Non-Residential	302-AN04-c	302-AO02-b	302-AO02-b	302-AO04-c	302-AO04-c	302-AO04-c	302-AO04-c	302-AO04-c	302-AO05-c	302-AO05-c	302-AO05-c	302-AO06-d
Cell	Soil Direct Contact	Soil to	302-AN04	302-AO02	302-AO02	302-AO04	302-AO04	302-AO04	302-AO04	302-AO04	302-AO05	302-AO05	302-AO05	302-AO06
Field Sample ID	Numeric Value	Groundwater	302-AN04-C1-VOC	302-AO02-C1-VOC	302-AO02-C2-VOC	302-AO04-C1-VOC	302-AO04-C2-VOC	302-AO04-C3-VOC	302-AO04-C4-VOC	302-AO05-C1-VOC	302-AO05-C2-VOC	302-AO05-C3-VOC	302-AO06-C1-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.1 - 2.3	0.3 - 0.5	0.6 - 0.8	0.5 - 0.6	0.9 - 1.1	1.8 - 2.0	2.4 - 2.6	0.9 - 1.1	1.8 - 2.0	2.7 - 2.9	3.0 - 3.2	
Sample Date	(mg/kg)	(mg/kg)	9/2/2022	10/6/2022	10/6/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	9/2/2022
<b>VOCs</b>														
Benzene	280	0.5	U (0.00057)	0.0025 (0.00059)	0.05 (0.00046)	0.00099 (0.00042)	0.076 (0.035)	U (0.00053)	U (0.00048)	0.00086 (0.0005)	0.00048 (0.00046)	U (0.032)	U (0.00049)	
1,2-Dibromoethane	3.7	0.005	U (0.00057)	U (0.00059)	U (0.00046)	U (0.00042)	U (0.035)	U (0.00053)	U (0.00048)	U (0.0005)	U (0.00046)	U (0.032)	U (0.00049)	
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.0012)	U (0.00092)	U (0.00085)	U (0.07)	U (0.0011)	U (0.00096)	U (0.001)	U (0.00092)	U (0.063)	U (0.00099)	
Ethyl Benzene	880	70	U (0.0011)	U (0.0012)	U (0.00092)	0.0014 (0.00085)	1.6 (0.07)	U (0.0011)	U (0.00096)	0.023 (0.001)	0.042 (0.00092)	0.26 (0.063)	U (0.00099)	
Isopropylbenzene	10000	2500	U (0.0011)	U (0.0012)	0.0001 J (0.00092)	0.0014 (0.00085)	0.2 (0.07)	U (0.0011)	U (0.00096)	0.098 (0.001)	0.16 (0.00092)	1.5 (0.063)	U (0.00099)	
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0024)	U (0.0018)	U (0.0017)	U (0.14)	U (0.0021)	U (0.0019)	0.00021 J (0.002)	U (0.0018)	U (0.13)	U (0.002)	
Toluene	10000	100	U (0.0011)	U (0.0012)	0.00062 J (0.00092)	0.00062 J (0.00085)	0.062 J (0.07)	U (0.0011)	U (0.00096)	0.00059 J (0.001)	U (0.00092)	U (0.063)	U (0.00099)	
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	U (0.0024)	U (0.0018)	0.0059 (0.0017)	2.8 (0.14)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0018)	U (0.13)	U (0.002)	
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0024)	U (0.0018)	0.0021 (0.0017)	0.31 (0.14)	U (0.0021)	U (0.0019)	U (0.002)	U (0.0018)	U (0.13)	U (0.002)	
Xylenes (total)	7900	1000	U (0.0023)	U (0.0024)	U (0.0018)	0.00356 J (0.0017)	1.046 J (0.14)	U (0.0021)	U (0.0019)	U (0.002)	0.00163 J (0.0018)	U (0.13)	U (0.002)	

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AP02-d	302-AP02-d	302-AP02-d	302-AP03-b	302-AP03-b	302-AP03-c	302-AP03-c	302-AP03-c	302-AP04-a	302-AP04-a	302-AP05-d
Cell	Soil Direct Contact	Soil to	302-AP02	302-AP02	302-AP02	302-AP03	302-AP03	302-AP03	302-AP03	302-AP03	302-AP04	302-AP04	302-AP05
Field Sample ID	Numeric Value	Groundwater	302-AP02-C1-VOC	302-AP02-C2-VOC	302-AP02-C3-VOC	302-AP03-C1-VOC	302-AP03-C3-VOC	302-AP03-C2-VOC	302-AP03-C4-VOC	302-AP03-C5-VOC	302-AP04-C1-VOC	302-AP04-C2-VOC	302-AP05-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	0.6 - 0.8	2.4 - 2.6	0.2 - 0.3	0.6 - 0.7	0.8 - 0.9	1.2 - 1.4	2.6 - 2.7	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	10/11/2022	10/11/2022	10/11/2022	10/14/2022	10/14/2022	10/14/2022	10/14/2022	10/14/2022	10/12/2022	10/12/2022	9/12/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00053)	U (0.00051)	U (0.00053)	U (0.00049)	U (0.00057)	U (0.00053)	U (0.00055)	U (0.00061)	10 (4.3)	0.3 (0.033)	0.00028 J (0.00043)
1,2-Dibromoethane	3.7	0.005	U (0.00053)	U (0.00051)	U (0.00053)	U (0.00049)	U (0.00057)	U (0.00053)	U (0.00055)	U (0.00061)	U (4.3)	U (0.033)	U (0.00043)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.001)	U (0.001)	U (0.00099)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	U (8.7)	U (0.066)	U (0.00087)
Ethyl Benzene	880	70	U (0.0011)	U (0.001)	U (0.001)	U (0.00099)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	4.6 J (8.7)	1.4 (0.066)	U (0.00087)
Isopropylbenzene	10000	2500	U (0.0011)	U (0.001)	U (0.001)	U (0.00099)	U (0.0011)	0.0002 J (0.0011)	U (0.0011)	U (0.0012)	18 (8.7)	7 (0.066)	U (0.00087)
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.002)	U (0.0021)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0022)	U (0.0024)	U (17)	U (0.13)	U (0.0017)
Toluene	10000	100	U (0.0011)	U (0.001)	U (0.001)	U (0.00099)	U (0.0011)	U (0.0011)	U (0.0011)	U (0.0012)	U (8.7)	0.34 (0.066)	U (0.00087)
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	U (0.002)	U (0.0021)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0022)	U (0.0024)	3.6 J (17)	0.12 J (0.13)	U (0.0017)
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	U (0.002)	U (0.0021)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0022)	U (0.0024)	1.7 J (17)	6.4 (0.13)	U (0.0017)
Xylenes (total)	7900	1000	U (0.0021)	U (0.002)	U (0.0021)	U (0.002)	U (0.0023)	U (0.0021)	U (0.0022)	U (0.0024)	14.35 J (17)	1.31 J (0.13)	U (0.0017)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AQ01-c	302-AQ01-c	302-AQ01-c	302-AQ03-b	302-AQ03-d	302-AQ04-c	302-AQ04-c	302-AR01-b	302-AR01-b	302-AR01-b	302-AR03-a
Cell	Soil Direct Contact	Soil to	302-AQ01	302-AQ01	302-AQ01	302-AQ03	302-AQ03	302-AQ04	302-AQ04	302-AR01	302-AR01	302-AR01	302-AR03
Field Sample ID	Numeric Value	Groundwater	302-AQ01-C1-VOC	302-AQ01-C2-VOC	302-AQ01-C3-VOC	302-AQ03-C1-VOC	302-AQ03-C2-VOC	302-AQ04-C1-VOC	302-AQ04-C2-VOC	302-AR01-C1-VOC	302-AR01-C2-VOC	302-AR01-C3-VOC	302-AR03-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	0.8 - 0.9	2.7 - 2.9	1.7 - 1.8	3.8 - 4.0	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2	3.8 - 4.0
Sample Date	(mg/kg)	(mg/kg)	10/7/2022	10/7/2022	10/7/2022	9/19/2022	9/19/2022	9/12/2022	9/12/2022	10/7/2022	10/7/2022	10/7/2022	9/19/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00046)	U (0.00075)	U (0.00056)	U (0.034)	U (0.03)	U (0.00054)	U (0.00044)	U (0.00047)	U (0.00064)	0.0018 (0.001)	0.018 J (0.031)
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00075)	U (0.00056)	U (0.034)	U (0.03)	U (0.00054)	U (0.00044)	U (0.00047)	U (0.00064)	U (0.001)	U (0.031)
1,2-Dichloroethane	85	0.5	U (0.00091)	U (0.0015)	U (0.0011)	U (0.067)	U (0.061)	U (0.0011)	U (0.00089)	U (0.00094)	U (0.0013)	U (0.0021)	U (0.063)
Ethyl Benzene	880	70	U (0.00091)	U (0.0015)	U (0.0011)	U (0.067)	U (0.061)	U (0.0011)	U (0.00089)	U (0.00094)	U (0.0013)	U (0.0021)	0.038 J (0.063)
Isopropylbenzene	10000	2500	U (0.00091)	U (0.0015)	0.00025 J (0.0011)	0.011 J (0.067)	0.51 (0.061)	U (0.0011)	U (0.00089)	U (0.00094)	U (0.0013)	U (0.0021)	0.65 (0.063)
Methyl tert-butyl ether	8500	2	U (0.0018)	0.00037 J (0.003)	U (0.0022)	U (0.13)	U (0.12)	U (0.0022)	U (0.0018)	U (0.0019)	U (0.0025)	U (0.0042)	U (0.12)
Toluene	10000	100	U (0.00091)	U (0.0015)	0.0011 (0.0011)	U (0.067)	U (0.061)	U (0.0011)	U (0.00089)	U (0.00094)	U (0.0013)	U (0.0021)	0.048 J (0.063)
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	U (0.003)	0.00053 J (0.0022)	U (0.13)	U (0.12)	U (0.0022)	U (0.0018)	U (0.0019)	U (0.0025)	U (0.0042)	0.041 J (0.12)
1,3,5-Trimethylbenzene	4700	93	U (0.0018)	U (0.003)	0.00045 J (0.0022)	U (0.13)	U (0.12)	U (0.0022)	U (0.0018)	U (0.0019)	U (0.0025)	U (0.0042)	U (0.12)
Xylenes (total)	7900	1000	U (0.0018)	U (0.003)	U (0.0022)	U (0.13)	U (0.12)	U (0.0022)	U (0.0018)	U (0.0019)	U (0.0025)	U (0.0042)	0.056 J (0.12)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AR03-d	302-AR03-d	302-AR03-d	302-AR03-d	302-AR04-c	302-AR04-c	302-AS01-a	302-AS01-a	302-AS01-a	302-AS01-a	302-AS04-c
Cell	Soil Direct Contact	Soil to	302-AR03	302-AR03	302-AR03	302-AR03	302-AR04	302-AR04	302-AS01	302-AS01	302-AS01	302-AS01	302-AS04
Field Sample ID	Numeric Value	Groundwater	302-AR03-C1-VOC	302-AR03-C2-VOC	302-AR03-C3-VOC	302-AR03-C4-VOC	302-AR04-C1-VOC	302-AR04-C2-VOC	302-AS01-C1-VOC	302-AS01-C2-VOC	302-AS01-C3-VOC	302-AS01-C4-VOC	302-AS04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.2 - 0.3	0.8 - 0.9	1.4 - 1.5	1.7 - 1.8	1.5 - 1.7	3.4 - 3.5	0.2 - 0.3	0.5 - 0.6	0.8 - 0.9	1.1 - 1.2	1.8 - 2.0
Sample Date	(mg/kg)	(mg/kg)	9/19/2022	9/19/2022	9/19/2022	9/19/2022	9/13/2022	9/13/2022	10/7/2022	10/7/2022	10/7/2022	10/7/2022	9/21/2022
<b>VOCs</b>													
Benzene	280	0.5	0.11 (0.029)	U (0.16)	U (0.3)	0.013 J (0.033)	U (0.00044)	U (0.00051)	U (0.00059)	U (0.00049)	U (0.00045)	U (0.00086)	0.00041 J (0.00042)
1,2-Dibromoethane	3.7	0.005	U (0.029)	U (0.16)	U (0.3)	U (0.033)	U (0.00044)	U (0.00051)	U (0.00059)	U (0.00049)	U (0.00045)	U (0.00086)	U (0.00042)
1,2-Dichloroethane	85	0.5	U (0.059)	U (0.33)	U (0.6)	U (0.067)	U (0.00089)	U (0.001)	U (0.0012)	U (0.00097)	U (0.00091)	U (0.0017)	U (0.00083)
Ethyl Benzene	880	70	0.037 J (0.059)	U (0.33)	U (0.6)	0.03 J (0.067)	U (0.00089)	U (0.001)	U (0.0012)	U (0.00097)	U (0.00091)	U (0.0017)	0.00014 J (0.00083)
Isopropylbenzene	10000	2500	1.4 (0.059)	1.7 (0.33)	2.8 (0.6)	6.2 (0.067)	U (0.00089)	U (0.001)	U (0.0012)	U (0.00097)	U (0.00091)	U (0.0017)	U (0.00083)
Methyl tert-butyl ether	8500	2	U (0.12)	U (0.65)	U (1.2)	U (0.13)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0019)	U (0.0018)	U (0.0035)	U (0.0017)
Toluene	10000	100	0.034 J (0.059)	U (0.33)	U (0.6)	0.088 (0.067)	U (0.00089)	U (0.001)	U (0.0012)	U (0.00097)	U (0.00091)	U (0.0017)	U (0.00083)
1,2,4-Trimethylbenzene	4700	300	0.082 J (0.12)	U (0.65)	U (1.2)	U (0.13)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0019)	U (0.0018)	U (0.0035)	U (0.0017)
1,3,5-Trimethylbenzene	4700	93	0.024 J (0.12)	U (0.65)	U (1.2)	0.014 J (0.13)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0019)	U (0.0018)	U (0.0035)	U (0.0017)
Xylenes (total)	7900	1000	0.2095 J (0.12)	U (0.65)	U (1.2)	0.57 J (0.13)	U (0.0018)	U (0.002)	U (0.0024)	U (0.0019)	U (0.0018)	U (0.0035)	U (0.0017)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**

**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential	Non-Residential	302-AS04-d	302-AS04-d	302-AS04-d	302-AS04-d	302-AS05-c	302-AS05-c	302-AS05-d	302-AS05-d	302-AS06-d	302-AT01-b	302-AT01-b
Cell	Soil Direct Contact	Soil to	302-AS04	302-AS04	302-AS04	302-AS04	302-AS05	302-AS05	302-AS05	302-AS05	302-AS06	302-AT01	302-AT01
Field Sample ID	Numeric Value	Groundwater	302-AS04-C1-VOC	302-AS04-C2-VOC	302-AS04-C4-VOC	302-AS04-C5-VOC	302-AS05-C2-VOC	302-AS05-C4-VOC	302-AS05-C1-VOC	302-AS05-C3-VOC	302-AS06-C1-VOC	302-AT01-C1-VOC	302-AT01-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.5 - 0.6	0.9 - 1.1	2.3 - 2.4	3.2 - 3.4	0.8 - 0.9	2.0 - 2.1	0.3 - 0.5	1.5 - 1.7	0.5 - 0.6	0.2 - 0.3	0.6 - 0.8
Sample Date	(mg/kg)	(mg/kg)	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/13/2022	10/11/2022	10/11/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00052)	U (0.00048)	0.12 (0.026)	0.17 (0.029)	0.075 (0.033)	0.26 J (0.33)	0.23 (0.055)	U (0.034)	U (0.0004)	U (0.00053)	U (0.00055)
1,2-Dibromoethane	3.7	0.005	U (0.00052)	U (0.00048)	U (0.026)	U (0.029)	U (0.033)	U (0.33)	U (0.055)	U (0.034)	U (0.0004)	U (0.00053)	U (0.00055)
1,2-Dichloroethane	85	0.5	U (0.001)	U (0.00096)	U (0.052)	U (0.058)	U (0.066)	U (0.66)	U (0.11)	U (0.068)	U (0.00081)	U (0.001)	U (0.0011)
Ethyl Benzene	880	70	U (0.001)	U (0.00096)	0.16 (0.052)	0.26 (0.058)	U (0.066)	0.38 J (0.66)	0.044 J (0.11)	U (0.068)	U (0.00081)	U (0.001)	U (0.0011)
Isopropylbenzene	10000	2500	U (0.001)	U (0.00096)	0.078 (0.052)	0.13 (0.058)	0.55 (0.066)	7.2 (0.66)	0.56 (0.11)	1.3 (0.068)	U (0.00081)	U (0.001)	U (0.0011)
Methyl tert-butyl ether	8500	2	U (0.0021)	U (0.0019)	U (0.1)	U (0.12)	U (0.13)	U (1.3)	U (0.22)	U (0.14)	U (0.0016)	U (0.0021)	U (0.0022)
Toluene	10000	100	U (0.001)	U (0.00096)	0.08 (0.052)	0.13 (0.058)	U (0.066)	U (0.66)	0.13 (0.11)	U (0.068)	U (0.00081)	U (0.001)	U (0.0011)
1,2,4-Trimethylbenzene	4700	300	U (0.0021)	U (0.0019)	0.2 (0.1)	0.39 (0.12)	U (0.13)	U (1.3)	0.058 J (0.22)	U (0.14)	U (0.0016)	U (0.0021)	U (0.0022)
1,3,5-Trimethylbenzene	4700	93	U (0.0021)	U (0.0019)	0.084 J (0.1)	0.15 (0.12)	U (0.13)	U (1.3)	U (0.22)	U (0.14)	U (0.0016)	U (0.0021)	U (0.0022)
Xylenes (total)	7900	1000	U (0.0021)	U (0.0019)	0.228 J (0.1)	0.386 J (0.12)	U (0.13)	U (1.3)	0.212 J (0.22)	U (0.14)	U (0.0016)	U (0.0021)	U (0.0022)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AT01-b	302-AT02-d	302-AT02-d	302-AT02-d	302-AT02-d	302-AT02-d	302-AT02-d	302-AT03-d	302-AT03-d	302-AT03-d	302-AT03-d	302-AT03-d
Cell	Soil Direct Contact	Soil to	302-AT01	302-AT02	302-AT02	302-AT02	302-AT02	302-AT02	302-AT02	302-AT03	302-AT03	302-AT03	302-AT03	302-AT03
Field Sample ID	Numeric Value	Groundwater	302-AT01-C3-VOC	302-AT02-C1-VOC	302-AT02-C2-VOC	302-AT02-C3-VOC	302-AT02-C4-VOC	302-AT02-C5-VOC	302-AT03-C1-VOC	302-AT03-C2-VOC	302-AT03-C3-VOC	302-AT03-C4-VOC	302-AT03-C5-VOC	
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.9 - 1.1	0.6 - 0.8	1.4 - 1.5	2.1 - 2.3	2.9 - 3.0	3.7 - 3.8	0.0 - 0.2	0.6 - 0.8	1.1 - 1.2	1.7 - 1.8	2.1 - 2.3	
Sample Date	(mg/kg)	(mg/kg)	10/11/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	9/22/2022	9/22/2022	9/22/2022	9/22/2022	9/22/2022	
<b>VOCs</b>														
Benzene	280	0.5	U (0.00046)	U (0.00056)	U (0.00073)	U (0.044)	U (0.00046)	U (0.032)	0.00033 J (0.00082)	U (0.00051)	0.015 (0.00047)	U (0.032)	U (0.031)	
1,2-Dibromoethane	3.7	0.005	U (0.00046)	U (0.00056)	U (0.00073)	U (0.044)	U (0.00046)	U (0.032)	U (0.00082)	U (0.00051)	U (0.00047)	U (0.032)	U (0.031)	
1,2-Dichloroethane	85	0.5	U (0.00092)	U (0.0011)	U (0.0014)	U (0.089)	U (0.00092)	U (0.064)	U (0.0016)	U (0.001)	U (0.00095)	U (0.064)	U (0.063)	
Ethyl Benzene	880	70	U (0.00092)	U (0.0011)	U (0.0014)	U (0.089)	U (0.00092)	U (0.064)	0.00094 J (0.0016)	U (0.001)	0.00028 J (0.00095)	0.014 J (0.064)	U (0.063)	
Isopropylbenzene	10000	2500	U (0.00092)	U (0.0011)	U (0.0014)	2.4 (0.089)	0.014 (0.00092)	4.5 (0.064)	0.0053 (0.0016)	0.0011 (0.001)	U (0.00095)	3.1 (0.064)	1 (0.063)	
Methyl tert-butyl ether	8500	2	U (0.0018)	U (0.0022)	U (0.0029)	U (0.18)	U (0.0018)	U (0.13)	U (0.0033)	U (0.002)	U (0.0019)	U (0.13)	U (0.12)	
Toluene	10000	100	U (0.00092)	U (0.0011)	U (0.0014)	U (0.089)	U (0.00092)	0.035 J (0.064)	0.0009 J (0.0016)	U (0.001)	U (0.00095)	0.034 J (0.064)	U (0.063)	
1,2,4-Trimethylbenzene	4700	300	U (0.0018)	U (0.0022)	U (0.0029)	U (0.18)	U (0.0018)	U (0.13)	0.31 (0.0033)	0.0059 (0.002)	0.00058 J (0.0019)	0.072 J (0.13)	U (0.12)	
1,3,5-Trimethylbenzene	4700	93	U (0.0018)	U (0.0022)	U (0.0029)	0.052 J (0.18)	0.00092 J (0.0018)	U (0.13)	0.085 (0.0033)	0.0014 J (0.002)	0.0002 J (0.0019)	U (0.13)	U (0.12)	
Xylenes (total)	7900	1000	U (0.0018)	U (0.0022)	U (0.0029)	0.13 J (0.18)	U (0.0018)	0.15 J (0.13)	0.0089 J (0.0033)	0.0013 J (0.002)	U (0.0019)	U (0.13)	U (0.12)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AT04-b	302-AT04-b	302-AT05-a	302-AU01-c	302-AU01-c	302-AU01-c	302-AU02-b	302-AU02-b	302-AU02-b	302-AU02-b	302-AU02-b
Cell	Soil Direct Contact	Soil to	302-AT04	302-AT04	302-AT05	302-AU01	302-AU01	302-AU01	302-AU02	302-AU02	302-AU02	302-AU02	302-AU02
Field Sample ID	Numeric Value	Groundwater	302-AT04-C1-VOC	302-AT04-C2-VOC	302-AT05-C1-VOC	302-AU01-C1-VOC	302-AU01-C2-VOC	302-AU01-C3-VOC	302-AU02-C1-VOC	302-AU02-C2-VOC	302-AU02-C3-VOC	302-AU02-C4-VOC	302-AU02-C5-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.9 - 1.1	2.4 - 2.6	2.0 - 2.1	0.2 - 0.3	0.5 - 0.6	0.5 - 0.6	0.0 - 0.2	0.3 - 0.5	0.6 - 0.8	0.8 - 0.9	1.1 - 1.2
Sample Date	(mg/kg)	(mg/kg)	9/22/2022	9/22/2022	9/14/2022	10/11/2022	10/11/2022	10/11/2022	9/23/2022	9/23/2022	9/23/2022	9/23/2022	9/23/2022
<b>VOCs</b>													
Benzene	280	0.5	0.06 (0.034)	U (0.03)	U (0.0005)	U (0.00044)	0.00081 (0.00064)	0.0023 (0.00076)	U (0.00053)	U (0.00071)	0.0011 (0.00044)	U (0.00062)	U (0.031)
1,2-Dibromoethane	3.7	0.005	U (0.034)	U (0.03)	U (0.0005)	U (0.00044)	U (0.00064)	U (0.00076)	U (0.00053)	U (0.00071)	U (0.00044)	U (0.00062)	U (0.031)
1,2-Dichloroethane	85	0.5	U (0.069)	U (0.061)	U (0.00099)	U (0.00088)	U (0.0013)	U (0.0015)	U (0.001)	U (0.0014)	U (0.00088)	U (0.0012)	U (0.061)
Ethyl Benzene	880	70	0.059 J (0.069)	U (0.061)	U (0.00099)	U (0.00088)	0.00059 J (0.0013)	0.0012 J (0.0015)	U (0.001)	U (0.0014)	0.0006 J (0.00088)	U (0.0012)	U (0.061)
Isopropylbenzene	10000	2500	5.2 (0.069)	0.8 (0.061)	U (0.00099)	U (0.00088)	0.0022 (0.0013)	0.013 (0.0015)	U (0.001)	U (0.0014)	0.027 (0.00088)	U (0.0012)	0.22 (0.061)
Methyl tert-butyl ether	8500	2	U (0.14)	U (0.12)	U (0.002)	U (0.0018)	U (0.0025)	U (0.003)	U (0.0021)	U (0.0028)	U (0.0018)	U (0.0025)	U (0.12)
Toluene	10000	100	0.051 J (0.069)	U (0.061)	U (0.00099)	U (0.00088)	0.0017 (0.0013)	0.0028 (0.0015)	U (0.001)	U (0.0014)	0.0017 (0.00088)	U (0.0012)	U (0.061)
1,2,4-Trimethylbenzene	4700	300	0.081 J (0.14)	U (0.12)	U (0.002)	U (0.0018)	0.0084 (0.0025)	0.0028 J (0.003)	U (0.0021)	U (0.0028)	0.0074 (0.0018)	U (0.0025)	U (0.12)
1,3,5-Trimethylbenzene	4700	93	0.016 J (0.14)	U (0.12)	U (0.002)	U (0.0018)	0.011 (0.0025)	0.0035 (0.003)	U (0.0021)	U (0.0028)	0.00078 J (0.0018)	U (0.0025)	U (0.12)
Xylenes (total)	7900	1000	0.312 J (0.14)	U (0.12)	U (0.002)	U (0.0018)	0.0376 J (0.0025)	0.0184 J (0.003)	U (0.0021)	U (0.0028)	0.0077 J (0.0018)	U (0.0025)	U (0.12)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AU03-c	302-AU03-c	302-AU03-c	302-AU03-c	302-AU04-b	302-AU05-d	302-AV02-a	302-AV02-a	302-AV02-a	302-AV02-a	302-AV04-b
Cell	Soil Direct Contact	Soil to	302-AU03	302-AU03	302-AU03	302-AU03	302-AU04	302-AU05	302-AV02	302-AV02	302-AV02	302-AV02	302-AV04
Field Sample ID	Numeric Value	Groundwater	302-AU03-C1-VOC	302-AU03-C2-VOC	302-AU03-C3-VOC	302-AU03-C4-VOC	302-AU04-C1-VOC	302-AU05-C1-VOC	302-AV02-C1-VOC	302-AV02-C2-VOC	302-AV02-C3-VOC	302-AV02-C4-VOC	302-AV04-C1-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.3 - 0.5	0.6 - 0.8	1.1 - 1.2	1.7 - 1.8	2.3 - 2.4	1.1 - 1.2	0.2 - 0.3	0.3 - 0.5	0.5 - 0.6	0.9 - 1.1	0.5 - 0.6
Sample Date	(mg/kg)	(mg/kg)	9/23/2022	9/23/2022	9/23/2022	9/23/2022	9/23/2022	9/14/2022	9/28/2022	9/28/2022	9/28/2022	9/28/2022	9/27/2022
<b>VOCs</b>													
Benzene	280	0.5	0.00022 J (0.00059)	0.029 (0.024)	0.052 (0.025)	U (0.03)	U (0.028)	U (0.00049)	U (0.0005)	0.0002 J (0.00053)	0.0044 (0.00055)	0.00059 J (0.0008)	0.00074 (0.00051)
1,2-Dibromoethane	3.7	0.005	U (0.00059)	U (0.024)	U (0.025)	U (0.03)	U (0.028)	U (0.00049)	U (0.0005)	U (0.00053)	U (0.00055)	U (0.0008)	U (0.00051)
1,2-Dichloroethane	85	0.5	U (0.0012)	U (0.047)	U (0.051)	U (0.06)	U (0.056)	U (0.00097)	U (0.00099)	U (0.0011)	U (0.0011)	U (0.0016)	U (0.001)
Ethyl Benzene	880	70	0.0004 J (0.0012)	0.28 (0.047)	0.71 (0.051)	0.099 (0.06)	0.12 (0.056)	U (0.00097)	U (0.00099)	U (0.0011)	0.0013 (0.0011)	0.00059 J (0.0016)	0.00044 J (0.001)
Isopropylbenzene	10000	2500	0.0016 (0.0012)	0.18 (0.047)	0.51 (0.051)	0.074 (0.06)	0.063 (0.056)	U (0.00097)	U (0.00099)	0.0011 (0.0011)	0.0011 (0.0011)	0.013 (0.0016)	0.00016 J (0.001)
Methyl tert-butyl ether	8500	2	U (0.0024)	U (0.095)	U (0.1)	U (0.12)	U (0.11)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0022)	U (0.0032)	U (0.002)
Toluene	10000	100	U (0.0012)	0.14 (0.047)	0.31 (0.051)	U (0.06)	U (0.056)	U (0.00097)	U (0.00099)	U (0.0011)	0.0038 (0.0011)	0.0011 J (0.0016)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	0.0014 J (0.0024)	3.5 (0.095)	9.8 (0.1)	0.11 J (0.12)	0.25 (0.11)	U (0.0019)	U (0.002)	0.00088 J (0.0021)	0.0014 J (0.0022)	0.0031 J (0.0032)	0.0015 J (0.002)
1,3,5-Trimethylbenzene	4700	93	0.00045 J (0.0024)	1.2 (0.095)	3.4 (0.1)	0.04 J (0.12)	0.066 J (0.11)	U (0.0019)	U (0.002)	0.00022 J (0.0021)	0.00042 J (0.0022)	0.00096 J (0.0032)	0.0026 (0.002)
Xylenes (total)	7900	1000	0.00155 J (0.0024)	1.77 J (0.095)	4.8 J (0.1)	U (0.12)	0.06 J (0.11)	U (0.0019)	U (0.002)	0.0047 J (0.0021)	0.0081 J (0.0022)	0.014 J (0.0032)	0.00168 J (0.002)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**

**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential	Non-Residential	302-AV04-b	302-AV04-b	302-AV04-b	302-AV05-c	302-AV05-d	302-AW02-a	302-AW02-a	302-AW02-a	302-AW02-a	302-AW04-c	302-AW04-c
Cell	Soil Direct Contact	Soil to	302-AV04	302-AV04	302-AV04	302-AV05	302-AV05	302-AW02	302-AW02	302-AW02	302-AW02	302-AW04	302-AW04
Field Sample ID	Numeric Value	Groundwater	302-AV04-C2-VOC	302-AV04-C3-VOC	302-AV04-C4-VOC	302-AV05-C1-VOC	302-AV05-C2-VOC	302-AW02-C1-VOC	302-AW02-C2-VOC	302-AW02-C3-VOC	302-AW02-C4-VOC	302-AW04-C1-VOC	302-AW04-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.2 - 1.4	2.1 - 2.3	2.4 - 2.6	0.6 - 0.8	1.4 - 1.5	0.0 - 0.2	0.3 - 0.5	0.5 - 0.6	0.7 - 0.8	0.9 - 1.1	1.2 - 1.4
Sample Date	(mg/kg)	(mg/kg)	9/27/2022	9/27/2022	9/27/2022	9/14/2022	9/14/2022	9/28/2022	9/28/2022	9/28/2022	9/28/2022	9/27/2022	9/27/2022
<b>VOCs</b>													
Benzene	280	0.5	0.0035 (0.00049)	0.0055 (0.00047)	0.0051 (0.00049)	U (0.00042)	U (0.00049)	U (0.0006)	U (0.00066)	0.0022 (0.00077)	0.35 (0.17)	0.00016 J (0.00048)	0.19 (0.033)
1,2-Dibromoethane	3.7	0.005	U (0.00049)	U (0.00047)	U (0.00049)	U (0.00042)	U (0.00049)	U (0.0006)	U (0.00066)	U (0.00077)	U (0.17)	U (0.00048)	U (0.00049)
1,2-Dichloroethane	85	0.5	U (0.00099)	U (0.00094)	U (0.00098)	U (0.00084)	U (0.00097)	U (0.0012)	U (0.0013)	U (0.0015)	U (0.35)	U (0.00095)	U (0.00097)
Ethyl Benzene	880	70	0.00082 J (0.00099)	0.00016 J (0.00094)	0.00015 J (0.00098)	U (0.00084)	U (0.00097)	U (0.0012)	U (0.0013)	0.0011 J (0.0015)	0.58 (0.35)	U (0.00095)	0.32 (0.065)
Isopropylbenzene	10000	2500	0.00043 J (0.00099)	0.00034 J (0.00094)	0.00033 J (0.00098)	U (0.00084)	U (0.00097)	U (0.0012)	U (0.0013)	0.0023 (0.0015)	2.8 (0.35)	U (0.00095)	0.011 J (0.065)
Methyl tert-butyl ether	8500	2	U (0.002)	U (0.0019)	U (0.002)	U (0.0017)	U (0.0019)	U (0.0024)	U (0.0026)	U (0.0031)	U (0.7)	U (0.0019)	U (0.0019)
Toluene	10000	100	U (0.00099)	U (0.00094)	U (0.00098)	U (0.00084)	U (0.00097)	U (0.0012)	U (0.0013)	0.0012 J (0.0015)	0.55 (0.35)	U (0.00095)	0.003 (0.00097)
1,2,4-Trimethylbenzene	4700	300	0.0032 (0.002)	0.00053 J (0.0019)	0.00046 J (0.002)	U (0.0017)	U (0.0019)	U (0.0024)	U (0.0026)	0.00077 J (0.0031)	1.2 (0.7)	U (0.0019)	0.76 (0.13)
1,3,5-Trimethylbenzene	4700	93	0.013 (0.002)	0.0031 (0.0019)	0.0022 (0.002)	U (0.0017)	U (0.0019)	U (0.0024)	U (0.0026)	U (0.0031)	0.57 J (0.7)	U (0.0019)	0.26 (0.13)
Xylenes (total)	7900	1000	0.00328 J (0.002)	0.00101 J (0.0019)	U (0.002)	U (0.0017)	U (0.0019)	U (0.0024)	U (0.0026)	0.0039 J (0.0031)	1.66 J (0.7)	U (0.0019)	1.024 J (0.13)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AW04-c	302-AW04-c	302-AW04-c	302-AW05-d	302-AX02-c	302-AX02-c	302-AX02-c	302-AX02-c	302-AX02-c	302-AX03-a	302-AX03-a
Cell	Soil Direct Contact	Soil to	302-AW04	302-AW04	302-AW04	302-AW05	302-AX02	302-AX02	302-AX02	302-AX02	302-AX02	302-AX03	302-AX03
Field Sample ID	Numeric Value	Groundwater	302-AW04-C3-VOC	302-AW04-C4-VOC	302-AW04-C5-VOC	302-AW05-C1-VOC	302-AX02-C1-VOC	302-AX02-C2-VOC	302-AX02-C3-VOC	302-AX02-C4-VOC	302-AX02-C5-VOC	302-AX03-C1-VOC	302-AX03-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.3 - 2.4	3.4 - 3.5	5.3 - 5.5	0.9 - 1.1	0.8 - 0.9	1.2 - 1.4	2.7 - 2.9	3.4 - 3.5	4.9 - 5.0	0.6 - 0.8	2.7 - 2.9
Sample Date	(mg/kg)	(mg/kg)	9/27/2022	9/27/2022	9/27/2022	9/15/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.00057)	U (0.00054)	U (0.00057)	U (0.00048)	0.34 (0.00057)	2 (0.033)	U (0.00049)	4.7 (0.052)	U (0.00057)	U (0.00055)	0.00078 (0.00051)
1,2-Dibromoethane	3.7	0.005	U (0.00057)	U (0.00054)	U (0.00057)	U (0.00048)	U (0.00057)	U (0.033)	U (0.00049)	U (0.052)	U (0.00057)	U (0.00055)	U (0.00051)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00096)	U (0.0011)	U (0.066)	U (0.00097)	U (0.1)	U (0.0011)	U (0.0011)	U (0.001)
Ethyl Benzene	880	70	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00096)	0.011 (0.0011)	0.13 (0.066)	0.001 (0.00097)	0.39 (0.1)	U (0.0011)	U (0.0011)	U (0.001)
Isopropylbenzene	10000	2500	0.00019 J (0.0011)	U (0.0011)	U (0.0011)	U (0.00096)	0.0025 (0.0011)	0.031 J (0.066)	0.0025 (0.00097)	0.086 J (0.1)	U (0.0011)	U (0.0011)	U (0.001)
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0019)	U (0.0023)	U (0.13)	U (0.0019)	U (0.21)	U (0.0023)	U (0.0022)	U (0.002)
Toluene	10000	100	U (0.0011)	U (0.0011)	U (0.0011)	U (0.00096)	0.0085 (0.0011)	0.062 J (0.066)	0.0009 J (0.00097)	0.14 (0.1)	U (0.0011)	U (0.0011)	U (0.001)
1,2,4-Trimethylbenzene	4700	300	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0019)	0.016 (0.0023)	0.42 (0.13)	0.0006 J (0.0019)	1.3 (0.21)	U (0.0023)	U (0.0022)	U (0.002)
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0019)	0.0071 (0.0023)	0.13 (0.13)	U (0.0019)	0.4 (0.21)	U (0.0023)	U (0.0022)	U (0.002)
Xylenes (total)	7900	1000	U (0.0023)	U (0.0022)	U (0.0023)	U (0.0019)	0.0214 J (0.0023)	0.196 J (0.13)	0.00152 J (0.0019)	0.65 J (0.21)	U (0.0023)	U (0.0022)	U (0.002)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.1b**

**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential	Non-Residential	302-AX03-a	302-AX06-a	302-AY02-b	302-AY02-c	302-AY02-d	302-AY03-a	302-AY03-b	302-AY03-c	302-AY04-a	302-AY04-b	302-AY04-c
Cell	Soil Direct Contact	Soil to	302-AX03	302-AX06	302-AY02	302-AY02	302-AY02	302-AY03	302-AY03	302-AY03	302-AY04	302-AY04	302-AY04
Field Sample ID	Numeric Value	Groundwater	302-AX03-C3-VOC	302-AX06-C1-VOC	302-AY02-C3-VOC	302-AY02-C1-VOC	302-AY02-C2-VOC	302-AY03-C3-VOC	302-AY03-C1-VOC	302-AY03-C2-VOC	302-AY04-C1-VOC	302-AY04-C2-VOC	302-AY04-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	4.9 - 5.0	1.8 - 2.0	2.0 - 2.1	0.8 - 0.9	0.3 - 0.5	0.5 - 0.6	0.2 - 0.3	0.3 - 0.5	0.6 - 0.8	2.4 - 2.6	4.9 - 5.0
Sample Date	(mg/kg)	(mg/kg)	9/29/2022	9/15/2022	10/10/2022	10/10/2022	10/10/2022	9/29/2022	9/29/2022	9/29/2022	9/30/2022	9/30/2022	9/30/2022
<b>VOCs</b>													
Benzene	280	0.5	U (0.0013)	U (0.00046)	0.79 (0.18)	0.016 (0.00086)	0.078 (0.00049)	U (0.00064)	0.0019 (0.0005)	0.01 (0.00068)	0.053 (0.035)	U (0.024)	U (0.029)
1,2-Dibromoethane	3.7	0.005	U (0.0013)	U (0.00046)	U (0.18)	U (0.00086)	U (0.00049)	U (0.00064)	U (0.0005)	U (0.00068)	U (0.035)	U (0.024)	U (0.029)
1,2-Dichloroethane	85	0.5	U (0.0026)	U (0.00093)	U (0.35)	U (0.0017)	U (0.00098)	U (0.0013)	U (0.001)	U (0.0014)	U (0.069)	U (0.047)	U (0.059)
Ethyl Benzene	880	70	U (0.0026)	U (0.00093)	0.81 (0.35)	0.027 (0.0017)	0.011 (0.00098)	U (0.0013)	0.00052 J (0.001)	0.0026 (0.0014)	13 (0.069)	0.053 (0.047)	0.02 J (0.059)
Isopropylbenzene	10000	2500	U (0.0026)	U (0.00093)	140 (0.88)	0.05 (0.0017)	0.0091 (0.00098)	U (0.0013)	U (0.001)	0.00055 J (0.0014)	5.6 (0.069)	0.18 (0.047)	U (0.059)
Methyl tert-butyl ether	8500	2	U (0.0052)	U (0.0018)	U (0.7)	U (0.0034)	U (0.002)	U (0.0026)	U (0.002)	U (0.0027)	U (0.14)	U (0.094)	U (0.12)
Toluene	10000	100	U (0.0026)	U (0.00093)	0.26 J (0.35)	0.013 (0.0017)	0.014 (0.00098)	U (0.0013)	U (0.001)	0.0015 (0.0014)	0.1 (0.069)	U (0.047)	U (0.059)
1,2,4-Trimethylbenzene	4700	300	U (0.0052)	U (0.0018)	0.66 J (0.7)	0.11 (0.0034)	0.02 (0.002)	U (0.0026)	0.00036 J (0.002)	0.0026 J (0.0027)	12 (0.14)	U (0.094)	0.024 J (0.12)
1,3,5-Trimethylbenzene	4700	93	U (0.0052)	U (0.0018)	0.31 J (0.7)	0.067 (0.0034)	0.011 (0.002)	U (0.0026)	U (0.002)	0.00084 J (0.0027)	1.8 (0.14)	U (0.094)	U (0.12)
Xylenes (total)	7900	1000	U (0.0052)	U (0.0018)	0.78 J (0.7)	0.059 J (0.0034)	0.0203 J (0.002)	U (0.0026)	0.00158 J (0.002)	0.0079 J (0.0027)	3.36 J (0.14)	U (0.094)	U (0.12)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AY05-c	302-AY05-c	302-AY05-c	302-AY05-c	302-AY05-c	302-AY05-c	302-AY07-d	302-AZ02-a	302-AZ02-b	302-AZ02-b	302-AZ03-c	302-AZ03-c
Cell	Soil Direct Contact	Soil to	302-AY05	302-AY05	302-AY05	302-AY05	302-AY05	302-AY05	302-AY07	302-AZ02	302-AZ02	302-AZ02	302-AZ03	302-AZ03
Field Sample ID	Numeric Value	Groundwater	302-AY05-C1-VOC	302-AY05-C2-VOC	302-AY05-C3-VOC	302-AY05-C4-VOC	302-AY05-C5-VOC	302-AY07-C1-VOC	302-AZ02-C3-VOC	302-AZ02-C1-VOC	302-AZ02-C2-VOC	302-AZ02-C2-VOC	302-AZ03-C1-VOC	302-AZ03-C2-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	0.6 - 0.8	1.2 - 1.4	1.8 - 2.0	2.4 - 2.6	3.0 - 3.2	0.8 - 0.9	1.5 - 1.7	0.5 - 0.6	1.1 - 1.2	0.5 - 0.6	0.8 - 0.9	0.8 - 0.9
Sample Date	(mg/kg)	(mg/kg)	9/30/2022	9/30/2022	9/30/2022	9/30/2022	9/30/2022	9/15/2022	10/10/2022	10/10/2022	10/10/2022	10/10/2022	10/3/2022	10/3/2022
<b>VOCs</b>														
Benzene	280	0.5	0.00021 J (0.00057)	U (0.00089)	U (0.00047)	U (0.00049)	U (0.00053)	U (0.00046)	U (0.00056)	U (0.00085)	0.0012 (0.00059)	0.9 (0.074)	U (0.032)	U (0.032)
1,2-Dibromoethane	3.7	0.005	U (0.00057)	U (0.00089)	U (0.00047)	U (0.00049)	U (0.00053)	U (0.00046)	U (0.00056)	U (0.00085)	U (0.00059)	U (0.074)	U (0.032)	U (0.032)
1,2-Dichloroethane	85	0.5	U (0.0011)	U (0.0018)	U (0.00094)	U (0.00099)	U (0.0011)	U (0.00093)	U (0.0011)	U (0.0017)	U (0.0012)	U (0.15)	U (0.064)	U (0.064)
Ethyl Benzene	880	70	U (0.0011)	U (0.0018)	U (0.00094)	U (0.00099)	U (0.0011)	U (0.00093)	U (0.0011)	U (0.0017)	0.00092 J (0.0012)	16 (0.15)	0.074 (0.064)	0.074 (0.064)
Isopropylbenzene	10000	2500	U (0.0011)	U (0.0018)	U (0.00094)	U (0.00099)	U (0.0011)	U (0.00093)	U (0.0011)	U (0.0017)	U (0.0012)	3.6 (0.15)	0.066 (0.064)	0.066 (0.064)
Methyl tert-butyl ether	8500	2	U (0.0023)	U (0.0036)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0018)	U (0.0022)	U (0.0034)	U (0.0024)	U (0.3)	U (0.13)	U (0.13)
Toluene	10000	100	U (0.0011)	U (0.0018)	U (0.00094)	U (0.00099)	U (0.0011)	U (0.00093)	U (0.0011)	U (0.0017)	0.0048 (0.0012)	1.6 (0.15)	0.035 J (0.064)	0.035 J (0.064)
1,2,4-Trimethylbenzene	4700	300	0.00046 J (0.0023)	0.0008 J (0.0036)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0018)	U (0.0022)	U (0.0034)	0.002 J (0.0024)	84 (1.5)	1.6 (0.13)	1.6 (0.13)
1,3,5-Trimethylbenzene	4700	93	U (0.0023)	U (0.0036)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0018)	U (0.0022)	U (0.0034)	0.00075 J (0.0024)	23 (0.3)	0.49 (0.13)	0.49 (0.13)
Xylenes (total)	7900	1000	U (0.0023)	U (0.0036)	U (0.0019)	U (0.002)	U (0.0021)	U (0.0018)	U (0.0022)	U (0.0034)	0.0061 J (0.0024)	79 J (0.3)	0.57 J (0.13)	0.57 J (0.13)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-AZ03-c	302-AZ03-c	302-AZ03-c	302-BA03-c	302-BA03-c	302-BA03-c	302-BA04-d	302-BA04-d	302-BB04-c	302-BB04-c	302-BB07-c
Cell	Soil Direct Contact	Soil to	302-AZ03	302-AZ03	302-AZ03	302-BA03	302-BA03	302-BA03	302-BA04	302-BA04	302-BB04	302-BB04	302-BB07
Field Sample ID	Numeric Value	Groundwater	302-AZ03-C3-VOC	302-AZ03-C4-VOC	302-AZ03-C5-VOC	302-BA03-C1-VOC	302-BA03-C2-VOC	302-BA03-C3-VOC	302-BA04-C1-VOC	302-BA04-C2-VOC	302-BB04-C1-VOC	302-BB04-C2-VOC	302-BB07-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	1.7 - 1.8	2.4 - 2.6	3.4 - 3.5	0.5 - 0.6	0.9 - 1.1	1.5 - 1.7	0.9 - 1.1	2.1 - 2.3	0.3 - 0.5	0.6 - 0.8	2.0 - 2.1
Sample Date	(mg/kg)	(mg/kg)	10/3/2022	10/3/2022	10/3/2022	10/10/2022	10/10/2022	10/10/2022	10/3/2022	10/3/2022	10/10/2022	10/10/2022	9/16/2022
<b>VOCs</b>													
Benzene	280	0.5	0.66 (0.026)	U (0.00046)	0.15 (0.035)	U (0.0016)	U (0.00099)	U (0.0005)	0.00056 (0.00049)	1.7 (0.07)	U (0.00085)	U (0.026)	27 (0.11)
1,2-Dibromoethane	3.7	0.005	U (0.026)	U (0.00046)	U (0.035)	U (0.0016)	U (0.00099)	U (0.0005)	U (0.00049)	U (0.07)	U (0.00085)	U (0.026)	U (0.11)
1,2-Dichloroethane	85	0.5	U (0.053)	U (0.00093)	U (0.07)	U (0.0032)	U (0.002)	U (0.00099)	U (0.00099)	U (0.14)	U (0.0017)	U (0.052)	U (0.23)
Ethyl Benzene	880	70	3.2 (0.053)	0.0003 J (0.00093)	0.54 (0.07)	U (0.0032)	U (0.002)	U (0.00099)	0.0018 (0.00099)	18 (0.14)	U (0.0017)	0.01 J (0.052)	56 (0.23)
Isopropylbenzene	10000	2500	0.56 (0.053)	0.00092 J (0.00093)	0.1 (0.07)	U (0.0032)	U (0.002)	U (0.00099)	0.0017 (0.00099)	3.4 (0.14)	U (0.0017)	0.037 J (0.052)	3.8 (0.23)
Methyl tert-butyl ether	8500	2	U (0.1)	0.0024 (0.0018)	U (0.14)	U (0.0065)	U (0.004)	U (0.002)	0.00023 J (0.002)	U (0.28)	U (0.0034)	U (0.1)	U (0.46)
Toluene	10000	100	0.23 (0.053)	U (0.00093)	U (0.07)	U (0.0032)	U (0.002)	U (0.00099)	0.00075 J (0.00099)	0.86 (0.14)	U (0.0017)	U (0.052)	44 (0.23)
1,2,4-Trimethylbenzene	4700	300	10 (0.1)	0.0011 J (0.0018)	1.9 (0.14)	U (0.0065)	U (0.004)	U (0.002)	0.04 (0.002)	69 (1.1)	U (0.0034)	2.2 (0.1)	50 (0.46)
1,3,5-Trimethylbenzene	4700	93	3.4 (0.1)	0.00034 J (0.0018)	0.62 (0.14)	U (0.0065)	U (0.004)	U (0.002)	0.013 (0.002)	21 (0.28)	U (0.0034)	0.6 (0.1)	19 (0.46)
Xylenes (total)	7900	1000	13.7 J (0.1)	0.001315 J (0.0018)	1.8 J (0.14)	U (0.0065)	U (0.004)	U (0.002)	0.0207 J (0.002)	80.1 J (0.28)	U (0.0034)	0.228 J (0.1)	193 J (0.57)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- 5 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.1b**  
**Cut Soil Discrete Analytical Results - Volatile Organic Compounds (Phase 1B)**  
 Soil Management Plan Addendum No. 3  
 Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Non-Residential	Non-Residential	302-BB07-c	302-BB07-c	302-BB07-d	302-BB07-d	302-BB08-d	302-BB08-d	302-BB08-d	302-BB08-d	302-BC04-d	302-BC06-b	302-BC06-b	302-BC06-b
Cell	Soil Direct Contact	Soil to	302-BB07	302-BB07	302-BB07	302-BB07	302-BB08	302-BB08	302-BB08	302-BB08	302-BC04	302-BC06	302-BC06	302-BC06
Field Sample ID	Numeric Value	Groundwater	302-BB07-C4-VOC	302-BB07-C5-VOC	302-BB07-C1-VOC	302-BB07-C2-VOC	302-BB08-C1-VOC	302-BB08-C2-VOC	302-BB08-C3-VOC	302-BC04-C1-VOC	302-BC06-C1-VOC	302-BC06-C2-VOC	302-BC06-C3-VOC	302-BC06-C3-VOC
Collection Depth (ft bgs)	(0-2 ft bgs)	Numeric Value	2.9 - 3.0	3.8 - 4.0	0.3 - 0.5	0.8 - 0.9	0.0 - 0.2	0.3 - 0.5	0.5 - 0.6	0.5 - 0.6	0.3 - 0.5	0.9 - 1.1	1.7 - 1.8	
Sample Date	(mg/kg)	(mg/kg)	9/16/2022	9/16/2022	9/16/2022	9/16/2022	9/16/2022	9/16/2022	9/16/2022	10/20/2022	9/16/2022	9/16/2022	9/16/2022	
<b>VOCs</b>														
Benzene	280	0.5	0.71 J (1.5)	65 (1.5)	1 (0.054)	7.3 (0.27)	0.0028 (0.00058)	0.00044 (0.00043)	U (0.0004)	0.00098 (0.00066)	0.066 (0.00058)	31 (29)	12 (2.8)	
1,2-Dibromoethane	3.7	0.005	U (1.5)	U (1.5)	U (0.054)	U (0.27)	U (0.00058)	U (0.00043)	U (0.0004)	U (0.00066)	U (0.00058)	U (29)	U (2.8)	
1,2-Dichloroethane	85	0.5	U (3)	U (3)	U (0.11)	U (0.54)	U (0.0012)	U (0.00086)	U (0.0008)	U (0.0013)	U (0.0012)	U (57)	U (5.6)	
Ethyl Benzene	880	70	16 (3)	65 (3)	4.8 (0.11)	16 (0.54)	U (0.0012)	U (0.00086)	U (0.0008)	0.00071 J (0.0013)	0.014 (0.0012)	120 (57)	100 (5.6)	
Isopropylbenzene	10000	2500	2 J (3)	5.8 (3)	1.5 (0.11)	3.5 (0.54)	U (0.0012)	U (0.00086)	U (0.0008)	0.001 J (0.0013)	0.0011 J (0.0012)	7.1 J (57)	9.1 (5.6)	
Methyl tert-butyl ether	8500	2	U (6)	U (6.1)	U (0.22)	U (1.1)	U (0.0023)	U (0.0017)	U (0.0016)	U (0.0026)	U (0.0023)	U (110)	U (11)	
Toluene	10000	100	2.6 J (3)	150 (3)	3.3 (0.11)	15 (0.54)	U (0.0012)	U (0.00086)	U (0.0008)	U (0.0013)	0.0033 (0.0012)	U (57)	7.9 (5.6)	
1,2,4-Trimethylbenzene	4700	300	9.9 (6)	110 (6.1)	8 (0.22)	14 (1.1)	U (0.0023)	U (0.0017)	U (0.0016)	0.0015 J (0.0026)	0.0088 (0.0023)	600 (110)	510 (11)	
1,3,5-Trimethylbenzene	4700	93	1.4 J (6)	41 (6.1)	4.1 (0.22)	6.6 (1.1)	U (0.0023)	U (0.0017)	U (0.0016)	0.00073 J (0.0026)	0.0038 (0.0023)	200 (110)	200 (11)	
Xylenes (total)	7900	1000	9.6 J (6)	316 J (6.1)	19.6 J (0.22)	64 J (1.1)	U (0.0023)	U (0.0017)	U (0.0016)	0.00668 J (0.0026)	0.026 J (0.0023)	520 J (110)	385 J (11)	

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Collection depth is the depth interval of soil relative to the existing conditions (i.e., pre-development) ground surface.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

VOCs -- Volatile Organic Compounds.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-A01-C1	201-A01-C2	201-A01-CX	201-A02-C1	201-A02-C2	201-A02-CX	201-A03-C1	201-A03-C2	201-A03-CX	201-A04-C1	201-A04-C2	201-A04-C3	201-A04-CX
			201-A01	201-A01	201-A01	201-A02	201-A02	201-A02	201-A03	201-A03	201-A03	201-A04	201-A04	201-A04	201-A04
Field Sample ID	Value (0-2 ft bgs)	Value	201-A01-C1-COMP	201-A01-C2-COMP	201-A01-CX-COMP	201-A02-C1-COMP	201-A02-C2-COMP	201-A02-CX-COMP	201-A03-C1-COMP	201-A03-C2-COMP	201-A03-CX-COMP	201-A04-C1-COMP	201-A04-C2-COMP	201-A04-C3-COMP	201-A04-CX-COMP
Sample Date	(mg/kg)	(mg/kg)	1/17/2022	1/17/2022	1/17/2022	1/18/2022	1/18/2022	1/18/2022	1/18/2022	1/18/2022	1/18/2022	1/19/2022	1/19/2022	1/19/2022	1/19/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	1.3 (0.12)	U (0.12)	0.16 (0.12)	U (0.12)	U (0.12)	0.039 J (0.12)	0.2 (0.11)	0.19 (0.12)	0.094 J (0.11)	0.2 (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	3.2 (0.12)	0.031 J (0.12)	0.44 (0.12)	0.044 J (0.12)	U (0.12)	0.038 J (0.12)	1.6 (0.11)	0.21 (0.12)	0.12 (0.11)	0.34 (0.12)
Benzo(a)pyrene	91	46	U (0.17)	U (0.16)	U (0.16)	2.7 (0.16)	U (0.16)	0.36 (0.16)	U (0.16)	U (0.16)	U (0.16)	3.3 (0.15)	0.17 (0.16)	0.11 J (0.15)	0.4 (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	3.2 (0.12)	U (0.12)	0.42 (0.12)	0.04 J (0.12)	U (0.12)	U (0.12)	3.2 (0.11)	0.2 (0.12)	0.13 (0.11)	0.45 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.17)	U (0.16)	U (0.16)	1.4 (0.16)	U (0.16)	0.18 (0.16)	U (0.16)	U (0.16)	U (0.16)	2 (0.15)	0.067 J (0.16)	0.055 J (0.15)	0.22 (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	3.2 (0.12)	0.063 J (0.12)	0.45 (0.12)	0.041 J (0.12)	U (0.12)	0.033 J (0.12)	1.4 (0.11)	0.19 (0.12)	0.11 (0.11)	0.34 (0.12)
Fluorene	130000	3800	U (0.21)	U (0.2)	U (0.2)	0.53 (0.2)	0.031 J (0.2)	0.17 J (0.2)	0.093 J (0.2)	U (0.21)	0.098 J (0.2)	0.08 J (0.19)	0.3 (0.2)	0.13 J (0.19)	0.24 (0.2)
Naphthalene	66	25	0.037 J (0.21)	0.045 J (0.2)	U (0.2)	1.2 (0.2)	0.47 (0.2)	1.6 (0.2)	3.4 (0.2)	0.37 (0.21)	4.7 (0.2)	2.4 (0.19)	2.4 (0.2)	1.5 (0.19)	3.7 (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	5.6 (0.12)	0.098 J (0.12)	0.93 (0.12)	0.15 (0.12)	0.026 J (0.12)	0.2 (0.12)	0.55 (0.11)	0.75 (0.12)	0.35 (0.11)	0.73 (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	5 (0.12)	0.028 J (0.12)	0.62 (0.12)	0.069 J (0.12)	U (0.12)	0.089 J (0.12)	1.1 (0.11)	0.5 (0.12)	0.29 (0.11)	0.74 (0.12)
<b>Metals</b>															
Lead	1000	450	7.91 (4.73)	13.6 (4.69)	13.4 (4.6)	10.9 (4.69)	6.32 (4.65)	7.34 (4.77)	19.5 (4.62)	78 (4.86)	9.68 (4.67)	47.2 (4.39)	47.5 (2.37)	17.8 (2.18)	80.4 (2.32)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-A05-C1	201-A05-C2	201-A05-C3	201-A05-CX	201-A06-C1	201-A06-C2	201-A06-CX	201-A07-C1	201-A07-C2	201-A07-CX	201-A08-C1	201-A08-C2	201-A08-CX
			201-A05	201-A05	201-A05	201-A05	201-A06	201-A06	201-A06	201-A07	201-A07	201-A07	201-A08	201-A08	201-A08
Field Sample ID	Value (0-2 ft bgs)	Value	201-A05-C1-COMP	201-A05-C2-COMP	201-A05-C3-COMP	201-A05-CX-COMP	201-A06-C1-COMP	201-A06-C2-COMP	201-A06-CX-COMP	201-A07-C1-COMP	201-A07-C2-COMP	201-A07-CX-COMP	201-A08-C1-COMP	201-A08-C2-COMP	201-A08-CX-COMP
Sample Date	(mg/kg)	(mg/kg)	1/19/2022	1/19/2022	1/19/2022	1/19/2022	1/21/2022	1/21/2022	1/21/2022	1/19/2022	1/19/2022	1/19/2022	1/20/2022	1/20/2022	1/20/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.13)	U (0.12)	U (0.11)	0.096 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.028 J (0.13)	U (0.12)	0.029 J (0.11)	0.11 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.17)	U (0.16)	U (0.15)	0.18 (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.12)	U (0.11)	0.18 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.17)	U (0.16)	U (0.15)	0.12 J (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.15)	U (0.16)
Chrysene	760	230	0.042 J (0.13)	0.04 J (0.12)	0.083 J (0.11)	0.18 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.083 J (0.22)	0.083 J (0.2)	0.11 J (0.19)	0.41 (0.18)	0.15 J (0.2)	0.031 J (0.2)	U (0.19)	0.021 J (0.19)	U (0.19)	U (0.2)	0.032 J (0.2)	U (0.19)	0.023 J (0.2)
Naphthalene	66	25	2 (0.22)	0.25 (0.2)	1.5 (0.19)	0.72 (0.18)	0.078 J (0.2)	0.43 (0.2)	U (0.19)	1.4 (0.19)	0.77 (0.19)	0.22 (0.2)	0.89 (0.2)	0.77 (0.19)	0.34 (0.2)
Phenanthrene	190000	10000	0.22 (0.13)	0.24 (0.12)	0.36 (0.11)	1.2 (0.11)	0.22 (0.12)	0.057 J (0.12)	0.048 J (0.12)	0.062 J (0.12)	0.034 J (0.12)	U (0.12)	0.078 J (0.12)	U (0.12)	0.055 J (0.12)
Pyrene	96000	2200	0.048 J (0.13)	0.029 J (0.12)	0.045 J (0.11)	0.15 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.042 J (0.12)	0.019 J (0.12)	U (0.12)	0.045 J (0.12)	U (0.12)	0.024 J (0.12)
<b>Metals</b>															
Lead	1000	450	116 (2.53)	4.48 (2.36)	8.67 (4.34)	6.92 (4.07)	40.2 (11.8)	7.7 J (11.9)	7.8 J (11.5)	7.13 (2.2)	25.8 (2.2)	6.92 (2.42)	53 (11.6)	13.4 (11.3)	45.6 (11.7)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	201-A09-C1	201-A09-C2	201-A09-CX	201-A10-C1	201-A10-C2	201-A10-CX	201-A11-C1	201-A11-C2	201-A11-CX	201-A12-C1	201-A12-C2	201-A12-CX	201-A13-C1
	Direct Contact	Groundwater	201-A09	201-A09	201-A09	201-A10	201-A10	201-A10	201-A11	201-A11	201-A11	201-A12	201-A12	201-A12	201-A13
Field Sample ID	Value (0-2 ft bgs)	Value	201-A09-C1-COMP	201-A09-C2-COMP	201-A09-CX-COMP	201-A10-C1-COMP	201-A10-C2-COMP	201-A10-CX-COMP	201-A11-C1-COMP	201-A11-C2-COMP	201-A11-CX-COMP	201-A12-C1-COMP	201-A12-C2-COMP	201-A12-CX-COMP	201-A13-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	1/20/2022	1/20/2022	1/20/2022	1/21/2022	1/21/2022	1/21/2022	1/21/2022	1/21/2022	1/21/2022	1/24/2022	1/24/2022	1/24/2022	1/24/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.13)	U (0.13)	U (0.13)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.13)	U (0.13)	U (0.13)	U (0.13)	0.059 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.031 J (0.12)	0.098 J (0.12)	U (0.12)	U (0.12)	0.062 J (0.12)
Benzo(a)pyrene	91	46	U (0.17)	U (0.17)	U (0.17)	U (0.18)	0.093 J (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	0.11 J (0.16)	U (0.15)	U (0.16)	0.083 J (0.16)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.13)	U (0.13)	U (0.13)	0.12 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.14 (0.12)	U (0.12)	U (0.12)	0.1 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.17)	U (0.17)	U (0.17)	U (0.18)	0.069 J (0.15)	U (0.16)	U (0.16)	U (0.16)	0.037 J (0.16)	0.072 J (0.16)	U (0.15)	U (0.16)	0.066 J (0.16)
Chrysene	760	230	U (0.13)	U (0.13)	U (0.13)	U (0.13)	0.082 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.033 J (0.12)	0.11 J (0.12)	0.024 J (0.12)	U (0.12)	0.065 J (0.12)
Fluorene	130000	3800	U (0.22)	U (0.21)	U (0.21)	0.022 J (0.22)	U (0.19)	U (0.2)	0.054 J (0.19)	0.12 J (0.21)	U (0.2)	U (0.2)	U (0.19)	U (0.21)	U (0.2)
Naphthalene	66	25	0.39 (0.22)	2.1 (0.21)	0.2 J (0.21)	0.028 J (0.22)	0.045 J (0.19)	U (0.2)	2.4 (0.19)	0.17 J (0.21)	0.14 J (0.2)	0.033 J (0.2)	1 (0.19)	0.046 J (0.21)	0.47 (0.2)
Phenanthrene	190000	10000	U (0.13)	U (0.13)	U (0.13)	U (0.13)	0.028 J (0.12)	U (0.12)	0.097 J (0.12)	0.18 (0.12)	0.039 J (0.12)	0.11 J (0.12)	0.034 J (0.12)	U (0.12)	0.054 J (0.12)
Pyrene	96000	2200	U (0.13)	U (0.13)	U (0.13)	U (0.13)	0.065 J (0.12)	U (0.12)	0.031 J (0.12)	0.039 J (0.12)	0.044 J (0.12)	0.16 (0.12)	0.039 J (0.12)	U (0.12)	0.087 J (0.12)
<b>Metals</b>															
Lead	1000	450	111 (12.3)	27.7 (12.2)	26.6 (12)	7.65 J (12.9)	51.9 (11.5)	7.2 J (12.4)	93.9 (11.3)	301 (12)	26.2 (11.8)	126 (2.21)	51.8 (2.23)	132 (2.36)	632 (2.26)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-A13-C2	201-A13-CX	201-A14-C1	201-A14-C2	201-A14-CX	201-A15-C1	201-A15-CX	201-B01-C1	201-B01-CX	201-B02-C1	201-B02-C2	201-B02-C3	201-B02-CX
			201-A13	201-A13	201-A14	201-A14	201-A14	201-A15	201-A15	201-B01	201-B01	201-B02	201-B02	201-B02	201-B02
Field Sample ID	Value (mg/kg)	Value (mg/kg)	201-A13-C2-COMP	201-A13-CX-COMP	201-A14-C1-COMP	201-A14-C2-COMP	201-A14-CX-COMP	201-A15-C1-COMP	201-A15-CX-COMP	201-B01-C1-COMP	201-B01-CX-COMP	201-B02-C1-COMP	201-B02-C2-COMP	201-B02-C3-COMP	201-B02-CX-COMP
Sample Date	(mg/kg)	(mg/kg)	1/24/2022	1/24/2022	1/24/2022	1/24/2022	1/24/2022	1/25/2022	1/25/2022	1/25/2022	1/25/2022	1/25/2022	1/26/2022	1/26/2022	1/26/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	0.24 (0.12)	0.084 J (0.11)	0.27 (0.12)	0.33 (0.11)	0.061 J (0.13)	U (1.2)	0.041 J (0.12)	0.046 J (0.12)	0.12 (0.11)	0.42 (0.12)	U (0.12)	0.29 (0.12)
Benzo(a)anthracene	130	340	0.025 J (0.12)	0.41 (0.12)	0.14 (0.11)	0.76 (0.12)	0.62 (0.11)	0.099 J (0.13)	U (1.2)	U (0.12)	U (0.12)	0.2 (0.11)	0.57 (0.12)	U (0.12)	0.03 J (0.12)
Benzo(a)pyrene	91	46	U (0.16)	0.31 (0.16)	0.18 (0.15)	0.75 (0.16)	0.5 (0.14)	0.077 J (0.17)	U (1.6)	U (0.16)	U (0.16)	0.14 J (0.15)	0.54 (0.16)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	0.42 (0.12)	0.21 (0.11)	0.9 (0.12)	0.65 (0.11)	0.16 (0.13)	U (1.2)	U (0.12)	U (0.12)	0.19 (0.11)	0.58 (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.17 (0.16)	0.12 J (0.15)	0.38 (0.16)	0.3 (0.14)	0.065 J (0.17)	U (1.6)	U (0.16)	U (0.16)	0.078 J (0.15)	0.22 (0.16)	U (0.16)	U (0.15)
Chrysene	760	230	0.022 J (0.12)	0.41 (0.12)	0.18 (0.11)	0.74 (0.12)	0.59 (0.11)	0.12 J (0.13)	U (1.2)	U (0.12)	U (0.12)	0.18 (0.11)	0.51 (0.12)	U (0.12)	0.032 J (0.12)
Fluorene	130000	3800	U (0.2)	0.081 J (0.2)	0.2 (0.19)	0.29 (0.2)	0.12 J (0.18)	0.2 J (0.21)	0.72 J (2)	0.56 (0.2)	0.99 (0.19)	0.14 J (0.19)	0.25 (0.2)	U (0.21)	2 (0.19)
Naphthalene	66	25	1.2 (0.2)	0.67 (0.2)	0.13 J (0.19)	0.13 J (0.2)	0.05 J (0.18)	0.11 J (0.21)	5 (2)	4.2 (0.2)	11 (0.97)	9.6 (0.94)	2.1 (0.2)	0.059 J (0.21)	5 (0.19)
Phenanthrene	190000	10000	0.037 J (0.12)	0.88 (0.12)	0.48 (0.11)	1.4 (0.12)	1.2 (0.11)	0.29 (0.13)	0.28 J (1.2)	0.22 (0.12)	0.47 (0.12)	0.61 (0.11)	1.4 (0.12)	U (0.12)	2.3 (0.12)
Pyrene	96000	2200	0.038 J (0.12)	0.74 (0.12)	0.33 (0.11)	1.5 (0.12)	1.2 (0.11)	0.26 (0.13)	U (1.2)	0.023 J (0.12)	0.023 J (0.12)	0.41 (0.11)	1 (0.12)	U (0.12)	0.19 (0.12)
<b>Metals</b>															
Lead	1000	450	9.26 (2.32)	350 (2.35)	45.1 (2.21)	15 (11.6)	296 (2.1)	60.9 (12.1)	776 (2.33)	8.22 J (11.8)	5.31 (2.27)	158 (2.13)	39.4 (2.35)	5.7 (2.37)	3.28 (2.22)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-B03-C1 201-B03 201-B03-C1-COMP 1/26/2022	201-B03-C2 201-B03 201-B03-C2-COMP 1/26/2022	201-B03-CX 201-B03 201-B03-CX-COMP 1/26/2022	201-B04-C1 201-B04 201-B04-C1-COMP 1/26/2022	201-B04-C2 201-B04 201-B04-C2-COMP 1/26/2022	201-B04-CX 201-B04 201-B04-CX-COMP 1/26/2022	201-B05-C1 201-B05 201-B05-C1-COMP 1/27/2022	201-B05-C2 201-B05 201-B05-C2-COMP 1/27/2022	201-B05-CX 201-B05 201-B05-CX-COMP 1/27/2022	201-B06-C1 201-B06 201-B06-C1-COMP 1/27/2022	201-B06-C2 201-B06 201-B06-C2-COMP 1/27/2022	201-B06-CX 201-B06 201-B06-CX-COMP 1/27/2022	201-B07-C1 201-B07 201-B07-C1-COMP 2/2/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	0.085 J (0.12)	U (0.12)	0.11 (0.11)	0.063 J (0.13)	U (0.12)	0.044 J (0.11)	U (0.12)	U (0.12)	U (0.12)	0.12 (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.045 J (0.11)	U (0.13)	0.036 J (0.12)	0.071 J (0.11)	U (0.12)	0.028 J (0.12)	0.06 J (0.12)	0.18 (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.16)	U (0.16)	U (0.16)	0.065 J (0.15)	U (0.17)	0.062 J (0.16)	0.13 J (0.15)	U (0.16)	U (0.16)	0.072 J (0.15)	0.26 (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.096 J (0.11)	U (0.13)	0.068 J (0.12)	0.15 (0.11)	U (0.12)	0.048 J (0.12)	0.095 J (0.12)	0.34 (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.16)	U (0.16)	U (0.16)	0.048 J (0.15)	U (0.17)	0.05 J (0.16)	0.12 J (0.15)	U (0.16)	0.03 J (0.16)	0.066 J (0.15)	0.19 (0.15)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.073 J (0.11)	U (0.13)	0.031 J (0.12)	0.069 J (0.11)	U (0.12)	0.037 J (0.12)	0.062 J (0.12)	0.2 (0.12)	U (0.12)
Fluorene	130000	3800	0.38 (0.19)	U (0.2)	0.86 (0.2)	U (0.2)	0.51 (0.19)	0.73 (0.21)	0.2 (0.2)	1.2 (0.19)	0.046 J (0.2)	0.028 J (0.2)	0.035 J (0.19)	1.5 (0.19)	0.66 (0.2)
Naphthalene	66	25	2.9 (0.19)	0.062 J (0.2)	0.64 (0.2)	0.24 (0.2)	22 (3.8)	1.3 (0.21)	1.4 (0.2)	4.3 (0.19)	0.49 (0.2)	0.26 (0.2)	0.94 (0.19)	6 (0.19)	0.14 J (0.2)
Phenanthrene	190000	10000	0.35 (0.12)	U (0.12)	0.63 (0.12)	U (0.12)	0.39 (0.11)	0.53 (0.13)	0.094 J (0.12)	0.44 (0.11)	0.03 J (0.12)	0.046 J (0.12)	0.093 J (0.12)	1 (0.12)	0.59 (0.12)
Pyrene	96000	2200	0.026 J (0.12)	U (0.12)	0.074 J (0.12)	U (0.12)	0.12 (0.11)	0.031 J (0.13)	0.056 J (0.12)	0.075 J (0.11)	U (0.12)	0.038 J (0.12)	0.097 J (0.12)	0.21 (0.12)	0.051 J (0.12)
<b>Metals</b>															
Lead	1000	450	44 (2.2)	5.38 (2.38)	26.6 (2.37)	350 (2.27)	58.3 (11.2)	5.11 (2.43)	156 (2.39)	126 (4.48)	17.9 (4.97)	1090 (2.38)	3.16 (2.28)	158 (2.36)	117 (11.6)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-B07-C2	201-B07-CX	201-B08-C1	201-B08-C2	201-B08-CX	201-B09-C1	201-B09-C2	201-B09-CX	201-B10-C1	201-B10-C2	201-B10-CX	201-B11-C1	201-B11-C2
			201-B07	201-B07	201-B08	201-B08	201-B08	201-B08	201-B09	201-B09	201-B09	201-B10	201-B10	201-B10	201-B11
Field Sample ID	Value (0-2 ft bgs)	Value	201-B07-C2-COMP	201-B07-CX-COMP	201-B08-C1-COMP	201-B08-C2-COMP	201-B08-CX-COMP	201-B09-C1-COMP	201-B09-C2-COMP	201-B09-CX-COMP	201-B10-C1-COMP	201-B10-C2-COMP	201-B10-CX-COMP	201-B11-C1-COMP	201-B11-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	2/2/2022	2/2/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	1/28/2022	2/2/2022	2/2/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.1)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.59)	U (0.12)	U (0.12)	0.2 (0.11)	0.15 (0.12)
Benzo(a)anthracene	130	340	U (0.1)	U (0.12)	U (0.12)	0.043 J (0.12)	0.048 J (0.13)	0.027 J (0.13)	U (0.12)	U (0.13)	0.17 J (0.59)	0.081 J (0.12)	U (0.12)	0.54 (0.11)	0.55 (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.18)	U (0.17)	U (0.16)	U (0.17)	U (0.78)	0.075 J (0.16)	U (0.16)	0.46 (0.15)	0.68 (0.16)
Benzo(b)fluoranthene	76	170	U (0.1)	U (0.12)	U (0.12)	0.052 J (0.12)	0.046 J (0.13)	U (0.13)	U (0.12)	U (0.13)	0.19 J (0.59)	0.11 J (0.12)	U (0.12)	0.57 (0.11)	0.77 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.16)	U (0.16)	0.031 J (0.15)	U (0.18)	U (0.17)	U (0.16)	U (0.17)	0.15 J (0.78)	0.053 J (0.16)	U (0.16)	0.25 (0.15)	0.46 (0.16)
Chrysene	760	230	U (0.1)	U (0.12)	U (0.12)	0.043 J (0.12)	0.043 J (0.13)	0.024 J (0.13)	0.03 J (0.12)	U (0.13)	0.23 J (0.59)	0.079 J (0.12)	U (0.12)	0.46 (0.11)	0.53 (0.12)
Fluorene	130000	3800	0.03 J (0.18)	0.57 (0.2)	U (0.21)	U (0.19)	U (0.22)	U (0.22)	0.024 J (0.21)	0.024 J (0.22)	U (0.98)	0.15 J (0.2)	0.39 (0.2)	0.082 J (0.18)	0.05 J (0.2)
Naphthalene	66	25	0.024 J (0.18)	2.2 (0.2)	U (0.21)	0.048 J (0.19)	U (0.22)	0.052 J (0.22)	1.4 (0.21)	0.36 (0.22)	U (0.98)	0.053 J (0.2)	0.18 J (0.2)	0.074 J (0.18)	0.12 J (0.2)
Phenanthrene	190000	10000	U (0.1)	0.4 (0.12)	U (0.12)	0.045 J (0.12)	0.092 J (0.13)	0.032 J (0.13)	0.043 J (0.12)	U (0.13)	U (0.59)	0.2 (0.12)	0.37 (0.12)	0.6 (0.11)	0.44 (0.12)
Pyrene	96000	2200	U (0.1)	0.022 J (0.12)	U (0.12)	0.045 J (0.12)	0.075 J (0.13)	0.032 J (0.13)	0.036 J (0.12)	U (0.13)	0.16 J (0.59)	0.12 (0.12)	0.028 J (0.12)	0.85 (0.11)	0.74 (0.12)
<b>Metals</b>															
Lead	1000	450	44 (10.3)	3.73 (2.3)	35.3 (2.43)	248 (2.29)	118 (2.52)	14.9 (2.51)	200 (2.37)	21.8 (2.51)	298 (2.3)	69.8 (2.28)	4.5 (2.36)	250 (2.15)	269 (2.26)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-B11-C3 201-B11	201-B11-CX 201-B11	201-B12-C1 201-B12	201-B12-C2 201-B12	201-B12-CX 201-B12	201-C01-C1 201-C01	201-C01-C2 201-C01	201-C01-C3 201-C01	201-C01-CX 201-C01	201-C02-C1 201-C02	201-C02-C2 201-C02	201-C02-CX 201-C02	201-C03-C1 201-C03
Field Sample ID	Value (0-2 ft bgs)	Value	201-B11-C3-COMP	201-B11-CX-COMP	201-B12-C1-COMP	201-B12-C2-COMP	201-B12-CX-COMP	201-C01-C1-COMP	201-C01-C2-COMP	201-C01-C3-COMP	201-C01-CX-COMP	201-C02-C1-COMP	201-C02-C2-COMP	201-C02-CX-COMP	201-C03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	2/2/2022	2/2/2022	2/2/2022	2/2/2022	2/2/2022	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/3/2022	2/4/2022
<b>PAHs</b>															
Anthracene	190000	350	7.9 (1.2)	0.047 J (0.12)	0.052 J (0.12)	U (0.12)	U (0.11)	1.1 (0.32)	0.042 J (0.12)	U (0.12)	0.053 J (0.12)	0.077 J (0.12)	0.069 J (0.11)	1.3 (1.2)	U (0.12)
Benzo(a)anthracene	130	340	9.7 (1.2)	0.17 (0.12)	0.065 J (0.12)	0.023 J (0.12)	U (0.11)	0.88 (0.32)	0.035 J (0.12)	U (0.12)	0.028 J (0.12)	0.026 J (0.12)	0.032 J (0.11)	0.47 J (1.2)	U (0.12)
Benzo(a)pyrene	91	46	9.7 (1.6)	0.18 (0.16)	0.068 J (0.16)	U (0.16)	U (0.15)	0.53 (0.43)	U (0.17)	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (1.6)	U (0.16)
Benzo(b)fluoranthene	76	170	9.8 (1.2)	0.22 (0.12)	0.08 J (0.12)	U (0.12)	U (0.11)	0.65 (0.32)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (1.2)	U (0.12)
Benzo(g,h,i)perylene	190000	180	5.9 (0.16)	0.16 (0.16)	0.068 J (0.16)	U (0.16)	U (0.15)	0.26 J (0.43)	U (0.17)	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (1.6)	U (0.16)
Chrysene	760	230	8.9 (1.2)	0.18 (0.12)	0.081 J (0.12)	0.024 J (0.12)	U (0.11)	0.93 (0.32)	0.034 J (0.12)	U (0.12)	0.03 J (0.12)	0.036 J (0.12)	0.03 J (0.11)	0.58 J (1.2)	U (0.12)
Fluorene	130000	3800	4.5 (0.2)	U (0.2)	0.75 (0.2)	0.15 J (0.2)	0.043 J (0.18)	3.6 (0.54)	0.073 J (0.21)	0.16 J (0.21)	0.68 (0.2)	0.15 J (0.21)	0.092 J (0.19)	2.5 (2)	0.021 J (0.2)
Naphthalene	66	25	0.88 (0.2)	0.052 J (0.2)	0.58 (0.2)	0.98 (0.2)	0.088 J (0.18)	U (0.54)	0.039 J (0.21)	0.1 J (0.21)	0.85 (0.2)	0.89 (0.21)	0.25 (0.19)	0.53 J (2)	U (0.2)
Phenanthrene	190000	10000	28 (1.2)	0.18 (0.12)	0.42 (0.12)	0.16 (0.12)	0.034 J (0.11)	6.6 (0.32)	0.082 J (0.12)	0.2 (0.12)	0.46 (0.12)	0.41 (0.12)	0.26 (0.11)	6.4 (1.2)	0.05 J (0.12)
Pyrene	96000	2200	23 (1.2)	0.25 (0.12)	0.11 J (0.12)	0.042 J (0.12)	U (0.11)	2.2 (0.32)	0.066 J (0.12)	0.034 J (0.12)	0.07 J (0.12)	0.06 J (0.12)	0.062 J (0.11)	1.4 (1.2)	U (0.12)
<b>Metals</b>															
Lead	1000	450	64.3 (2.24)	75.4 (2.23)	1060 (11.8)	88 (2.27)	9.28 (2.12)	503 (2.15)	59.2 (2.42)	15.5 (2.47)	4.76 (2.44)	704 (2.38)	133 (2.19)	11.6 (11.3)	98.8 (2.37)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-C03-C2	201-C03-CX	201-C04-C1	201-C04-C2	201-C04-CX	201-C05-C1	201-C05-C2	201-C05-CX	201-C06-C1	201-C06-C2	201-C06-CX	201-C07-C1	201-C07-C2
			201-C03	201-C03	201-C04	201-C04	201-C04	201-C05	201-C05	201-C05	201-C06	201-C06	201-C06	201-C07	201-C07
Field Sample ID	Value (0-2 ft bgs)	Value	201-C03-C2-COMP	201-C03-CX-COMP	201-C04-C1-COMP	201-C04-C2-COMP	201-C04-CX-COMP	201-C05-C1-COMP	201-C05-C2-COMP	201-C05-CX-COMP	201-C06-C1-COMP	201-C06-C2-COMP	201-C06-CX-COMP	201-C07-C1-COMP	201-C07-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	2/4/2022	2/4/2022	2/4/2022	2/4/2022	2/4/2022	2/17/2022	2/17/2022	2/17/2022	2/22/2022	2/22/2022	2/22/2022	2/17/2022	2/17/2022
<b>PAHs</b>															
Anthracene	190000	350	0.73 (0.6)	0.05 J (0.12)	0.051 J (0.12)	U (0.12)	0.045 J (0.12)	0.074 J (0.12)	0.041 J (0.12)	U (1.9)	U (0.11)	4.4 (1.4)	U (1.4)	U (0.13)	U (0.12)
Benzo(a)anthracene	130	340	0.26 (0.12)	0.032 J (0.12)	0.07 J (0.12)	0.029 J (0.12)	0.068 J (0.12)	0.17 (0.12)	0.13 (0.12)	0.43 J (1.9)	0.043 J (0.11)	3.5 (1.4)	1.2 J (1.4)	0.059 J (0.13)	U (0.12)
Benzo(a)pyrene	91	46	0.08 J (0.16)	U (0.16)	0.052 J (0.16)	U (0.16)	U (0.16)	0.13 J (0.16)	0.097 J (0.16)	U (2.5)	0.05 J (0.15)	2.8 (1.9)	0.86 J (1.9)	0.061 J (0.17)	U (0.17)
Benzo(b)fluoranthene	76	170	0.085 J (0.12)	U (0.12)	0.078 J (0.12)	U (0.12)	0.067 J (0.12)	0.18 (0.12)	0.12 (0.12)	U (1.9)	0.037 J (0.11)	2.6 (1.4)	0.69 J (1.4)	0.057 J (0.13)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.058 J (0.16)	U (0.16)	0.058 J (0.16)	U (0.16)	0.041 J (0.16)	0.099 J (0.16)	0.072 J (0.16)	U (2.5)	0.059 J (0.15)	1.8 J (1.9)	0.68 J (1.9)	0.047 J (0.17)	U (0.17)
Chrysene	760	230	0.5 (0.12)	0.038 J (0.12)	0.13 (0.12)	0.054 J (0.12)	0.13 (0.12)	0.15 (0.12)	0.26 (0.12)	1.9 (1.9)	0.051 J (0.11)	4.4 (1.4)	2.1 (1.4)	0.12 J (0.13)	U (0.12)
Fluorene	130000	3800	1.3 (0.2)	0.077 J (0.2)	0.16 J (0.19)	0.11 J (0.2)	0.12 J (0.21)	0.033 J (0.2)	0.061 J (0.2)	1.1 J (3.1)	U (0.19)	5.6 (2.4)	0.33 J (2.4)	0.04 J (0.22)	U (0.21)
Naphthalene	66	25	2.9 (0.2)	0.067 J (0.2)	0.69 (0.19)	0.74 (0.2)	0.61 (0.21)	0.031 J (0.2)	0.067 J (0.2)	U (3.1)	0.16 J (0.19)	3.6 (2.4)	0.34 J (2.4)	0.099 J (0.22)	U (0.21)
Phenanthrene	190000	10000	4 (0.12)	0.23 (0.12)	0.25 (0.12)	0.11 J (0.12)	0.21 (0.12)	0.34 (0.12)	0.14 (0.12)	2.6 (1.9)	0.054 J (0.11)	19 (1.4)	0.56 J (1.4)	0.15 (0.13)	U (0.12)
Pyrene	96000	2200	0.59 (0.12)	0.067 J (0.12)	0.17 (0.12)	0.069 J (0.12)	0.17 (0.12)	0.27 (0.12)	0.2 (0.12)	0.76 J (1.9)	0.06 J (0.11)	8.1 (1.4)	2.4 (1.4)	0.11 J (0.13)	U (0.12)
<b>Metals</b>															
Lead	1000	450	358 (2.33)	99.1 (2.44)	646 (2.24)	155 (2.42)	786 (2.4)	87.6 (2.36)	26.2 (2.37)	141 (3.66)	514 (2.24)	1380 (2.82)	80.7 (2.9)	11.9 (2.52)	11.9 (2.42)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-C07-CX 201-C07 201-C07-CX-COMP 2/17/2022	201-C08-C1 201-C08 201-C08-C1-COMP 2/17/2022	201-C08-C2 201-C08 201-C08-C2-COMP 2/17/2022	201-C08-CX 201-C08 201-C08-CX-COMP 2/17/2022	201-C09-C1 201-C09 201-C09-C1-COMP 2/22/2022	201-C09-C2 201-C09 201-C09-C2-COMP 2/22/2022	201-C09-CX 201-C09 201-C09-CX-COMP 2/22/2022	201-C10-C1 201-C10 201-C10-C1-COMP 2/18/2022	201-C10-C2 201-C10 201-C10-C2-COMP 2/18/2022	201-C10-CX 201-C10 201-C10-CX-COMP 2/18/2022	201-C11-C1 201-C11 201-C11-C1-COMP 3/28/2022	201-C11-C2 201-C11 201-C11-C2-COMP 3/28/2022	201-C11-C3 201-C11 201-C11-C3-COMP 3/28/2022
<b>PAHs</b>															
Anthracene	190000	350	0.075 J (0.12)	0.072 J (0.12)	U (0.12)	0.9 (0.12)	U (0.12)	U (0.12)	U (0.13)	0.3 (0.12)	0.04 J (0.11)	0.24 (0.12)	U (3.5)	0.43 J (0.64)	0.82 J (2.3)
Benzo(a)anthracene	130	340	0.1 J (0.12)	0.087 J (0.12)	0.023 J (0.12)	0.99 (0.12)	U (0.12)	U (0.12)	U (0.13)	0.71 (0.12)	0.16 (0.11)	0.72 (0.12)	2.6 J (3.5)	1 (0.64)	2.6 (2.3)
Benzo(a)pyrene	91	46	0.059 J (0.17)	0.095 J (0.16)	U (0.16)	0.9 (0.16)	U (0.16)	U (0.16)	U (0.17)	0.67 (0.15)	0.12 J (0.14)	0.74 (0.16)	5 (4.7)	1.2 (0.85)	2.4 J (3.1)
Benzo(b)fluoranthene	76	170	0.05 J (0.12)	0.055 J (0.12)	U (0.12)	0.41 (0.12)	U (0.12)	U (0.12)	U (0.13)	1 (0.12)	0.17 (0.11)	0.93 (0.12)	5.5 (3.5)	1.1 (0.64)	3.5 (2.3)
Benzo(g,h,i)perylene	190000	180	0.06 J (0.17)	0.11 J (0.16)	U (0.16)	0.9 (0.16)	0.026 J (0.16)	U (0.16)	U (0.17)	0.4 (0.15)	0.11 J (0.14)	0.72 (0.16)	3.7 J (4.7)	0.78 J (0.85)	1.6 J (3.1)
Chrysene	760	230	0.2 (0.12)	0.098 J (0.12)	0.047 J (0.12)	1.2 (0.12)	0.046 J (0.12)	U (0.12)	0.035 J (0.13)	0.81 (0.12)	0.18 (0.11)	0.8 (0.12)	5.7 (3.5)	1.2 (0.64)	8.5 (2.3)
Fluorene	130000	3800	0.11 J (0.21)	0.078 J (0.2)	U (0.2)	0.79 (0.2)	U (0.2)	U (0.2)	U (0.21)	0.22 (0.19)	U (0.18)	0.11 J (0.2)	1.7 J (5.9)	0.34 J (1.1)	1.2 J (3.9)
Naphthalene	66	25	0.81 (0.21)	U (0.2)	U (0.2)	0.16 J (0.2)	0.033 J (0.2)	U (0.2)	U (0.21)	0.061 J (0.19)	0.039 J (0.18)	0.29 (0.2)	1.7 J (5.9)	0.24 J (1.1)	1.8 J (3.9)
Phenanthrene	190000	10000	0.44 (0.12)	0.32 (0.12)	U (0.12)	1.8 (0.12)	U (0.12)	U (0.12)	U (0.13)	1.5 (0.12)	0.17 (0.11)	0.85 (0.12)	4.7 (3.5)	1.4 (0.64)	4.7 (2.3)
Pyrene	96000	2200	0.21 (0.12)	0.25 (0.12)	0.044 J (0.12)	3.6 (0.12)	0.031 J (0.12)	U (0.12)	0.037 J (0.13)	1.2 (0.12)	0.24 (0.11)	1 (0.12)	5.6 (3.5)	2 (0.64)	4.8 (2.3)
<b>Metals</b>															
Lead	1000	450	139 (2.4)	15 (2.37)	58.4 (2.28)	55.6 (2.42)	6.28 (2.28)	8.82 J (11.9)	177 (2.45)	4230 (2.22)	225 (2.06)	226 (2.37)	257 (2.26)	2460 (2.5)	16700 (11.8)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-C11-CX 201-C11 3/28/2022	201-D01-C1 201-D01 1/31/2022	201-D01-C2 201-D01 1/31/2022	201-D01-CX 201-D01 1/31/2022	201-D02-C1 201-D02 1/31/2022	201-D02-C2 201-D02 1/31/2022	201-D02-CX 201-D02 1/31/2022	201-D03-C1 201-D03 1/31/2022	201-D03-CX 201-D03 1/31/2022	201-D04-C1 201-D04 2/1/2022	201-D04-C2 201-D04 2/1/2022	201-D04-CX 201-D04 2/1/2022	201-D05-C1 201-D05 2/1/2022
Field Sample ID	Value (mg/kg)	Value (mg/kg)	201-C11-CX-COMP	201-D01-C1-COMP	201-D01-C2-COMP	201-D01-CX-COMP	201-D02-C1-COMP	201-D02-C2-COMP	201-D02-CX-COMP	201-D03-C1-COMP	201-D03-CX-COMP	201-D04-C1-COMP	201-D04-C2-COMP	201-D04-CX-COMP	201-D05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	3/28/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	1/31/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022
<b>PAHs</b>															
Anthracene	190000	350	U (4.8)	0.32 J (0.35)	0.26 J (0.34)	U (0.34)	U (0.13)	0.4 (0.12)	0.14 (0.12)	U (0.13)	U (0.3)	0.64 (0.12)	2.9 (0.12)	0.086 J (0.12)	0.43 (0.12)
Benzo(a)anthracene	130	340	2.4 J (4.8)	0.61 (0.35)	0.79 (0.34)	U (0.34)	0.085 J (0.13)	0.84 (0.12)	0.31 (0.12)	0.06 J (0.13)	U (0.3)	2.2 (0.12)	5.9 (0.12)	0.24 (0.12)	0.82 (0.12)
Benzo(a)pyrene	91	46	3.2 J (6.4)	0.68 (0.46)	1 (0.46)	U (0.45)	0.11 J (0.17)	0.75 (0.16)	0.31 (0.15)	0.069 J (0.17)	U (0.4)	2.2 (0.16)	7.2 (0.16)	0.25 (0.16)	0.67 (0.16)
Benzo(b)fluoranthene	76	170	4.9 (4.8)	1 (0.35)	1.7 (0.34)	U (0.34)	0.12 J (0.13)	0.9 (0.12)	0.42 (0.12)	0.11 J (0.13)	U (0.3)	3.4 (0.12)	5.8 (0.59)	0.35 (0.12)	1.2 (0.12)
Benzo(g,h,i)perylene	190000	180	2.6 J (6.4)	0.47 (0.46)	0.74 (0.46)	U (0.45)	0.087 J (0.17)	0.36 (0.16)	0.18 (0.15)	0.057 J (0.17)	U (0.4)	1.3 (0.16)	5.2 (0.16)	0.15 J (0.16)	0.42 (0.16)
Chrysene	760	230	8.8 (4.8)	0.91 (0.35)	1.1 (0.34)	U (0.34)	0.13 (0.13)	0.76 (0.12)	0.44 (0.12)	0.096 J (0.13)	U (0.3)	2.3 (0.12)	6.1 (0.12)	0.28 (0.12)	1.1 (0.12)
Fluorene	130000	3800	1.3 J (8)	0.12 J (0.58)	0.12 J (0.57)	U (0.56)	U (0.21)	0.13 J (0.2)	0.083 J (0.19)	0.15 J (0.21)	0.07 J (0.5)	0.19 (0.19)	0.92 (0.2)	0.041 J (0.2)	0.32 (0.19)
Naphthalene	66	25	3 J (8)	0.74 (0.58)	0.6 (0.57)	U (0.56)	0.14 J (0.21)	0.14 J (0.2)	0.35 (0.19)	1.1 (0.21)	0.11 J (0.5)	0.46 (0.19)	0.44 (0.2)	0.11 J (0.2)	0.68 (0.19)
Phenanthrene	190000	10000	1.2 J (4.8)	1.3 (0.35)	1.2 (0.34)	U (0.34)	0.16 (0.13)	1.3 (0.12)	0.71 (0.12)	0.2 (0.13)	0.085 J (0.3)	2.3 (0.12)	10 (0.59)	0.43 (0.12)	1.2 (0.12)
Pyrene	96000	2200	9.9 (4.8)	0.94 (0.35)	1.1 (0.34)	U (0.34)	0.1 J (0.13)	1.5 (0.12)	0.58 (0.12)	0.13 (0.13)	U (0.3)	3.6 (0.12)	11 (0.59)	0.39 (0.12)	1.2 (0.12)
<b>Metals</b>															
Lead	1000	450	<u>17600 (13.4)</u>	289 (2.28)	294 (4.51)	224 (2.27)	<u>489 (2.43)</u>	<u>518 (2.32)</u>	260 (2.26)	16.9 (2.46)	7.5 J (10.1)	258 (2.24)	<u>808 (2.3)</u>	145 (2.32)	152 (2.22)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-D05-C2	201-D05-CX	201-D06-C1	201-D06-C2	201-D06-CX	201-D07-C1	201-D07-C2	201-D07-C3	201-D07-CX	201-D08-C1	201-D08-C2	201-D08-C3	201-D08-CX
			201-D05	201-D05	201-D06	201-D06	201-D06	201-D07	201-D07	201-D07	201-D07	201-D08	201-D08	201-D08	201-D08
Field Sample ID	Value (0-2 ft bgs)	Value	201-D05-C2-COMP	201-D05-CX-COMP	201-D06-C1-COMP	201-D06-C2-COMP	201-D06-CX-COMP	201-D07-C1-COMP	201-D07-C2-COMP	201-D07-C3-COMP	201-D07-CX-COMP	201-D08-C1-COMP	201-D08-C2-COMP	201-D08-C3-COMP	201-D08-CX-COMP
Sample Date	(mg/kg)	(mg/kg)	2/1/2022	2/1/2022	2/22/2022	2/22/2022	2/22/2022	2/1/2022	2/1/2022	2/1/2022	2/1/2022	2/18/2022	2/18/2022	2/18/2022	2/18/2022
<b>PAHs</b>															
Anthracene	190000	350	0.14 J (0.23)	0.2 (0.14)	U (1.3)	U (1.2)	0.31 (0.12)	0.056 J (0.11)	0.12 (0.12)	0.69 (0.12)	U (0.12)	0.14 (0.12)	U (1.3)	0.89 J (2.6)	2.7 (2.7)
Benzo(a)anthracene	130	340	0.37 (0.23)	0.3 (0.14)	0.71 J (1.3)	0.42 J (1.2)	0.54 (0.12)	0.13 (0.11)	0.18 (0.12)	1.5 (0.12)	0.12 (0.12)	0.32 (0.12)	0.65 J (1.3)	0.62 J (2.6)	2 J (2.7)
Benzo(a)pyrene	91	46	0.28 J (0.31)	0.32 (0.19)	0.66 J (1.7)	U (1.5)	0.5 (0.16)	0.21 (0.15)	0.19 (0.16)	1.4 (0.16)	0.24 (0.16)	0.28 (0.16)	1 J (1.8)	U (3.5)	1.2 J (3.7)
Benzo(b)fluoranthene	76	170	0.35 (0.23)	0.42 (0.14)	0.99 J (1.3)	0.57 J (1.2)	0.56 (0.12)	0.23 (0.11)	0.21 (0.12)	1.8 (0.12)	0.16 (0.12)	0.39 (0.12)	0.82 J (1.3)	U (2.6)	1.1 J (2.7)
Benzo(g,h,i)perylene	190000	180	0.13 J (0.31)	0.24 (0.19)	0.76 J (1.7)	0.35 J (1.5)	0.29 (0.16)	0.2 (0.15)	0.11 J (0.16)	0.62 (0.16)	0.2 (0.16)	0.28 (0.16)	1.3 J (1.8)	U (3.5)	0.97 J (3.7)
Chrysene	760	230	0.54 (0.23)	0.44 (0.14)	1.9 (1.3)	0.61 J (1.2)	0.55 (0.12)	0.18 (0.11)	0.18 (0.12)	1.5 (0.12)	0.14 (0.12)	0.45 (0.12)	1.1 J (1.3)	0.56 J (2.6)	4.3 (2.7)
Fluorene	130000	3800	0.16 J (0.39)	0.43 (0.23)	0.35 J (2.2)	0.2 J (1.9)	0.17 J (0.2)	0.027 J (0.18)	0.092 J (0.2)	0.29 (0.2)	U (0.2)	0.087 J (0.2)	U (2.2)	1.5 J (4.4)	3.6 J (4.6)
Naphthalene	66	25	0.18 J (0.39)	3.6 (0.23)	0.59 J (2.2)	0.24 J (1.9)	0.2 (0.2)	0.12 J (0.18)	0.042 J (0.2)	0.12 J (0.2)	0.062 J (0.2)	0.16 J (0.2)	0.82 J (2.2)	8 (4.4)	9.7 (4.6)
Phenanthrene	190000	10000	0.38 (0.23)	0.98 (0.14)	0.83 J (1.3)	0.67 J (1.2)	1 (0.12)	0.19 (0.11)	0.41 (0.12)	2.9 (0.12)	0.076 J (0.12)	0.44 (0.12)	0.93 J (1.3)	4 (2.6)	11 (2.7)
Pyrene	96000	2200	0.62 (0.23)	0.54 (0.14)	2.1 (1.3)	0.68 J (1.2)	0.99 (0.12)	0.23 (0.11)	0.28 (0.12)	3 (0.12)	0.11 J (0.12)	0.58 (0.12)	0.56 J (1.3)	2.1 J (2.6)	5.6 (2.7)
<b>Metals</b>															
Lead	1000	450	74.7 (2.21)	2390 (2.69)	3.75 (2.56)	224 (2.3)	10.8 (2.33)	147 (4.24)	100 (2.36)	61.4 (2.42)	73.6 (2.27)	549 (2.38)	4610 (2.57)	11700 (2.53)	39400 (26.3)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-D09-C1 201-D09	201-D09-C2 201-D09	201-D09-C3 201-D09	201-D09-CX 201-D09	201-D10-C1 201-D10	201-D10-C2 201-D10	201-D10-CX 201-D10	201-D11-C1 201-D11	201-D11-C2 201-D11	201-D11-CX 201-D11	201-D12-C1 201-D12	201-D12-CX 201-D12	201-E01-C1 201-E01
Field Sample ID	Value (mg/kg)	Value (mg/kg)	201-D09-C1-COMP 2/21/2022	201-D09-C2-COMP 2/21/2022	201-D09-C3-COMP 2/21/2022	201-D09-CX-COMP 2/21/2022	201-D10-C1-COMP 2/21/2022	201-D10-C2-COMP 2/21/2022	201-D10-CX-COMP 2/21/2022	201-D11-C1-COMP 2/21/2022	201-D11-C2-COMP 2/21/2022	201-D11-CX-COMP 2/21/2022	201-D12-C1-COMP 2/18/2022	201-D12-CX-COMP 2/18/2022	201-E01-C1-COMP 2/23/2022
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	0.064 J (0.12)	U (0.6)	U (0.11)	U (0.12)	0.073 J (0.12)	0.18 (0.12)	0.11 J (0.12)	0.3 (0.11)	0.091 J (0.12)	22 (2.3)	0.34 (0.11)	U (0.12)	0.14 (0.12)
Benzo(a)anthracene	130	340	0.24 (0.12)	U (0.6)	0.053 J (0.11)	U (0.12)	0.12 (0.12)	0.62 (0.12)	0.45 (0.12)	0.42 (0.11)	0.091 J (0.12)	23 (2.3)	0.27 (0.11)	0.023 J (0.12)	0.12 (0.12)
Benzo(a)pyrene	91	46	0.24 (0.16)	U (0.8)	0.047 J (0.15)	U (0.15)	0.1 J (0.16)	0.76 (0.16)	0.43 (0.16)	0.35 (0.15)	0.086 J (0.15)	15 (3)	0.18 (0.15)	U (0.16)	0.094 J (0.16)
Benzo(b)fluoranthene	76	170	0.3 (0.12)	U (0.6)	0.048 J (0.11)	U (0.12)	0.12 (0.12)	0.97 (0.12)	0.57 (0.12)	0.51 (0.11)	0.12 (0.12)	20 (2.3)	0.25 (0.11)	U (0.12)	0.068 J (0.12)
Benzo(g,h,i)perylene	190000	180	0.15 J (0.16)	0.15 J (0.8)	U (0.15)	U (0.15)	0.046 J (0.16)	0.55 (0.16)	0.22 (0.16)	0.2 (0.15)	0.046 J (0.15)	5.2 (0.15)	0.16 (0.15)	U (0.16)	0.082 J (0.16)
Chrysene	760	230	0.25 (0.12)	0.1 J (0.6)	0.047 J (0.11)	U (0.12)	0.11 J (0.12)	0.7 (0.12)	0.44 (0.12)	0.4 (0.11)	0.11 J (0.12)	20 (2.3)	0.25 (0.11)	0.033 J (0.12)	0.24 (0.12)
Fluorene	130000	3800	0.02 J (0.2)	U (1)	U (0.19)	U (0.19)	0.037 J (0.2)	0.07 J (0.19)	0.032 J (0.2)	0.21 (0.19)	0.19 (0.19)	9.7 (3.8)	0.31 (0.18)	0.076 J (0.2)	0.24 (0.2)
Naphthalene	66	25	0.052 J (0.2)	U (1)	U (0.19)	U (0.19)	0.026 J (0.2)	0.18 J (0.19)	U (0.2)	0.048 J (0.19)	0.15 J (0.19)	7 (0.19)	0.36 (0.18)	0.044 J (0.2)	0.057 J (0.2)
Phenanthrene	190000	10000	0.29 (0.12)	0.13 J (0.6)	0.082 J (0.11)	U (0.12)	0.26 (0.12)	0.85 (0.12)	0.43 (0.12)	0.75 (0.11)	0.53 (0.12)	82 (2.3)	1.2 (0.11)	0.18 (0.12)	0.59 (0.12)
Pyrene	96000	2200	0.41 (0.12)	0.13 J (0.6)	0.087 J (0.11)	U (0.12)	0.19 (0.12)	1 (0.12)	0.79 (0.12)	1.1 (0.11)	0.26 (0.12)	40 (2.3)	0.5 (0.11)	0.048 J (0.12)	0.65 (0.12)
<b>Metals</b>															
Lead	1000	450	503 (2.3)	6.04 (2.36)	233 (11.1)	7.27 (2.32)	29.7 (12)	239 (2.35)	914 (2.35)	488 (2.16)	31.8 (11.2)	47.6 (11.4)	876 (2.09)	7.9 (4.73)	57.5 (2.33)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	201-E01-CX 201-E01 2/23/2022	201-E02-C1 201-E02 2/23/2022	201-E02-CX 201-E02 2/23/2022	201-E03-C1 201-E03 4/19/2022	201-E03-CX 201-E03 4/19/2022	201-E04-C1 201-E04 2/23/2022	201-E04-C2 201-E04 2/23/2022	201-E04-CX 201-E04 2/23/2022	201-E05-C1 201-E05 2/23/2022	201-E05-CX 201-E05 2/23/2022	201-F01-C1 201-F01 4/19/2022	201-F01-CX 201-F01 4/19/2022	201-F02-C1 201-F02 4/19/2022
Field Sample ID	Value (mg/kg)	Value (mg/kg)	201-E01-CX-COMP	201-E02-C1-COMP	201-E02-CX-COMP	201-E03-C1-COMP	201-E03-CX-COMP	201-E04-C1-COMP	201-E04-C2-COMP	201-E04-CX-COMP	201-E05-C1-COMP	201-E05-CX-COMP	201-F01-C1-COMP	201-F01-CX-COMP	201-F02-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	2/23/2022	2/23/2022	2/23/2022	4/19/2022	4/19/2022	2/23/2022	2/23/2022	2/23/2022	2/23/2022	2/23/2022	4/19/2022	4/19/2022	4/19/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.057 J (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.11)	0.4 (0.12)
Benzo(a)anthracene	130	340	U (0.12)	0.065 J (0.12)	U (0.12)	0.082 J (0.12)	U (0.12)	0.18 (0.12)	U (0.12)	U (0.11)	0.066 J (0.11)	U (0.12)	0.074 J (0.12)	U (0.11)	0.036 J (0.12)
Benzo(a)pyrene	91	46	U (0.16)	0.057 J (0.16)	U (0.16)	0.076 J (0.16)	U (0.15)	0.18 (0.16)	U (0.16)	U (0.14)	0.074 J (0.14)	U (0.16)	0.09 J (0.16)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	0.066 J (0.12)	U (0.12)	0.09 J (0.12)	U (0.12)	0.21 (0.12)	U (0.12)	U (0.11)	0.079 J (0.11)	U (0.12)	0.099 J (0.12)	U (0.11)	0.049 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.036 J (0.16)	U (0.16)	0.044 J (0.16)	U (0.15)	0.1 J (0.16)	U (0.16)	U (0.14)	0.067 J (0.14)	U (0.16)	0.05 J (0.16)	U (0.15)	0.038 J (0.16)
Chrysene	760	230	U (0.12)	0.058 J (0.12)	U (0.12)	0.078 J (0.12)	0.021 J (0.12)	0.18 (0.12)	U (0.12)	U (0.11)	0.074 J (0.11)	U (0.12)	0.068 J (0.12)	U (0.11)	0.047 J (0.12)
Fluorene	130000	3800	U (0.19)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	0.031 J (0.2)	U (0.2)	U (0.18)	U (0.18)	U (0.2)	U (0.2)	U (0.19)	1.1 (0.2)
Naphthalene	66	25	U (0.19)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	0.032 J (0.2)	U (0.2)	U (0.18)	0.027 J (0.18)	U (0.2)	U (0.2)	U (0.19)	0.26 (0.2)
Phenanthrene	190000	10000	U (0.12)	0.097 J (0.12)	U (0.12)	0.062 J (0.12)	U (0.12)	0.32 (0.12)	U (0.12)	U (0.11)	0.066 J (0.11)	U (0.12)	0.044 J (0.12)	U (0.11)	2.7 (0.12)
Pyrene	96000	2200	U (0.12)	0.098 J (0.12)	U (0.12)	0.12 (0.12)	0.028 J (0.12)	0.31 (0.12)	U (0.12)	U (0.11)	0.094 J (0.11)	U (0.12)	0.097 J (0.12)	U (0.11)	0.32 (0.12)
<b>Metals</b>															
Lead	1000	450	40 (2.23)	11.5 (2.35)	6.16 (2.4)	13.2 (2.32)	124 (2.28)	151 (2.33)	10 (2.32)	6.29 (2.12)	103 (2.2)	14.6 (2.43)	51.2 (2.35)	17.4 (2.28)	53 (2.38)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	201-F02-CX 201-F02	201-F03-C1 201-F03	201-F03-C2 201-F03	201-F03-CX 201-F03	201-F04-C1 201-F04	201-F04-CX 201-F04	201-F05-C1 201-F05	201-F05-CX 201-F05	202-A01-C1 202-A01	202-A01-C2 202-A01	202-A01-C3 202-A01	202-A01-CX 202-A01	202-A02-C1 202-A02
Field Sample ID	Value (0-2 ft bgs)	Value	201-F02-CX-COMP	201-F03-C1-COMP	201-F03-C2-COMP	201-F03-CX-COMP	201-F04-C1-COMP	201-F04-CX-COMP	201-F05-C1-COMP	201-F05-CX-COMP	202-A01-C1-COMP	202-A01-C2-COMP	202-A01-C3-COMP	202-A01-CX-COMP	202-A02-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	4/19/2022	2/24/2022	2/24/2022	2/24/2022	4/19/2022	4/19/2022	3/29/2022	3/29/2022	3/30/2022	3/30/2022	3/30/2022	3/30/2022	3/29/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.37 (0.11)	U (0.11)	U (0.11)	U (0.11)	0.12 (0.11)	U (0.1)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	0.026 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.057 J (0.12)	0.13 (0.12)	1.3 (0.11)	U (0.11)	0.07 J (0.11)	0.028 J (0.11)	0.025 J (0.11)	0.034 J (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	0.065 J (0.16)	0.16 (0.15)	1.5 (0.15)	U (0.15)	0.07 J (0.15)	U (0.15)	U (0.14)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	0.036 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.071 J (0.12)	0.17 (0.12)	1.6 (0.11)	U (0.11)	0.091 J (0.11)	0.04 J (0.11)	U (0.11)	0.035 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.048 J (0.16)	U (0.16)	U (0.16)	U (0.16)	0.034 J (0.16)	0.14 J (0.15)	0.73 (0.15)	U (0.15)	0.05 J (0.15)	U (0.15)	U (0.14)	U (0.15)
Chrysene	760	230	U (0.12)	0.027 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.06 J (0.12)	0.19 (0.12)	1.3 (0.11)	U (0.11)	0.073 J (0.11)	0.024 J (0.11)	0.035 J (0.11)	0.032 J (0.12)
Fluorene	130000	3800	0.1 J (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	0.19 (0.19)	0.19 (0.19)	U (0.19)	0.031 J (0.19)	U (0.19)	1.2 (0.18)	U (0.19)
Naphthalene	66	25	0.55 (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	0.038 J (0.19)	0.12 J (0.19)	0.12 J (0.19)	U (0.19)	0.037 J (0.19)	U (0.19)	0.21 (0.18)	U (0.19)
Phenanthrene	190000	10000	0.15 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.099 J (0.12)	0.1 J (0.12)	1.8 (0.11)	U (0.11)	0.12 (0.11)	U (0.11)	1.8 (0.11)	0.033 J (0.12)
Pyrene	96000	2200	0.02 J (0.12)	0.022 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.089 J (0.12)	0.23 (0.12)	2.5 (0.11)	U (0.11)	0.11 (0.11)	0.032 J (0.11)	0.13 (0.11)	0.049 J (0.12)
<b>Metals</b>															
Lead	1000	450	10.8 (2.36)	22.2 (2.24)	37.9 (12.3)	5.23 (2.27)	101 (12)	1160 (11.4)	19.2 (2.26)	37.2 (2.3)	17.1 (2.26)	58.4 (2.21)	52.3 (2.12)	3.95 (2.03)	150 (2.26)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-A02-CX 202-A02 3/29/2022	202-A03-C1 202-A03 3/29/2022	202-A03-C2 202-A03 3/29/2022	202-A03-C3 202-A03 3/29/2022	202-A03-CX 202-A03 3/29/2022	202-A04-C1 202-A04 3/31/2022	202-A04-C2 202-A04 3/31/2022	202-A04-C3 202-A04 3/31/2022	202-A04-CX 202-A04 3/31/2022	202-A05-C1 202-A05 3/31/2022	202-A05-C2 202-A05 3/31/2022	202-A05-CX 202-A05 3/31/2022	202-A06-C1 202-A06 4/28/2022
Field Sample ID	Value (mg/kg)	Value (mg/kg)	202-A02-CX-COMP	202-A03-C1-COMP	202-A03-C2-COMP	202-A03-C3-COMP	202-A03-CX-COMP	202-A04-C1-COMP	202-A04-C2-COMP	202-A04-C3-COMP	202-A04-CX-COMP	202-A05-C1-COMP	202-A05-C2-COMP	202-A05-CX-COMP	202-A06-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	3/31/2022	4/28/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.56)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.56)	U (0.12)	U (0.12)	U (0.12)	0.096 J (0.11)	0.027 J (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.75)	U (0.16)	U (0.16)	U (0.16)	0.16 (0.15)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.56)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.18 (0.11)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.75)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	0.1 J (0.15)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.11)	0.029 J (0.11)	U (0.12)	U (0.13)	U (0.12)	0.42 J (0.56)	U (0.12)	U (0.12)	U (0.12)	0.098 J (0.11)	0.024 J (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.2)	U (0.21)	U (0.2)	0.84 J (0.94)	U (0.2)	U (0.2)	U (0.19)	U (0.18)	U (0.2)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.2)	U (0.21)	U (0.2)	0.16 J (0.94)	U (0.2)	U (0.2)	U (0.19)	U (0.18)	U (0.2)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	0.031 J (0.11)	U (0.12)	U (0.13)	U (0.12)	1.5 (0.56)	U (0.12)	U (0.12)	U (0.12)	0.061 J (0.11)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.11)	0.032 J (0.11)	U (0.12)	U (0.13)	U (0.12)	0.44 J (0.56)	U (0.12)	U (0.12)	U (0.12)	0.1 J (0.11)	0.033 J (0.12)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	7.65 (2.22)	37.2 (2.15)	22.6 (2.42)	16.1 (2.46)	4.68 (2.42)	15.1 (4.34)	7.9 (2.47)	8.57 (2.41)	6.46 (2.26)	6.81 (4.49)	5.82 (2.32)	9.53 (2.35)	4.23 (2.32)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-A06-C2 202-A06	202-A06-C3 202-A06	202-A06-CX 202-A06	202-A07-C1 202-A07	202-A07-C2 202-A07	202-A07-C3 202-A07	202-A07-CX 202-A07	202-A08-C1 202-A08	202-A08-C2 202-A08	202-A08-CX 202-A08	202-A09-C1 202-A09	202-A09-C2 202-A09	202-A09-C3 202-A09
Field Sample ID	Value (0-2 ft bgs)	Value	202-A06-C2-COMP	202-A06-C3-COMP	202-A06-CX-COMP	202-A07-C1-COMP	202-A07-C2-COMP	202-A07-C3-COMP	202-A07-CX-COMP	202-A08-C1-COMP	202-A08-C2-COMP	202-A08-CX-COMP	202-A09-C1-COMP	202-A09-C2-COMP	202-A09-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	4/28/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	4/28/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022	2/24/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.13)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.05 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)
Benzo(a)anthracene	130	340	U (0.13)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.1 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)
Benzo(a)pyrene	91	46	U (0.17)	U (0.16)	U (0.14)	U (0.16)	U (0.18)	U (0.15)	U (0.15)	0.07 J (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.18)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.075 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.17)	U (0.16)	U (0.14)	U (0.16)	U (0.18)	U (0.15)	U (0.15)	0.034 J (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.18)	U (0.16)
Chrysene	760	230	U (0.13)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.097 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)
Fluorene	130000	3800	U (0.21)	U (0.2)	U (0.18)	U (0.2)	U (0.22)	U (0.19)	U (0.19)	0.019 J (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.22)	U (0.2)
Naphthalene	66	25	U (0.21)	U (0.2)	U (0.18)	U (0.2)	U (0.22)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.22)	U (0.2)
Phenanthrene	190000	10000	U (0.13)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.2 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)
Pyrene	96000	2200	U (0.13)	U (0.12)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	0.19 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)
<b>Metals</b>															
Lead	1000	450	5.03 (4.89)	4.99 (2.28)	3.2 (2.04)	5.78 (4.84)	6.19 (5.3)	4.12 (2.26)	4.11 (2.22)	8.04 J (11.6)	8.53 J (11.5)	4.24 (2.32)	23.9 (11.2)	8.98 J (13.3)	7.03 J (11.5)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-A09-CX 202-A09 2/24/2022	202-B01-C1 202-B01 3/30/2022	202-B01-C2 202-B01 3/30/2022	202-B01-C3 202-B01 3/30/2022	202-B01-CX 202-B01 3/30/2022	202-B02-C1 202-B02 3/30/2022	202-B02-C2 202-B02 3/30/2022	202-B02-C3 202-B02 3/30/2022	202-B02-CX 202-B02 3/30/2022	202-B03-C1 202-B03 3/2/2022	202-B03-C2 202-B03 3/2/2022	202-B03-C3 202-B03 3/2/2022	202-B03-CX 202-B03 3/2/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	0.2 J (0.6)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	0.045 J (0.12)	U (0.6)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.8)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	0.052 J (0.12)	U (0.6)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.8)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.12)	0.043 J (0.12)	0.26 J (0.6)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	2.4 (1)	0.084 J (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.2)	1.7 (1)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	0.057 J (0.12)	2.5 (0.6)	0.14 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.12)	0.066 J (0.12)	0.19 J (0.6)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	7.76 J (12.2)	53.7 (2.36)	8.04 (2.34)	3.55 (2.3)	6.64 (2.37)	12.7 (2.37)	5.52 (2.31)	6.08 (2.46)	6.98 (2.34)	10.9 (2.28)	26 (2.28)	4.32 (2.39)	6.28 (4.6)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-B04-C1 202-B04 202-B04-C1-COMP 3/2/2022	202-B04-C2 202-B04 202-B04-C2-COMP 3/2/2022	202-B04-C3 202-B04 202-B04-C3-COMP 3/2/2022	202-B04-C4 202-B04 202-B04-C4-COMP 3/2/2022	202-B04-CX 202-B04 202-B04-CX-COMP 3/2/2022	202-B05-C1 202-B05 202-B05-C1-COMP 3/2/2022	202-B05-C2 202-B05 202-B05-C2-COMP 3/2/2022	202-B05-C3 202-B05 202-B05-C3-COMP 3/2/2022	202-B05-CX 202-B05 202-B05-CX-COMP 3/2/2022	202-B06-C1 202-B06 202-B06-C1-COMP 3/1/2022	202-B06-C2 202-B06 202-B06-C2-COMP 3/1/2022	202-B06-CX 202-B06 202-B06-CX-COMP 3/1/2022	202-B07-C1 202-B07 202-B07-C1-COMP 3/1/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.024 J (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.18)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.18)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.022 J (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.19)	U (0.2)	U (0.22)	U (0.2)	U (0.19)	U (0.2)	U (0.18)	U (0.19)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.19)	U (0.2)	U (0.22)	U (0.2)	U (0.19)	U (0.2)	U (0.18)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.032 J (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.025 J (0.11)
<b>Metals</b>															
Lead	1000	450	8 (2.38)	5.46 (2.35)	7.22 (2.35)	5.99 (4.58)	4.69 J (4.7)	46.1 (4.35)	4.61 J (4.81)	45.9 (2.6)	4.84 (2.36)	4.86 (2.3)	5.78 J (11.3)	4.05 (2.14)	10.2 (2.22)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-B07-C2 202-B07 202-B07-C2-COMP 3/1/2022	202-B07-C3 202-B07 202-B07-C3-COMP 3/1/2022	202-B07-CX 202-B07 202-B07-CX-COMP 3/1/2022	202-B08-C1 202-B08 202-B08-C1-COMP 2/25/2022	202-B08-C2 202-B08 202-B08-C2-COMP 2/25/2022	202-B08-C3 202-B08 202-B08-C3-COMP 2/25/2022	202-B08-CX 202-B08 202-B08-CX-COMP 2/25/2022	202-B09-C1 202-B09 202-B09-C1-COMP 2/25/2022	202-B09-C2 202-B09 202-B09-C2-COMP 2/25/2022	202-B09-CX 202-B09 202-B09-CX-COMP 2/25/2022	202-B10-C1 202-B10 202-B10-C1-COMP 2/25/2022	202-B10-C2 202-B10 202-B10-C2-COMP 2/25/2022	202-B10-C3 202-B10 202-B10-C3-COMP 2/25/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.11)	0.1 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.11)	0.04 J (0.11)	0.3 (0.12)	U (0.12)	0.13 (0.12)	U (0.12)	0.11 J (0.12)	0.074 J (0.12)	U (0.12)	0.12 (0.12)	U (0.13)	0.054 J (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.15)	0.045 J (0.15)	0.26 (0.16)	U (0.16)	0.13 J (0.15)	U (0.16)	0.1 J (0.16)	0.064 J (0.15)	U (0.16)	0.11 J (0.16)	U (0.18)	0.05 J (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.11)	0.052 J (0.11)	0.3 (0.12)	U (0.12)	0.15 (0.12)	U (0.12)	0.11 J (0.12)	0.082 J (0.12)	U (0.12)	0.12 (0.12)	U (0.13)	0.056 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.15)	0.031 J (0.15)	0.18 (0.16)	U (0.16)	0.078 J (0.15)	U (0.16)	0.056 J (0.16)	0.037 J (0.15)	U (0.16)	0.066 J (0.16)	U (0.18)	0.03 J (0.16)
Chrysene	760	230	U (0.12)	U (0.11)	0.039 J (0.11)	0.32 (0.12)	U (0.12)	0.14 (0.12)	U (0.12)	0.11 J (0.12)	0.063 J (0.12)	U (0.12)	0.12 (0.12)	U (0.13)	0.052 J (0.12)
Fluorene	130000	3800	U (0.2)	U (0.19)	U (0.18)	0.036 J (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.22)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.19)	0.045 J (0.18)	0.14 J (0.2)	U (0.2)	0.032 J (0.19)	U (0.2)	U (0.19)	U (0.19)	U (0.2)	0.026 J (0.2)	U (0.22)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.11)	0.045 J (0.11)	0.51 (0.12)	U (0.12)	0.14 (0.12)	U (0.12)	0.14 (0.12)	0.093 J (0.12)	U (0.12)	0.13 (0.12)	U (0.13)	0.057 J (0.12)
Pyrene	96000	2200	U (0.12)	U (0.11)	0.059 J (0.11)	0.59 (0.12)	U (0.12)	0.22 (0.12)	U (0.12)	0.19 (0.12)	0.11 J (0.12)	U (0.12)	0.18 (0.12)	U (0.13)	0.078 J (0.12)
<b>Metals</b>															
Lead	1000	450	6.72 J (11.5)	43.5 (2.21)	83.6 (11)	9.44 (2.42)	12.9 (12)	129 (11.5)	6.59 J (12.1)	147 (11.1)	28.6 (11.5)	10.3 (2.34)	85 (11.6)	34.9 (2.58)	5.51 (2.28)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-B10-CX 202-B10	202-C01-C1 202-C01	202-C01-C2 202-C01	202-C01-C3 202-C01	202-C01-CX 202-C01	202-C02-C1 202-C02	202-C02-C2 202-C02	202-C02-C3 202-C02	202-C02-C4 202-C02	202-C02-CX 202-C02	202-C03-C1 202-C03	202-C03-C2 202-C03	202-C03-C3 202-C03	
Field Sample ID	Value (mg/kg)	Value (mg/kg)	202-B10-CX-COMP 2/25/2022	202-C01-C1-COMP 4/5/2022	202-C01-C2-COMP 4/5/2022	202-C01-C3-COMP 4/5/2022	202-C01-CX-COMP 4/5/2022	202-C02-C1-COMP 4/1/2022	202-C02-C2-COMP 4/1/2022	202-C02-C3-COMP 4/1/2022	202-C02-C4-COMP 4/1/2022	202-C02-CX-COMP 4/1/2022	202-C03-C1-COMP 4/1/2022	202-C03-C2-COMP 4/1/2022	202-C03-C3-COMP 4/1/2022	
Sample Date	(mg/kg)	(mg/kg)														
<b>PAHs</b>																
Anthracene	190000	350	U (0.12)	0.15 (0.12)	0.2 (0.12)	0.05 J (0.12)	0.12 (0.1)	1.5 (0.12)	0.23 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	
Benzo(a)anthracene	130	340	U (0.12)	0.32 (0.12)	0.22 (0.12)	U (0.12)	U (0.1)	3.5 (0.12)	0.074 J (0.11)	0.043 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	
Benzo(a)pyrene	91	46	U (0.16)	0.37 (0.16)	0.28 (0.16)	U (0.17)	U (0.14)	3.6 (0.15)	0.072 J (0.15)	U (0.16)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	
Benzo(b)fluoranthene	76	170	U (0.12)	0.42 (0.12)	0.32 (0.12)	U (0.12)	U (0.1)	4.6 (0.12)	0.086 J (0.11)	0.051 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.2 (0.16)	0.16 (0.16)	U (0.17)	U (0.14)	1.9 (0.15)	0.052 J (0.15)	0.031 J (0.16)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	
Chrysene	760	230	U (0.12)	0.33 (0.12)	0.24 (0.12)	U (0.12)	U (0.1)	3.4 (0.12)	0.25 (0.11)	0.05 J (0.12)	U (0.12)	0.037 J (0.12)	0.043 J (0.12)	U (0.12)	U (0.12)	
Fluorene	130000	3800	U (0.19)	0.19 J (0.2)	0.59 (0.2)	0.37 (0.21)	0.82 (0.17)	0.61 (0.19)	1.3 (0.19)	0.11 J (0.2)	U (0.19)	0.18 J (0.2)	0.24 (0.21)	0.1 J (0.2)	0.039 J (0.2)	
Naphthalene	66	25	U (0.19)	0.16 J (0.2)	0.68 (0.2)	1.3 (0.21)	U (0.17)	0.22 (0.19)	0.39 (0.19)	0.032 J (0.2)	U (0.19)	0.037 J (0.2)	0.049 J (0.21)	U (0.2)	U (0.2)	
Phenanthrene	190000	10000	U (0.12)	0.45 (0.12)	1.1 (0.12)	0.5 (0.12)	1.2 (0.1)	5.6 (0.12)	2.2 (0.11)	0.19 (0.12)	U (0.12)	0.3 (0.12)	0.44 (0.12)	0.077 J (0.12)	U (0.12)	
Pyrene	96000	2200	U (0.12)	0.57 (0.12)	0.43 (0.12)	0.022 J (0.12)	0.059 J (0.1)	6.5 (0.12)	0.37 (0.11)	0.086 J (0.12)	U (0.12)	0.049 J (0.12)	0.051 J (0.12)	U (0.12)	U (0.12)	
<b>Metals</b>																
Lead	1000	450	2.99 (2.3)	13 (2.39)	7.74 (2.35)	5.59 (2.48)	5.7 (2.02)	220 (2.22)	139 (2.18)	28.6 (2.29)	7.84 (4.48)	7.63 (2.36)	57.6 (4.92)	42.8 (4.6)	5.96 (2.29)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-C03-C4 202-C03 202-C03-C4-COMP 4/1/2022	202-C03-CX 202-C03 202-C03-CX-COMP 4/1/2022	202-C04-C1 202-C04 202-C04-C1-COMP 3/31/2022	202-C04-C2 202-C04 202-C04-C2-COMP 3/31/2022	202-C04-C3 202-C04 202-C04-C3-COMP 3/31/2022	202-C04-CX 202-C04 202-C04-CX-COMP 3/31/2022	202-C05-C1 202-C05 202-C05-C1-COMP 4/1/2022	202-C05-C2 202-C05 202-C05-C2-COMP 4/1/2022	202-C05-C3 202-C05 202-C05-C3-COMP 4/1/2022	202-C05-CX 202-C05 202-C05-CX-COMP 4/1/2022	202-C06-C1 202-C06 202-C06-C1-COMP 3/4/2022	202-C06-C2 202-C06 202-C06-C2-COMP 3/4/2022	202-C06-C3 202-C06 202-C06-C3-COMP 3/4/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.11)	U (0.11)	0.041 J (0.12)	U (0.12)	0.08 J (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	0.022 J (0.11)	0.24 (0.12)	U (0.12)	0.17 (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.022 J (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	U (0.15)	0.25 (0.16)	U (0.16)	0.14 J (0.16)	U (0.17)	U (0.17)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	0.032 J (0.11)	0.32 (0.12)	U (0.12)	0.16 (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.15)	0.022 J (0.15)	0.14 J (0.16)	U (0.16)	0.055 J (0.16)	U (0.17)	U (0.17)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.11)	0.04 J (0.11)	0.25 (0.12)	U (0.12)	0.15 (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.021 J (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	U (0.18)	U (0.18)	U (0.2)	U (0.2)	0.038 J (0.2)	U (0.21)	U (0.21)	U (0.21)	U (0.2)	U (0.2)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.18)	U (0.18)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.21)	U (0.21)	U (0.2)	U (0.2)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	U (0.11)	U (0.11)	0.14 (0.12)	U (0.12)	0.3 (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.11)	0.045 J (0.11)	0.37 (0.12)	U (0.12)	0.27 (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.027 J (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	10.5 (4.46)	7.14 (2.07)	10.4 (2.15)	110 (2.48)	37.5 (2.33)	76.1 (2.36)	7.56 (2.4)	4.61 (2.44)	5.69 (2.42)	9.25 (2.31)	8.58 (2.4)	71.9 (11.5)	7.94 (2.39)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-C06-CX 202-C06 202-C06-CX-COMP 3/4/2022	202-C07-C1 202-C07 202-C07-C1-COMP 3/4/2022	202-C07-C2 202-C07 202-C07-C2-COMP 3/4/2022	202-C07-C3 202-C07 202-C07-C3-COMP 3/4/2022	202-C07-C4 202-C07 202-C07-C4-COMP 3/4/2022	202-C07-CX 202-C07 202-C07-CX-COMP 3/4/2022	202-C08-C1 202-C08 202-C08-C1-COMP 3/7/2022	202-C08-C2 202-C08 202-C08-C2-COMP 3/7/2022	202-C08-C3 202-C08 202-C08-C3-COMP 3/7/2022	202-C08-C4 202-C08 202-C08-C4-COMP 3/7/2022	202-C08-CX 202-C08 202-C08-CX-COMP 3/7/2022	202-C09-C1 202-C09 202-C09-C1-COMP 3/1/2022	202-C09-C2 202-C09 202-C09-C2-COMP 3/1/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.14)	U (0.15)	U (0.14)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (0.16)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.14)	U (0.15)	U (0.14)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (0.16)	U (0.15)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.18)	U (0.19)	U (0.18)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.19)	U (0.2)	U (0.18)	U (0.19)
Naphthalene	66	25	U (0.2)	U (0.18)	U (0.19)	U (0.18)	U (0.2)	0.037 J (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.19)	U (0.2)	U (0.18)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
<b>Metals</b>															
Lead	1000	450	4.8 (2.42)	24 (2.07)	6.04 (2.31)	4.26 (2.22)	5.12 (2.28)	7.14 J (11.6)	19.6 (2.35)	6.28 (2.4)	8.05 (2.48)	5.62 (2.27)	5.19 (2.34)	7.25 (2.23)	7.7 (2.29)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-C09-C3	202-C09-CX	202-C10-C1	202-C10-C2	202-C10-C3	202-C10-CX	202-C11-C1	202-C11-C2	202-C11-CX	202-C12-C1	202-C12-C2	202-C12-C3	202-C12-C4
			202-C09	202-C09	202-C10	202-C10	202-C10	202-C10	202-C11	202-C11	202-C11	202-C12	202-C12	202-C12	202-C12
Field Sample ID	Value (mg/kg)	Value (mg/kg)	202-C09-C3-COMP	202-C09-CX-COMP	202-C10-C1-COMP	202-C10-C2-COMP	202-C10-C3-COMP	202-C10-CX-COMP	202-C11-C1-COMP	202-C11-C2-COMP	202-C11-CX-COMP	202-C12-C1-COMP	202-C12-C2-COMP	202-C12-C3-COMP	202-C12-C4-COMP
Sample Date			3/1/2022	3/1/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022	2/28/2022	3/9/2022	3/9/2022	3/9/2022	3/9/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	0.048 J (0.12)	U (0.1)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.052 J (0.12)	0.13 (0.12)	U (0.1)	U (0.11)	0.072 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	0.11 J (0.16)	U (0.14)	U (0.15)	0.08 J (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.14)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.058 J (0.12)	0.12 (0.12)	U (0.1)	U (0.11)	0.092 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.034 J (0.16)	0.078 J (0.16)	U (0.14)	U (0.15)	0.062 J (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.14)
Chrysene	760	230	U (0.12)	U (0.12)	0.053 J (0.12)	0.13 (0.12)	U (0.1)	U (0.11)	0.076 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.18)	U (0.18)	U (0.19)	U (0.2)	U (0.19)	U (0.2)	U (0.19)	U (0.21)	U (0.18)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.18)	U (0.18)	0.036 J (0.19)	U (0.2)	U (0.19)	U (0.2)	U (0.19)	U (0.21)	U (0.18)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.055 J (0.12)	0.24 (0.12)	U (0.1)	U (0.11)	0.067 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	0.083 J (0.12)	0.25 (0.12)	U (0.1)	0.02 J (0.11)	0.091 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)
<b>Metals</b>															
Lead	1000	450	11 (2.27)	6.86 J (12)	8.17 (2.37)	7.54 J (11.5)	5.02 (2.04)	36.1 (2.17)	74.1 (11.4)	4.77 (2.39)	11.2 J (11.8)	8.4 (2.28)	7.01 (2.27)	9.3 (2.49)	7.25 (2.18)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-C12-CX 202-C12 202-C12-CX-COMP 3/9/2022	202-D01-C1 202-D01 202-D01-C1-COMP 3/22/2022	202-D01-C2 202-D01 202-D01-C2-COMP 3/22/2022	202-D01-C3 202-D01 202-D01-C3-COMP 3/22/2022	202-D01-C4 202-D01 202-D01-C4-COMP 3/22/2022	202-D01-CX 202-D01 202-D01-CX-COMP 3/22/2022	202-D02-C1 202-D02 202-D02-C1-COMP 4/4/2022	202-D02-C2 202-D02 202-D02-C2-COMP 4/4/2022	202-D02-C3 202-D02 202-D02-C3-COMP 4/4/2022	202-D02-CX 202-D02 202-D02-CX-COMP 4/4/2022	202-D03-C1 202-D03 202-D03-C1-COMP 4/4/2022	202-D03-C2 202-D03 202-D03-C2-COMP 4/4/2022	202-D03-C3 202-D03 202-D03-C3-COMP 4/4/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	0.07 J (0.11)	0.069 J (0.12)	U (0.12)	0.052 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	0.064 J (0.15)	0.06 J (0.16)	U (0.16)	0.05 J (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	0.094 J (0.11)	0.072 J (0.12)	U (0.12)	0.071 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	0.044 J (0.15)	0.032 J (0.16)	U (0.16)	0.035 J (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.11)	0.071 J (0.11)	0.062 J (0.12)	U (0.12)	0.056 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	0.065 J (0.19)	0.15 J (0.19)	U (0.2)	0.086 J (0.2)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	0.17 J (0.19)	U (0.2)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	0.056 J (0.11)	0.085 J (0.12)	U (0.12)	0.046 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.12 (0.11)	0.34 (0.12)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.11)	0.1 J (0.11)	0.091 J (0.12)	U (0.12)	0.08 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.035 J (0.12)	U (0.12)	0.048 J (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	7.98 (2.2)	181 (2.22)	4.79 (2.44)	5.67 (2.26)	63.2 (2.27)	5.13 (2.23)	5.21 (2.35)	7.67 (2.42)	5.45 (2.22)	6.51 (2.27)	13.5 (2.35)	4.71 (2.33)	5.16 (2.39)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	202-D03-CX	202-D04-C1	202-D04-C2	202-D04-C3	202-D04-CX	202-D05-C1	202-D05-C2	202-D05-C3	202-D05-C4	202-D05-CX	202-D06-C1	202-D06-C2	202-D06-C3
Cell	Direct Contact Numeric	Groundwater Numeric	202-D03	202-D04	202-D04	202-D04	202-D04	202-D05	202-D05	202-D05	202-D05	202-D05	202-D06	202-D06	202-D06
Field Sample ID	Value (0-2 ft bgs)	Value	202-D03-CX-COMP	202-D04-C1-COMP	202-D04-C2-COMP	202-D04-C3-COMP	202-D04-CX-COMP	202-D05-C1-COMP	202-D05-C2-COMP	202-D05-C3-COMP	202-D05-C4-COMP	202-D05-CX-COMP	202-D06-C1-COMP	202-D06-C2-COMP	202-D06-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	4/4/2022	3/4/2022	3/4/2022	3/4/2022	3/4/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022	3/7/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.11)	U (0.13)	U (0.14)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.11)	U (0.13)	U (0.14)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.18)	U (0.16)	U (0.17)	U (0.15)	U (0.18)	U (0.19)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.11)	U (0.13)	U (0.14)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.18)	U (0.16)	U (0.17)	U (0.15)	U (0.18)	U (0.19)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.11)	U (0.13)	U (0.14)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.21)	U (0.23)	U (0.2)	U (0.21)	U (0.19)	U (0.22)	U (0.23)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.21)	U (0.23)	U (0.2)	U (0.21)	U (0.19)	U (0.22)	U (0.23)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.11)	U (0.13)	U (0.14)	U (0.12)
Pyrene	96000	2200	0.022 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.11)	U (0.13)	U (0.14)	U (0.12)
<b>Metals</b>															
Lead	1000	450	7.23 J (11.6)	5.85 (2.39)	6.4 (2.32)	3.06 (2.34)	4.19 (2.26)	8.26 (2.4)	7.53 (2.57)	20.3 (2.34)	9.19 (2.48)	5.27 (2.24)	5.84 (2.55)	9.58 (2.75)	4.9 (2.29)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	202-D06-CX	202-D07-C1	202-D07-C2	202-D07-C3	202-D07-C4	202-D07-CX	202-D08-C1	202-D08-C2	202-D08-C3	202-D08-CX	202-D09-C1	202-D09-C2	202-D09-C3
Cell	Direct Contact Numeric	Groundwater Numeric	202-D06	202-D07	202-D07	202-D07	202-D07	202-D07	202-D08	202-D08	202-D08	202-D08	202-D09	202-D09	202-D09
Field Sample ID	Value (0-2 ft bgs)	Value	202-D06-CX-COMP	202-D07-C1-COMP	202-D07-C2-COMP	202-D07-C3-COMP	202-D07-C4-COMP	202-D07-CX-COMP	202-D08-C1-COMP	202-D08-C2-COMP	202-D08-C3-COMP	202-D08-CX-COMP	202-D09-C1-COMP	202-D09-C2-COMP	202-D09-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	3/7/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022	3/8/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.034 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.14)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.14)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.039 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.14)	U (0.16)	0.025 J (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.14)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.031 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.2)	U (0.19)	U (0.18)	U (0.2)	U (0.18)	U (0.19)	U (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.2)	U (0.19)	U (0.18)	U (0.2)	U (0.18)	U (0.19)	U (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.033 J (0.11)	U (0.12)	0.069 J (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.046 J (0.11)	U (0.12)	0.037 J (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	4.24 (2.21)	35.2 (2.28)	4.61 (2.35)	5.39 (2.27)	2.43 (2.08)	7.02 (2.32)	38 (2.21)	5.75 (2.22)	8.79 J (11.5)	13.3 (11.6)	6.8 (2.21)	6.45 (2.24)	6.29 (2.35)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-D09-C4 202-D09	202-D09-CX 202-D09	202-E01-C1 202-E01	202-E01-C2 202-E01	202-E01-C3 202-E01	202-E01-C4 202-E01	202-E01-CX 202-E01	202-E02-C1 202-E02	202-E02-C2 202-E02	202-E02-C3 202-E02	202-E02-CX 202-E02	202-E03-C1 202-E03	202-E03-C2 202-E03
Field Sample ID	Value (0-2 ft bgs)	Value	202-D09-C4-COMP	202-D09-CX-COMP	202-E01-C1-COMP	202-E01-C2-COMP	202-E01-C3-COMP	202-E01-C4-COMP	202-E01-CX-COMP	202-E02-C1-COMP	202-E02-C2-COMP	202-E02-C3-COMP	202-E02-CX-COMP	202-E03-C1-COMP	202-E03-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	3/8/2022	3/8/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/22/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.11)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.094 J (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.03 J (0.11)	0.026 J (0.12)	0.087 J (0.12)	U (0.13)	U (0.11)	0.04 J (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.35 (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.15)	U (0.16)	0.081 J (0.15)	U (0.17)	U (0.14)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	0.34 (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.041 J (0.11)	U (0.12)	0.098 J (0.12)	U (0.13)	U (0.11)	0.039 J (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.44 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.041 J (0.15)	U (0.16)	0.051 J (0.15)	U (0.17)	U (0.14)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	0.22 (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	0.026 J (0.11)	0.027 J (0.12)	0.088 J (0.12)	U (0.13)	U (0.11)	0.034 J (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.33 (0.12)
Fluorene	130000	3800	U (0.21)	U (0.2)	U (0.18)	U (0.2)	U (0.19)	U (0.21)	0.052 J (0.18)	U (0.19)	U (0.18)	U (0.19)	U (0.2)	U (0.2)	0.026 J (0.2)
Naphthalene	66	25	U (0.21)	U (0.2)	U (0.18)	U (0.2)	U (0.19)	U (0.21)	0.12 J (0.18)	U (0.19)	U (0.18)	U (0.19)	U (0.2)	U (0.2)	0.042 J (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.11)	0.067 J (0.12)	0.16 (0.12)	U (0.13)	U (0.11)	0.06 J (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.36 (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	0.029 J (0.11)	0.052 J (0.12)	0.15 (0.12)	U (0.13)	U (0.11)	0.056 J (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.55 (0.12)
<b>Metals</b>															
Lead	1000	450	6.76 (2.45)	9.29 J (11.8)	59.3 (2.2)	80.2 (2.29)	79.1 (2.33)	25.7 (12.5)	2.35 (2.13)	13.1 (11.5)	49.7 (10.6)	4.72 (2.16)	3.37 (2.34)	44.9 (11.7)	320 (2.32)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-E03-C3 202-E03 202-E03-C3-COMP 3/24/2022	202-E03-CX 202-E03 202-E03-CX-COMP 3/24/2022	202-E04-C1 202-E04 202-E04-C1-COMP 3/23/2022	202-E04-C2 202-E04 202-E04-C2-COMP 3/23/2022	202-E04-C3 202-E04 202-E04-C3-COMP 3/23/2022	202-E04-CX 202-E04 202-E04-CX-COMP 3/23/2022	202-E05-C1 202-E05 202-E05-C1-COMP 3/22/2022	202-E05-C2 202-E05 202-E05-C2-COMP 3/22/2022	202-E05-C3 202-E05 202-E05-C3-COMP 3/22/2022	202-E05-CX 202-E05 202-E05-CX-COMP 3/22/2022	202-E06-C1 202-E06 202-E06-C1-COMP 3/23/2022	202-E06-C2 202-E06 202-E06-C2-COMP 3/23/2022	202-E06-C3 202-E06 202-E06-C3-COMP 3/23/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.1)
Benzo(a)anthracene	130	340	0.12 (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.057 J (0.12)	U (0.12)	U (0.1)
Benzo(a)pyrene	91	46	0.1 J (0.16)	U (0.14)	U (0.15)	U (0.18)	U (0.18)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	0.065 J (0.16)	U (0.16)	U (0.14)
Benzo(b)fluoranthene	76	170	0.13 (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.079 J (0.12)	U (0.12)	U (0.1)
Benzo(g,h,i)perylene	190000	180	0.065 J (0.16)	U (0.14)	U (0.15)	U (0.18)	U (0.18)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	0.043 J (0.16)	U (0.16)	U (0.14)
Chrysene	760	230	0.11 J (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.055 J (0.12)	U (0.12)	0.042 J (0.1)
Fluorene	130000	3800	U (0.2)	U (0.18)	U (0.19)	U (0.22)	U (0.22)	U (0.2)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	0.02 J (0.17)
Naphthalene	66	25	U (0.2)	U (0.18)	U (0.19)	U (0.22)	U (0.22)	U (0.2)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.17)
Phenanthrene	190000	10000	0.11 J (0.12)	U (0.11)	U (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.051 J (0.12)	U (0.12)	0.21 (0.1)
Pyrene	96000	2200	0.15 (0.12)	U (0.11)	0.026 J (0.12)	U (0.13)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.087 J (0.12)	U (0.12)	0.021 J (0.1)
<b>Metals</b>															
Lead	1000	450	129 (11.8)	8.53 J (10.4)	46.5 (11.4)	15.7 (2.52)	5.95 (2.65)	5.55 (2.33)	317 (12.7)	13.1 (12.2)	14 (11.5)	10.5 J (11.8)	2.6 (2.28)	19.8 (2.33)	2.15 (2.07)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-E06-CX 202-E06 202-E06-CX-COMP 3/23/2022	202-E07-C1 202-E07 202-E07-C1-COMP 3/23/2022	202-E07-C2 202-E07 202-E07-C2-COMP 3/23/2022	202-E07-C3 202-E07 202-E07-C3-COMP 3/23/2022	202-E07-CX 202-E07 202-E07-CX-COMP 3/23/2022	202-E08-C1 202-E08 202-E08-C1-COMP 3/10/2022	202-E08-C2 202-E08 202-E08-C2-COMP 3/10/2022	202-E08-C3 202-E08 202-E08-C3-COMP 3/10/2022	202-E08-C4 202-E08 202-E08-C4-COMP 3/10/2022	202-E08-CX 202-E08 202-E08-CX-COMP 3/10/2022	202-E09-C1 202-E09 202-E09-C1-COMP 3/10/2022	202-E09-C2 202-E09 202-E09-C2-COMP 3/10/2022	202-E09-C3 202-E09 202-E09-C3-COMP 3/10/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.14 (0.12)	0.044 J (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.044 J (0.11)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	0.14 J (0.16)	0.051 J (0.15)	U (0.16)	U (0.15)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	U (0.14)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.16 (0.12)	0.052 J (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.052 J (0.11)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.078 J (0.16)	0.027 J (0.15)	U (0.16)	U (0.15)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	0.022 J (0.14)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	0.15 (0.12)	0.041 J (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.04 J (0.11)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.19)	U (0.21)	U (0.19)	U (0.2)	U (0.2)	U (0.18)	0.02 J (0.2)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.19)	U (0.21)	U (0.19)	U (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.11 J (0.12)	0.055 J (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.059 J (0.11)	0.05 J (0.12)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	0.23 (0.12)	0.067 J (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.063 J (0.11)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	52.6 (2.38)	7.12 (2.35)	6.58 J (11.3)	18.4 (2.17)	8.42 J (12)	1.65 J (2.24)	8.26 (2.45)	3.2 (2.12)	5.72 (2.35)	6.03 (2.36)	73.1 (10.8)	6.92 (2.32)	2.28 J (2.4)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-E09-C4 202-E09 202-E09-C4-COMP 3/10/2022	202-E09-CX 202-E09 202-E09-CX-COMP 3/10/2022	202-E10-C1 202-E10 202-E10-C1-COMP 4/28/2022	202-E10-C2 202-E10 202-E10-C2-COMP 4/28/2022	202-E10-C3 202-E10 202-E10-C3-COMP 4/28/2022	202-E10-C4 202-E10 202-E10-C4-COMP 4/28/2022	202-E10-CX 202-E10 202-E10-CX-COMP 4/28/2022	202-E11-C1 202-E11 202-E11-C1-COMP 3/11/2022	202-E11-C2 202-E11 202-E11-C2-COMP 3/11/2022	202-E11-C3 202-E11 202-E11-C3-COMP 3/11/2022	202-E11-CX 202-E11 202-E11-CX-COMP 3/11/2022	202-E12-C1 202-E12 202-E12-C1-COMP 3/10/2022	202-E12-C2 202-E12 202-E12-C2-COMP 3/10/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.1)	U (0.11)	U (0.13)	0.15 (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	U (0.1)	U (0.11)	U (0.13)	0.63 (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.14)	U (0.18)	0.68 (0.17)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.15)	U (0.14)	U (0.14)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.1)	U (0.11)	U (0.13)	0.74 (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.14)	U (0.18)	0.32 (0.17)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.15)	U (0.14)	U (0.14)	U (0.15)	U (0.16)
Chrysene	760	230	U (0.1)	0.02 J (0.11)	U (0.13)	0.61 (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.12)
Fluorene	130000	3800	0.02 J (0.18)	0.031 J (0.18)	U (0.22)	0.093 J (0.22)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.18)	U (0.17)	U (0.18)	U (0.19)	U (0.2)
Naphthalene	66	25	U (0.18)	0.25 (0.18)	U (0.22)	1.4 (0.22)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.18)	U (0.17)	U (0.18)	U (0.19)	U (0.2)
Phenanthrene	190000	10000	0.071 J (0.1)	0.11 (0.11)	U (0.13)	0.54 (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.12)
Pyrene	96000	2200	U (0.1)	U (0.11)	U (0.13)	0.61 (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.12)
<b>Metals</b>															
Lead	1000	450	5.13 (2.06)	1.89 J (2.07)	196 (5.22)	3.89 (2.52)	32 (12)	14.3 (4.89)	4.2 (2.32)	5.56 (4.54)	1.83 J (2.14)	1.59 J (2.02)	6.32 (2.05)	5.7 (2.25)	7.42 (2.27)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) Sample Date	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	202-E12-C3	202-E12-CX	202-E13-C1	202-E13-C2	202-E13-C3	202-E13-C4	202-E13-CX	202-E14-C1	202-E14-C2	202-E14-C3	202-E14-CX	202-E15-C1	202-E15-C2
			202-E12	202-E12	202-E13	202-E13	202-E13	202-E13	202-E13	202-E13	202-E13	202-E14	202-E14	202-E14	202-E14
Field Sample ID			202-E12-C3-COMP 3/10/2022	202-E12-CX-COMP 3/10/2022	202-E13-C1-COMP 3/9/2022	202-E13-C2-COMP 3/9/2022	202-E13-C3-COMP 3/9/2022	202-E13-C4-COMP 3/9/2022	202-E13-CX-COMP 3/9/2022	202-E14-C1-COMP 3/9/2022	202-E14-C2-COMP 3/9/2022	202-E14-C3-COMP 3/9/2022	202-E14-CX-COMP 3/9/2022	202-E15-C1-COMP 3/10/2022	202-E15-C2-COMP 3/10/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.2)	U (0.18)	U (0.19)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.2)	U (0.18)	U (0.19)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	6.96 (2.38)	5.69 (4.5)	7.73 J (12)	13.2 (2.4)	5.73 (2.37)	7.49 J (12.1)	5.03 (2.36)	7.74 (2.3)	5.31 (2.35)	18.3 (11)	4.47 (2.17)	11.6 J (12.2)	25.6 (2.33)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-E15-C3 202-E15 202-E15-C3-COMP 3/10/2022	202-E15-CX 202-E15 202-E15-CX-COMP 3/10/2022	202-F01-C1 202-F01 202-F01-C1-COMP 4/12/2022	202-F01-CX 202-F01 202-F01-CX-COMP 4/12/2022	202-F02-C1 202-F02 202-F02-C1-COMP 3/25/2022	202-F02-C2 202-F02 202-F02-C2-COMP 3/25/2022	202-F02-C3 202-F02 202-F02-C3-COMP 3/25/2022	202-F02-CX 202-F02 202-F02-CX-COMP 3/25/2022	202-F03-C1 202-F03 202-F03-C1-COMP 3/25/2022	202-F03-C2 202-F03 202-F03-C2-COMP 3/25/2022	202-F03-C3 202-F03 202-F03-C3-COMP 3/25/2022	202-F03-CX 202-F03 202-F03-CX-COMP 3/25/2022	202-F04-C1 202-F04 202-F04-C1-COMP 3/25/2022
Field Sample ID	Value (0-2 ft bgs)	Value													
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.27 (0.12)	U (0.13)	U (0.13)	U (0.14)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	1 (0.12)	U (0.13)	U (0.13)	U (0.14)	U (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	1.3 (0.16)	U (0.17)	U (0.17)	U (0.19)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	1.5 (0.12)	U (0.13)	U (0.13)	U (0.14)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	0.8 (0.16)	U (0.17)	U (0.17)	U (0.19)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.88 (0.12)	U (0.13)	U (0.13)	U (0.14)	U (0.12)
Fluorene	130000	3800	U (0.18)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	0.18 J (0.19)	0.079 J (0.2)	U (0.21)	U (0.21)	U (0.24)	U (0.2)
Naphthalene	66	25	U (0.18)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	3.9 (0.19)	0.071 J (0.2)	U (0.21)	U (0.21)	U (0.24)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.29 (0.11)	0.67 (0.12)	U (0.13)	U (0.13)	U (0.14)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.02 J (0.11)	0.97 (0.12)	U (0.13)	U (0.13)	U (0.14)	U (0.12)
<b>Metals</b>															
Lead	1000	450	6.1 (2.18)	6.25 (2.3)	27.7 (11.2)	7.57 J (11.3)	8.38 (2.33)	6.17 (4.74)	4.92 (2.34)	6.04 (2.22)	7.58 (4.55)	31.9 (2.46)	7.63 (2.48)	6.26 (2.7)	6.22 (2.34)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) Sample Date	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	202-F04-C2	202-F04-C3	202-F04-CX	202-F05-C1	202-F05-C2	202-F05-C3	202-F05-CX	202-F06-C1	202-F06-C2	202-F06-C3	202-F06-C4	202-F06-CX	202-F07-C1
			202-F04	202-F04	202-F04	202-F05	202-F05	202-F05	202-F05	202-F05	202-F06	202-F06	202-F06	202-F06	202-F06
Field Sample ID	Value (0-2 ft bgs)	Value	202-F04-C2-COMP 3/25/2022	202-F04-C3-COMP 3/25/2022	202-F04-CX-COMP 3/25/2022	202-F05-C1-COMP 4/5/2022	202-F05-C2-COMP 4/5/2022	202-F05-C3-COMP 4/5/2022	202-F05-CX-COMP 4/5/2022	202-F06-C1-COMP 3/14/2022	202-F06-C2-COMP 3/14/2022	202-F06-C3-COMP 3/14/2022	202-F06-C4-COMP 3/14/2022	202-F06-CX-COMP 3/14/2022	202-F07-C1-COMP 4/27/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.1)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.11)	U (0.13)	U (0.12)	0.036 J (0.1)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.15)	U (0.17)	U (0.16)	0.083 J (0.14)	U (0.14)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.11)	U (0.13)	U (0.12)	0.058 J (0.1)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.15)	U (0.17)	U (0.16)	0.13 J (0.14)	U (0.14)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.11)	U (0.13)	U (0.12)	0.054 J (0.1)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.19)	U (0.21)	U (0.2)	U (0.18)	U (0.18)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	0.092 J (0.2)
Naphthalene	66	25	U (0.2)	U (0.19)	U (0.21)	U (0.2)	U (0.18)	U (0.18)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	0.15 J (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.11)	U (0.13)	U (0.12)	0.067 J (0.1)	U (0.11)	U (0.11)	0.024 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.095 J (0.12)
Pyrene	96000	2200	U (0.12)	U (0.11)	U (0.13)	0.02 J (0.12)	0.052 J (0.1)	U (0.11)	U (0.11)	0.029 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	5.73 (2.36)	6.91 (4.31)	8.68 (2.46)	31.8 (2.4)	70.8 (2.14)	5.36 (2.1)	6.96 (2.2)	13.5 (11.2)	8.87 J (11.4)	6.83 J (11.7)	7.32 J (11.2)	224 (11.8)	6.17 (2.42)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F07-C2	202-F07-C3	202-F07-C4	202-F07-CX	202-F08-C1	202-F08-C2	202-F08-C3	202-F08-CX	202-F09-C1	202-F09-C2	202-F09-CX	202-F10-C1	202-F10-C2
Field Sample ID	Value (0-2 ft bgs)	Value	202-F07-C2-COMP	202-F07-C3-COMP	202-F07-C4-COMP	202-F07-CX-COMP	202-F08-C1-COMP	202-F08-C2-COMP	202-F08-C3-COMP	202-F08-CX-COMP	202-F09-C1-COMP	202-F09-C2-COMP	202-F09-CX-COMP	202-F10-C1-COMP	202-F10-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/28/2022	4/28/2022	4/28/2022	4/6/2022	4/6/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	0.04 J (0.12)	U (0.12)	0.058 J (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	0.031 J (0.13)	0.023 J (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	0.04 J (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	0.029 J (0.13)	0.02 J (0.12)	U (0.12)	U (0.12)	U (0.11)
Fluorene	130000	3800	0.043 J (0.21)	0.55 (0.2)	0.23 (0.2)	1.6 (0.19)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.19)	U (0.19)
Naphthalene	66	25	0.15 J (0.21)	0.56 (0.2)	1.9 (0.2)	5.3 (0.19)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.19)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	0.54 (0.12)	0.1 J (0.12)	1.4 (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	0.025 J (0.13)	0.023 J (0.12)	U (0.12)	U (0.12)	U (0.11)
<b>Metals</b>															
Lead	1000	450	5.07 (2.45)	8.53 (2.42)	8.23 (2.31)	8.68 (2.3)	60.3 (2.38)	6.14 (2.27)	7.2 (2.45)	27.4 (2.38)	79.3 (4.89)	4.44 (2.28)	6.21 (2.35)	62.2 (2.34)	24.7 (2.25)

- Notes:**
- Concentrations are presented in mg/kg.
  - Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
  - A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**  
 PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-F10-C3 202-F10 202-F10-C3-COMP 4/6/2022	202-F10-C4 202-F10 202-F10-C4-COMP 4/6/2022	202-F10-CX 202-F10 202-F10-CX-COMP 4/6/2022	202-F11-C1 202-F11 202-F11-C1-COMP 4/8/2022	202-F11-C2 202-F11 202-F11-C2-COMP 4/8/2022	202-F11-C3 202-F11 202-F11-C3-COMP 4/8/2022	202-F11-CX 202-F11 202-F11-CX-COMP 4/8/2022	202-F12-C1 202-F12 202-F12-C1-COMP 4/12/2022	202-F12-C2 202-F12 202-F12-C2-COMP 4/12/2022	202-F12-C3 202-F12 202-F12-C3-COMP 4/12/2022	202-F12-CX 202-F12 202-F12-CX-COMP 4/12/2022	202-F13-C1 202-F13 202-F13-C1-COMP 4/8/2022	202-F13-C2 202-F13 202-F13-C2-COMP 4/8/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.1)	0.069 J (0.1)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.067 J (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	2.9 (0.12)
Benzo(a)anthracene	130	340	0.081 J (0.12)	U (0.1)	0.022 J (0.1)	0.03 J (0.12)	U (0.12)	U (0.11)	0.032 J (0.11)	0.19 (0.12)	U (0.13)	U (0.12)	U (0.12)	0.097 J (0.12)	2.2 (0.12)
Benzo(a)pyrene	91	46	0.084 J (0.15)	U (0.14)	U (0.14)	U (0.16)	U (0.16)	U (0.14)	U (0.14)	0.15 J (0.16)	U (0.17)	U (0.16)	U (0.16)	0.12 J (0.16)	2 (0.16)
Benzo(b)fluoranthene	76	170	0.091 J (0.12)	U (0.1)	U (0.1)	U (0.12)	U (0.12)	U (0.11)	0.037 J (0.11)	0.16 (0.12)	U (0.13)	U (0.12)	U (0.12)	0.18 (0.12)	2.3 (0.12)
Benzo(g,h,i)perylene	190000	180	0.055 J (0.15)	U (0.14)	0.021 J (0.14)	U (0.16)	U (0.16)	U (0.14)	U (0.14)	0.082 J (0.16)	U (0.17)	U (0.16)	U (0.16)	0.077 J (0.16)	1.2 (0.16)
Chrysene	760	230	0.08 J (0.12)	U (0.1)	0.031 J (0.1)	0.026 J (0.12)	U (0.12)	U (0.11)	0.031 J (0.11)	0.19 (0.12)	U (0.13)	U (0.12)	U (0.12)	0.11 J (0.12)	2.1 (0.12)
Fluorene	130000	3800	U (0.19)	U (0.17)	0.13 J (0.18)	U (0.2)	U (0.2)	U (0.18)	U (0.18)	0.044 J (0.2)	U (0.22)	U (0.2)	U (0.2)	U (0.19)	2.7 (0.2)
Naphthalene	66	25	U (0.19)	U (0.17)	0.024 J (0.18)	U (0.2)	U (0.2)	U (0.18)	U (0.18)	0.09 J (0.2)	U (0.22)	U (0.2)	U (0.2)	0.024 J (0.19)	U (0.2)
Phenanthrene	190000	10000	0.083 J (0.12)	U (0.1)	0.28 (0.1)	0.038 J (0.12)	U (0.12)	U (0.11)	0.093 J (0.11)	0.34 (0.12)	U (0.13)	U (0.12)	U (0.12)	0.074 J (0.12)	16 (1.2)
Pyrene	96000	2200	0.14 (0.12)	U (0.1)	0.15 (0.1)	0.043 J (0.12)	U (0.12)	U (0.11)	0.056 J (0.11)	0.3 (0.12)	0.032 J (0.13)	U (0.12)	U (0.12)	0.1 J (0.12)	6.7 (0.12)
<b>Metals</b>															
Lead	1000	450	303 (11.4)	5.1 (2.06)	65.3 (2.01)	349 (2.4)	9.94 (2.41)	4.36 (2.07)	3.58 (2.05)	140 (2.24)	85.6 (12.7)	8.24 (2.49)	4.21 (2.39)	52.6 (2.25)	68.5 (2.36)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-F13-C3 202-F13 202-F13-C3-COMP 4/8/2022	202-F13-C4 202-F13 202-F13-C4-COMP 4/8/2022	202-F13-CX 202-F13 202-F13-CX-COMP 4/8/2022	202-F14-C1 202-F14 202-F14-C1-COMP 4/6/2022	202-F14-C2 202-F14 202-F14-C2-COMP 4/6/2022	202-F14-C3 202-F14 202-F14-C3-COMP 4/6/2022	202-F14-CX 202-F14 202-F14-CX-COMP 4/6/2022	202-F15-C1 202-F15 202-F15-C1-COMP 3/18/2022	202-F15-C2 202-F15 202-F15-C2-COMP 3/18/2022	202-F15-C3 202-F15 202-F15-C3-COMP 3/18/2022	202-F15-C4 202-F15 202-F15-C4-COMP 3/18/2022	202-F15-CX 202-F15 202-F15-CX-COMP 3/18/2022	202-F16-C1 202-F16 202-F16-C1-COMP 3/16/2022
Field Sample ID	Value (0-2 ft bgs)	Value													
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	0.14 (0.12)	U (0.12)	0.074 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.32)	0.15 (0.1)	U (0.1)	U (0.1)	5.8 (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.039 J (0.11)	0.078 J (0.12)	U (0.12)	0.56 (0.12)	0.036 J (0.12)	U (0.12)	U (0.12)	0.098 J (0.32)	0.31 (0.1)	0.047 J (0.1)	U (0.1)	7.5 (0.58)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	0.08 J (0.16)	U (0.16)	0.55 (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.43)	0.28 (0.14)	0.044 J (0.14)	U (0.14)	6 (0.77)	U (0.16)
Benzo(b)fluoranthene	76	170	0.052 J (0.11)	0.094 J (0.12)	U (0.12)	0.67 (0.12)	0.039 J (0.12)	U (0.12)	U (0.12)	0.12 J (0.32)	0.32 (0.1)	0.051 J (0.1)	U (0.1)	7.8 (0.58)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.039 J (0.15)	0.075 J (0.16)	U (0.16)	0.27 (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.43)	0.15 (0.14)	U (0.14)	U (0.14)	3.8 (0.15)	U (0.16)
Chrysene	760	230	0.046 J (0.11)	0.089 J (0.12)	U (0.12)	0.54 (0.12)	0.034 J (0.12)	U (0.12)	U (0.12)	0.1 J (0.32)	0.29 (0.1)	0.045 J (0.1)	U (0.1)	6.4 (0.58)	U (0.12)
Fluorene	130000	3800	0.092 J (0.19)	0.84 (0.2)	0.12 J (0.2)	0.032 J (0.21)	0.048 J (0.2)	U (0.2)	U (0.2)	U (0.54)	0.082 J (0.18)	0.017 J (0.18)	U (0.17)	3.5 (0.19)	U (0.2)
Naphthalene	66	25	0.059 J (0.19)	0.87 (0.2)	0.74 (0.2)	U (0.21)	0.16 J (0.2)	U (0.2)	U (0.2)	U (0.54)	0.082 J (0.18)	U (0.18)	U (0.17)	1.2 (0.19)	U (0.2)
Phenanthrene	190000	10000	0.21 (0.11)	1.6 (0.12)	0.15 (0.12)	0.24 (0.12)	0.11 J (0.12)	U (0.12)	U (0.12)	0.069 J (0.32)	0.54 (0.1)	0.11 (0.1)	0.035 J (0.1)	18 (0.58)	U (0.12)
Pyrene	96000	2200	0.065 J (0.11)	0.18 (0.12)	U (0.12)	0.82 (0.12)	0.075 J (0.12)	U (0.12)	U (0.12)	0.14 J (0.32)	0.54 (0.1)	0.094 J (0.1)	0.027 J (0.1)	13 (0.58)	U (0.12)
<b>Metals</b>															
Lead	1000	450	31.3 (2.29)	10.5 (2.3)	6.1 (2.35)	259 (2.42)	99.2 (11.7)	9.54 J (11.6)	17.1 (11.6)	47 (2.16)	26.9 (2.08)	4.35 (2.1)	5.16 (2.05)	16.5 (2.24)	4.41 (2.36)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-F16-C2 202-F16 202-F16-C2-COMP 3/16/2022	202-F16-C3 202-F16 202-F16-C3-COMP 3/16/2022	202-F16-C4 202-F16 202-F16-C4-COMP 3/16/2022	202-F16-CX 202-F16 202-F16-CX-COMP 3/16/2022	202-F17-C1 202-F17 202-F17-C1-COMP 3/16/2022	202-F17-C2 202-F17 202-F17-C2-COMP 3/16/2022	202-F17-C3 202-F17 202-F17-C3-COMP 3/16/2022	202-F17-CX 202-F17 202-F17-CX-COMP 3/16/2022	202-G01-C1 202-G01 202-G01-C1-COMP 3/14/2022	202-G01-C2 202-G01 202-G01-C2-COMP 3/14/2022	202-G01-C3 202-G01 202-G01-C3-COMP 3/14/2022	202-G01-CX 202-G01 202-G01-CX-COMP 3/14/2022	202-G02-C1 202-G02 202-G02-C1-COMP 3/14/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.052 J (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.18)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	0.048 J (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.061 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.18)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	0.026 J (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.053 J (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.22)	U (0.19)	U (0.2)	U (0.18)	U (0.19)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.22)	U (0.19)	U (0.2)	U (0.18)	U (0.19)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.12 (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.11 J (0.12)
<b>Metals</b>															
Lead	1000	450	4.53 (2.38)	4.52 (2.37)	5.09 (2.44)	6.76 (2.39)	59.3 (2.27)	4.42 (2.32)	4.21 (2.35)	4.47 (2.65)	35.6 (11.2)	4.76 (2.33)	2.33 (2.15)	2.4 (2.29)	62.1 (11.6)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-G02-C2	202-G02-C3	202-G02-C4	202-G02-CX	202-G03-C1	202-G03-C2	202-G03-C3	202-G03-CX	202-G04-C1	202-G04-C2	202-G04-C3	202-G04-C4	202-G04-CX
Field Sample ID	Value (0-2 ft bgs)	Value	202-G02	202-G02	202-G02	202-G02	202-G03	202-G03	202-G03	202-G03	202-G04	202-G04	202-G04	202-G04	202-G04
Sample Date	(mg/kg)	(mg/kg)	202-G02-C2-COMP	202-G02-C3-COMP	202-G02-C4-COMP	202-G02-CX-COMP	202-G03-C1-COMP	202-G03-C2-COMP	202-G03-C3-COMP	202-G03-CX-COMP	202-G04-C1-COMP	202-G04-C2-COMP	202-G04-C3-COMP	202-G04-C4-COMP	202-G04-CX-COMP
			3/14/2022	3/14/2022	3/14/2022	3/14/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022	3/11/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	0.082 J (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.11)	U (0.12)
Benzo(a)pyrene	91	46	0.065 J (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.14)	U (0.17)	U (0.16)	U (0.14)	U (0.14)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	0.1 J (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.044 J (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	U (0.14)	U (0.17)	U (0.16)	U (0.14)	U (0.14)	U (0.15)	U (0.16)
Chrysene	760	230	0.088 J (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.11)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.18)	U (0.21)	U (0.2)	U (0.17)	U (0.18)	U (0.18)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.18)	U (0.21)	U (0.2)	U (0.17)	U (0.18)	U (0.18)	U (0.2)
Phenanthrene	190000	10000	0.13 (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.062 J (0.12)	U (0.1)	U (0.11)	0.022 J (0.11)	U (0.12)
Pyrene	96000	2200	0.13 (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.1)	U (0.11)	U (0.11)	U (0.12)
<b>Metals</b>															
Lead	1000	450	24.8 (11.3)	6.76 J (11.5)	17.8 (11.2)	7.91 J (12.2)	6.04 (2.35)	6.8 (4.8)	2.48 (2.14)	2.78 (2.39)	7.04 (4.8)	3.77 (2.03)	2.32 (2.17)	2.12 J (2.16)	6.26 (2.44)

- Notes:**
- 1 Concentrations are presented in mg/kg.
  - 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
  - 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**  
 PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-G05-C1	202-G05-C2	202-G05-C3	202-G05-C4	202-G05-CX	202-G06-C1	202-G06-C2	202-G06-C3	202-G06-CX	202-G07-C1	202-G07-C2	202-G07-C3	202-G07-CX
			202-G05	202-G05	202-G05	202-G05	202-G05	202-G06	202-G06	202-G06	202-G06	202-G07	202-G07	202-G07	202-G07
Field Sample ID	Value (0-2 ft bgs)	Value	202-G05-C1-COMP	202-G05-C2-COMP	202-G05-C3-COMP	202-G05-C4-COMP	202-G05-CX-COMP	202-G06-C1-COMP	202-G06-C2-COMP	202-G06-C3-COMP	202-G06-CX-COMP	202-G07-C1-COMP	202-G07-C2-COMP	202-G07-C3-COMP	202-G07-CX-COMP
Sample Date	(mg/kg)	(mg/kg)	3/15/2022	3/15/2022	3/15/2022	3/15/2022	3/15/2022	3/21/2022	3/21/2022	3/21/2022	3/21/2022	3/16/2022	3/16/2022	3/16/2022	3/16/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.13)	U (0.11)	U (0.12)	U (0.13)	U (0.1)	U (0.11)	7.2 J (7.9)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.13)	U (0.11)	U (0.12)	U (0.13)	U (0.1)	U (0.11)	18 (7.9)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Benzo(a)pyrene	91	46	U (0.17)	U (0.15)	U (0.16)	U (0.17)	U (0.14)	U (0.15)	22 (10)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.11)	U (0.12)	U (0.13)	U (0.1)	U (0.11)	27 (7.9)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.17)	U (0.15)	U (0.16)	U (0.17)	U (0.14)	U (0.15)	13 (10)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (0.15)
Chrysene	760	230	U (0.13)	U (0.11)	U (0.12)	U (0.13)	U (0.1)	U (0.11)	20 (7.9)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Fluorene	130000	3800	U (0.21)	U (0.18)	U (0.2)	U (0.21)	U (0.17)	U (0.18)	6.9 J (13)	U (0.2)	U (0.2)	U (0.19)	U (0.21)	U (0.18)	U (0.19)
Naphthalene	66	25	U (0.21)	U (0.18)	U (0.2)	U (0.21)	U (0.17)	U (0.18)	8.7 J (13)	U (0.2)	U (0.2)	U (0.19)	U (0.21)	U (0.18)	U (0.19)
Phenanthrene	190000	10000	U (0.13)	U (0.11)	U (0.12)	U (0.13)	U (0.1)	U (0.11)	46 (7.9)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
Pyrene	96000	2200	U (0.13)	U (0.11)	U (0.12)	U (0.13)	U (0.1)	U (0.11)	44 (7.9)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)
<b>Metals</b>															
Lead	1000	450	7.12 (2.47)	3.28 (2.2)	5.83 (4.84)	5.99 (5.04)	5.39 (2.09)	7.91 (4.44)	5.92 (5.06)	48.4 (4.66)	15.8 (4.58)	5.27 (2.3)	4.82 (2.54)	6.2 (2.18)	1.82 J (2.29)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	202-G08-C1 202-G08	202-G08-C2 202-G08	202-G08-C3 202-G08	202-G08-CX 202-G08	202-G09-C1 202-G09	202-G09-C2 202-G09	202-G09-C3 202-G09	202-G09-CX 202-G09	202-G10-C1 202-G10	202-G10-C2 202-G10	202-G10-CX 202-G10	202-H01-C1 202-H01	202-H01-C2 202-H01
Field Sample ID	Value (0-2 ft bgs)	Value	202-G08-C1-COMP 3/15/2022	202-G08-C2-COMP 3/15/2022	202-G08-C3-COMP 3/15/2022	202-G08-CX-COMP 3/15/2022	202-G09-C1-COMP 3/17/2022	202-G09-C2-COMP 3/17/2022	202-G09-C3-COMP 3/17/2022	202-G09-CX-COMP 3/17/2022	202-G10-C1-COMP 3/15/2022	202-G10-C2-COMP 3/15/2022	202-G10-CX-COMP 3/15/2022	202-H01-C1-COMP 4/11/2022	202-H01-C2-COMP 4/11/2022
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	0.034 J (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.17)	U (0.18)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.18)	U (0.16)	U (0.18)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.17)	U (0.18)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.18)	U (0.16)	U (0.18)	0.023 J (0.15)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	0.035 J (0.12)	U (0.12)
Fluorene	130000	3800	U (0.21)	U (0.21)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.23)	U (0.2)	U (0.22)	U (0.19)	U (0.2)
Naphthalene	66	25	U (0.21)	U (0.21)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.23)	U (0.2)	U (0.22)	0.044 J (0.19)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	0.15 (0.12)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.13)	0.082 J (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	16 (2.46)	8.66 (4.79)	6.87 (5.36)	5.5 (4.7)	47.1 (2.26)	5.69 (2.35)	4.87 (2.39)	4.64 (2.4)	9.88 (2.63)	6.69 (4.75)	5.57 (2.66)	2820 (2.27)	274 (2.29)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-H01-C3 202-H01	202-H01-C4 202-H01	202-H01-CX 202-H01	202-H02-C1 202-H02	202-H02-C2 202-H02	202-H02-C3 202-H02	202-H02-C4 202-H02	202-H02-CX 202-H02	202-H03-C1 202-H03	202-H03-C2 202-H03	202-H03-C3 202-H03	202-H03-CX 202-H03	202-H04-C1 202-H04
Field Sample ID	Value (mg/kg)	Value (mg/kg)	202-H01-C3-COMP 4/11/2022	202-H01-C4-COMP 4/11/2022	202-H01-CX-COMP 4/11/2022	202-H02-C1-COMP 4/14/2022	202-H02-C2-COMP 4/14/2022	202-H02-C3-COMP 4/14/2022	202-H02-C4-COMP 4/14/2022	202-H02-CX-COMP 4/14/2022	202-H03-C1-COMP 4/13/2022	202-H03-C2-COMP 4/13/2022	202-H03-C3-COMP 4/13/2022	202-H03-CX-COMP 4/13/2022	202-H04-C1-COMP 4/13/2022
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	0.36 (0.12)	0.057 J (0.12)	0.093 J (0.13)	U (0.11)	0.36 (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.11)	0.32 (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.15)	U (0.18)	U (0.16)	U (0.19)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.18)	U (0.14)	0.7 (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.11)	0.76 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.15)	U (0.18)	U (0.16)	U (0.19)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.18)	U (0.14)	0.65 (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.11)	0.38 (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	0.028 J (0.18)	U (0.22)	0.15 J (0.2)	U (0.24)	2.1 (0.2)	U (0.2)	1.2 (0.2)	0.31 (0.2)	0.45 (0.22)	0.18 (0.18)	U (0.19)
Naphthalene	66	25	0.11 J (0.2)	0.4 (0.2)	0.061 J (0.18)	0.32 (0.22)	0.55 (0.2)	6.8 (0.24)	3.6 (0.2)	1.1 (0.2)	4.1 (0.2)	1.1 (0.2)	2.1 (0.22)	0.32 (0.18)	0.51 (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.074 J (0.11)	0.65 (0.13)	0.25 (0.12)	1.2 (0.14)	4.3 (0.12)	1.4 (0.12)	2.1 (0.12)	0.43 (0.12)	0.66 (0.13)	0.22 (0.11)	1.2 (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.11)	0.033 J (0.13)	U (0.12)	0.087 J (0.14)	0.24 (0.12)	0.088 J (0.12)	0.16 (0.12)	0.025 J (0.12)	0.031 J (0.13)	U (0.11)	0.65 (0.12)
<b>Metals</b>															
Lead	1000	450	75.1 (2.33)	306 (2.35)	4.15 (2.15)	369 (2.64)	5.06 (2.42)	5.5 (2.69)	6.04 (2.33)	3.16 (2.4)	68.5 (2.35)	13.5 (2.3)	3.91 (2.67)	3.78 (2.13)	5.26 (2.29)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	202-H04-C2	202-H04-C3	202-H04-CX	202-H05-C1	202-H05-C2	202-H05-C3	202-H05-C4	202-H05-CX	202-H06-C1	202-H06-C2	202-H06-C3	202-H06-CX	202-H07-C1
	Direct Contact	Groundwater	202-H04	202-H04	202-H04	202-H05	202-H05	202-H05	202-H05	202-H05	202-H06	202-H06	202-H06	202-H06	202-H07
Field Sample ID	Value (0-2 ft bgs)	Value	202-H04-C2-COMP	202-H04-C3-COMP	202-H04-CX-COMP	202-H05-C1-COMP	202-H05-C2-COMP	202-H05-C3-COMP	202-H05-C4-COMP	202-H05-CX-COMP	202-H06-C1-COMP	202-H06-C2-COMP	202-H06-C3-COMP	202-H06-CX-COMP	202-H07-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	4/13/2022	4/13/2022	4/13/2022	4/11/2022	4/11/2022	4/11/2022	4/11/2022	4/11/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/22/2022
<b>PAHs</b>															
Anthracene	190000	350	0.18 (0.13)	0.49 (0.13)	0.8 (0.12)	0.36 (0.12)	U (0.12)	U (0.12)	0.073 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.13)	U (0.13)	U (0.12)	0.054 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.024 J (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.18)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.033 J (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.18)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.13)	0.024 J (0.13)	U (0.12)	0.048 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.025 J (0.12)	U (0.13)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.72 (0.22)	2.2 (0.21)	3.2 (0.19)	0.22 (0.2)	U (0.2)	U (0.2)	0.044 J (0.21)	U (0.2)	0.41 (0.2)	U (0.2)	0.03 J (0.22)	U (0.2)	U (0.19)
Naphthalene	66	25	1.2 (0.22)	4.7 (0.21)	1.3 (0.19)	0.19 J (0.2)	U (0.2)	U (0.2)	0.046 J (0.21)	U (0.2)	0.98 (0.2)	U (0.2)	U (0.22)	U (0.2)	U (0.19)
Phenanthrene	190000	10000	1.2 (0.13)	4.3 (0.13)	7.1 (0.12)	1.1 (0.12)	U (0.12)	U (0.12)	0.23 (0.12)	U (0.12)	0.37 (0.12)	U (0.12)	0.068 J (0.13)	0.026 J (0.12)	U (0.12)
Pyrene	96000	2200	0.15 (0.13)	0.42 (0.13)	0.48 (0.12)	0.38 (0.12)	U (0.12)	U (0.12)	0.064 J (0.12)	U (0.12)	U (0.12)	0.027 J (0.12)	U (0.13)	0.031 J (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	8.98 J (13.5)	7.8 (2.54)	4.06 (2.3)	11.2 (2.27)	5.88 (2.3)	5.81 (2.32)	5.81 (2.4)	6.69 (2.36)	7.27 (2.3)	91.4 (2.22)	10.5 (2.54)	11.5 (2.35)	5.63 (2.27)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-H07-C2	202-H07-C3	202-H07-CX	202-H08-C1	202-H08-C2	202-H08-C3	202-H08-C4	202-H08-CX	202-H09-C1	202-H09-C2	202-H09-C3	202-H09-C4	202-H09-CX
			202-H07	202-H07	202-H07	202-H08	202-H08	202-H08	202-H08	202-H08	202-H08	202-H09	202-H09	202-H09	202-H09
Field Sample ID	Value (0-2 ft bgs)	Value	202-H07-C2-COMP	202-H07-C3-COMP	202-H07-CX-COMP	202-H08-C1-COMP	202-H08-C2-COMP	202-H08-C3-COMP	202-H08-C4-COMP	202-H08-CX-COMP	202-H09-C1-COMP	202-H09-C2-COMP	202-H09-C3-COMP	202-H09-C4-COMP	202-H09-CX-COMP
Sample Date	(mg/kg)	(mg/kg)	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022	4/27/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.065 J (0.14)	U (0.13)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.14)	U (0.13)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.19)	U (0.17)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.14)	U (0.13)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.16)	U (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.19)	U (0.17)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.025 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.14)	U (0.13)
Fluorene	130000	3800	U (0.19)	U (0.2)	U (0.2)	U (0.18)	0.047 J (0.18)	U (0.2)	U (0.19)	U (0.19)	0.15 J (0.19)	U (0.2)	0.094 J (0.2)	0.55 (0.23)	0.094 J (0.22)
Naphthalene	66	25	U (0.19)	U (0.2)	U (0.2)	U (0.18)	0.031 J (0.18)	U (0.2)	U (0.19)	U (0.19)	0.25 (0.19)	0.083 J (0.2)	0.35 (0.2)	3 (0.23)	0.18 J (0.22)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.11 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.28 (0.11)	0.04 J (0.12)	0.23 (0.12)	1.4 (0.14)	0.29 (0.13)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.032 J (0.11)	U (0.12)	U (0.12)	U (0.12)	0.026 J (0.11)	U (0.12)	U (0.12)	0.041 J (0.14)	U (0.13)
<b>Metals</b>															
Lead	1000	450	15.6 (11.5)	10.4 J (11.7)	6.67 (2.41)	5.22 (2.14)	117 (10.8)	6.12 (2.45)	5.43 (2.26)	5.65 (2.33)	129 (2.18)	5.86 (2.37)	6.33 (2.37)	5.8 (2.79)	7.68 (2.5)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-H10-C1 202-H10 202-H10-C1-COMP 4/14/2022	202-H10-C2 202-H10 202-H10-C2-COMP 4/14/2022	202-H10-C3 202-H10 202-H10-C3-COMP 4/14/2022	202-H10-CX 202-H10 202-H10-CX-COMP 4/14/2022	202-H11-C1 202-H11 202-H11-C1-COMP 4/26/2022	202-H11-C2 202-H11 202-H11-C2-COMP 4/26/2022	202-H11-C3 202-H11 202-H11-C3-COMP 4/26/2022	202-H11-C4 202-H11 202-H11-C4-COMP 4/26/2022	202-H11-CX 202-H11 202-H11-CX-COMP 4/26/2022	202-I01-C1 202-I01 202-I01-C1-COMP 3/18/2022	202-I01-C2 202-I01 202-I01-C2-COMP 3/18/2022	202-I01-C3 202-I01 202-I01-C3-COMP 3/18/2022	202-I01-CX 202-I01 202-I01-CX-COMP 3/18/2022
<b>PAHs</b>															
Anthracene	190000	350	1.1 (0.12)	U (0.14)	U (0.1)	U (0.12)	U (0.11)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	1.7 (0.14)	U (0.12)	0.72 (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.14)	U (0.1)	U (0.12)	0.026 J (0.11)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	2.2 (0.14)	U (0.12)	0.76 (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.18)	U (0.14)	U (0.16)	U (0.15)	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.15)	1.9 (0.18)	U (0.15)	0.69 (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.14)	U (0.1)	U (0.12)	U (0.11)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	2.3 (0.14)	U (0.12)	0.79 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.18)	U (0.14)	U (0.16)	U (0.15)	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.15)	0.92 (0.18)	U (0.15)	0.33 (0.16)
Chrysene	760	230	0.026 J (0.12)	U (0.14)	U (0.1)	U (0.12)	0.021 J (0.11)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	2 (0.14)	U (0.12)	0.73 (0.12)
Fluorene	130000	3800	3.5 (0.2)	U (0.23)	U (0.17)	U (0.2)	U (0.19)	U (0.19)	0.021 J (0.21)	0.021 J (0.21)	0.053 J (0.2)	U (0.19)	0.99 (0.23)	U (0.19)	0.33 (0.2)
Naphthalene	66	25	4.4 (0.2)	0.69 (0.23)	0.57 (0.17)	7.8 (0.2)	U (0.19)	0.09 J (0.19)	5.6 (0.21)	8.2 (0.21)	2.1 (0.2)	U (0.19)	0.42 (0.23)	U (0.19)	0.1 J (0.2)
Phenanthrene	190000	10000	7.8 (0.12)	0.66 (0.14)	0.56 (0.1)	6.3 (0.12)	0.023 J (0.11)	U (0.11)	U (0.13)	0.025 J (0.12)	0.068 J (0.12)	U (0.11)	5.7 (0.14)	U (0.12)	1.9 (0.12)
Pyrene	96000	2200	0.78 (0.12)	0.065 J (0.14)	U (0.1)	0.57 (0.12)	0.032 J (0.11)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.11)	4.4 (0.14)	U (0.12)	1.4 (0.12)
<b>Metals</b>															
Lead	1000	450	457 (11.8)	16.2 (2.78)	4.6 (2.06)	8.42 (2.35)	10.1 (2.17)	41.8 (2.23)	6.37 (2.54)	6.19 (2.42)	8.42 (2.45)	12.5 (2.23)	215 (2.63)	4.14 (2.23)	6.49 J (11.8)

- Notes:**
- 1 Concentrations are presented in mg/kg.
  - 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
  - 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
  - 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
  - 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
  - 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**  
 PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	202-I02-C1	202-I02-C2	202-I02-C3	202-I02-C4	202-I02-CX	202-I03-C1	202-I03-C2	202-I03-CX	202-I04-C1	202-I04-C2	202-I04-C3	202-I04-CX	202-I05-C1
Cell	Direct Contact Numeric	Groundwater Numeric	202-I02	202-I02	202-I02	202-I02	202-I02	202-I03	202-I03	202-I03	202-I04	202-I04	202-I04	202-I04	202-I05
Field Sample ID	Value (0-2 ft bgs)	Value	202-I02-C1-COMP	202-I02-C2-COMP	202-I02-C3-COMP	202-I02-C4-COMP	202-I02-CX-COMP	202-I03-C1-COMP	202-I03-C2-COMP	202-I03-CX-COMP	202-I04-C1-COMP	202-I04-C2-COMP	202-I04-C3-COMP	202-I04-CX-COMP	202-I05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	4/25/2022	4/25/2022	4/25/2022	4/25/2022	4/25/2022	3/17/2022	3/17/2022	3/17/2022	4/22/2022	4/22/2022	4/22/2022	4/22/2022	3/21/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.043 J (0.11)	U (0.13)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.17)	U (0.17)	U (0.16)	U (0.17)	U (0.15)	U (0.17)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.042 J (0.11)	U (0.13)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	U (0.17)	U (0.17)	U (0.16)	U (0.17)	0.025 J (0.15)	U (0.17)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.04 J (0.11)	U (0.13)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.21)	U (0.21)	U (0.2)	U (0.2)	U (0.19)	U (0.21)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	U (0.21)	U (0.21)	U (0.2)	U (0.2)	U (0.19)	U (0.21)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.03 J (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.076 J (0.11)	U (0.13)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.029 J (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.077 J (0.11)	U (0.13)
<b>Metals</b>															
Lead	1000	450	5.86 (2.46)	6.9 (2.38)	4.56 (2.36)	5.95 (2.36)	6.42 (2.39)	24.6 (2.43)	19.2 (2.27)	6.54 (2.51)	5.23 (2.46)	5.64 (2.39)	4.68 (2.44)	5.74 (2.19)	6.38 (4.87)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-105-C2 202-105 202-105-C2-COMP 3/21/2022	202-105-C3 202-105 202-105-C3-COMP 3/21/2022	202-105-CX 202-105 202-105-CX-COMP 3/21/2022	202-106-C1 202-106 202-106-C1-COMP 3/17/2022	202-106-C2 202-106 202-106-C2-COMP 3/17/2022	202-106-C3 202-106 202-106-C3-COMP 3/17/2022	202-106-C4 202-106 202-106-C4-COMP 3/17/2022	202-106-CX 202-106 202-106-CX-COMP 3/17/2022	202-107-C1 202-107 202-107-C1-COMP 4/25/2022	202-107-C2 202-107 202-107-C2-COMP 4/25/2022	202-107-C3 202-107 202-107-C3-COMP 4/25/2022	202-107-CX 202-107 202-107-CX-COMP 4/25/2022	202-108-C1 202-108 202-108-C1-COMP 3/21/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.17)	U (0.16)	U (0.15)	U (0.17)	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.17)	U (0.16)	U (0.15)	U (0.17)	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.21)	U (0.2)	U (0.18)	U (0.22)	U (0.19)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.2)	U (0.21)	U (0.2)	U (0.18)	U (0.22)	U (0.19)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	5.75 (2.31)	22.3 (2.47)	15.3 (4.63)	6.08 (2.19)	7 (2.47)	3.69 (2.25)	6.42 (2.6)	7 (2.27)	3.8 (2.34)	5.91 (2.33)	7.13 (2.3)	4.2 (2.48)	4 (2.36)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) Sample Date	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	202-I08-C2	202-I08-CX	202-J01-C1	202-J01-C2	202-J01-C3	202-J01-C4	202-J01-CX	202-J02-C1	202-J02-C2	202-J02-C3	202-J02-C4	202-J02-CX	202-J03-C1
			202-I08	202-I08	202-J01	202-J01	202-J01	202-J01	202-J01	202-J01	202-J02	202-J02	202-J02	202-J02	202-J02
Field Sample ID			202-I08-C2-COMP 3/21/2022	202-I08-CX-COMP 3/21/2022	202-J01-C1-COMP 4/26/2022	202-J01-C2-COMP 4/26/2022	202-J01-C3-COMP 4/26/2022	202-J01-C4-COMP 4/26/2022	202-J01-CX-COMP 4/26/2022	202-J02-C1-COMP 4/21/2022	202-J02-C2-COMP 4/21/2022	202-J02-C3-COMP 4/21/2022	202-J02-C4-COMP 4/21/2022	202-J02-CX-COMP 4/21/2022	202-J03-C1-COMP 4/21/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.11)	0.056 J (0.11)	U (0.13)	U (0.11)	0.065 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.13)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.027 J (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.14)	U (0.14)	U (0.14)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.18)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.13)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.14)	U (0.14)	U (0.14)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.18)	0.03 J (0.15)
Chrysene	760	230	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.13)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.027 J (0.11)
Fluorene	130000	3800	U (0.2)	U (0.18)	0.049 J (0.18)	1.5 (0.18)	0.21 (0.21)	0.27 (0.19)	1.3 (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.22)	U (0.19)
Naphthalene	66	25	U (0.2)	U (0.18)	1.5 (0.18)	4.4 (0.18)	2.7 (0.21)	1.4 (0.19)	3.1 (0.2)	0.14 J (0.19)	1.7 (0.2)	0.38 (0.2)	1.4 (0.2)	2.3 (0.22)	0.17 J (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.11)	0.056 J (0.11)	2.8 (0.11)	0.34 (0.13)	0.45 (0.11)	2.6 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.06 J (0.11)
Pyrene	96000	2200	U (0.12)	U (0.11)	U (0.11)	0.23 (0.11)	U (0.13)	0.026 J (0.11)	0.23 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.048 J (0.11)
<b>Metals</b>															
Lead	1000	450	9.49 (2.29)	31.5 (2.07)	6.42 (2.16)	5.56 (2.14)	6.76 (2.54)	6.43 (2.16)	6.59 (2.3)	7.31 (2.29)	247 (2.31)	28.5 (12)	5.8 (2.3)	5.36 (2.56)	72.8 (11.1)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) Sample Date	Non-Residential Soil to Groundwater Numeric Value (mg/kg)	202-J03-C2	202-J03-CX	202-J04-C1	202-J04-C2	202-J04-C3	202-J04-C4	202-J04-CX	202-J05-C1	202-J05-C2	202-J05-CX	202-J06-C1	202-J06-C2	202-J06-C3
			202-J03	202-J03	202-J04	202-J04	202-J04	202-J04	202-J04	202-J04	202-J05	202-J05	202-J05	202-J06	202-J06
Field Sample ID			202-J03-C2-COMP 4/21/2022	202-J03-CX-COMP 4/21/2022	202-J04-C1-COMP 4/26/2022	202-J04-C2-COMP 4/26/2022	202-J04-C3-COMP 4/26/2022	202-J04-C4-COMP 4/26/2022	202-J04-CX-COMP 4/26/2022	202-J05-C1-COMP 4/25/2022	202-J05-C2-COMP 4/25/2022	202-J05-CX-COMP 4/25/2022	202-J06-C1-COMP 4/20/2022	202-J06-C2-COMP 4/20/2022	202-J06-C3-COMP 4/20/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.13)	U (0.13)	U (0.12)	1.3 (1.1)	0.084 J (0.11)	5.3 J (5.9)	28 (1.2)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.13)	U (0.13)	U (0.12)	U (1.1)	U (0.11)	U (5.9)	89 (5.8)	U (0.12)	U (0.12)	0.067 J (0.12)	0.027 J (0.12)	0.068 J (0.12)	0.059 J (0.11)
Benzo(a)pyrene	91	46	U (0.18)	U (0.17)	U (0.15)	U (1.5)	U (0.15)	U (7.8)	100 (7.7)	U (0.16)	U (0.15)	0.052 J (0.16)	U (0.16)	0.061 J (0.16)	0.064 J (0.15)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.13)	U (0.12)	U (1.1)	U (0.11)	U (5.9)	120 (5.8)	U (0.12)	U (0.12)	0.06 J (0.12)	U (0.12)	0.08 J (0.12)	0.075 J (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.18)	U (0.17)	U (0.15)	U (1.5)	U (0.15)	U (7.8)	40 (1.5)	U (0.16)	U (0.15)	0.026 J (0.16)	0.039 J (0.16)	0.046 J (0.16)	0.041 J (0.15)
Chrysene	760	230	U (0.13)	U (0.13)	U (0.12)	U (1.1)	U (0.11)	U (5.9)	61 (1.2)	U (0.12)	U (0.12)	0.051 J (0.12)	0.036 J (0.12)	0.075 J (0.12)	0.06 J (0.11)
Fluorene	130000	3800	0.058 J (0.22)	0.12 J (0.21)	0.44 (0.19)	5.2 (1.9)	2.1 (0.18)	59 (9.8)	23 (1.9)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.19)	U (0.19)
Naphthalene	66	25	8 (0.22)	3 (0.21)	0.79 (0.19)	1.3 J (1.9)	3.3 (0.18)	9.2 J (9.8)	3.5 (1.9)	U (0.2)	U (0.19)	U (0.2)	0.038 J (0.2)	U (0.19)	U (0.19)
Phenanthrene	190000	10000	0.078 J (0.13)	0.15 (0.13)	0.92 (0.12)	10 (1.1)	3.9 (0.11)	120 (5.9)	140 (5.8)	U (0.12)	U (0.12)	0.13 (0.12)	0.09 J (0.12)	0.076 J (0.12)	0.038 J (0.11)
Pyrene	96000	2200	U (0.13)	U (0.13)	0.064 J (0.12)	2 (1.1)	0.29 (0.11)	9.6 (5.9)	150 (5.8)	U (0.12)	U (0.12)	0.11 J (0.12)	0.063 J (0.12)	0.12 (0.12)	0.07 J (0.11)
<b>Metals</b>															
Lead	1000	450	8.14 (2.58)	6.91 (2.49)	8.35 (2.27)	6.44 (2.24)	8.9 (2.24)	173 (2.37)	37 (2.32)	11.2 J (12)	1960 (2.3)	2730 (2.4)	226 (2.28)	21.7 (2.32)	7.23 (2.26)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-J06-CX 202-J06 4/20/2022	202-J07-C1 202-J07 4/26/2022	202-J07-C2 202-J07 4/26/2022	202-J07-C3 202-J07 4/26/2022	202-J07-CX 202-J07 4/26/2022	202-J08-C1 202-J08 4/25/2022	202-J08-C2 202-J08 4/25/2022	202-J08-C3 202-J08 4/25/2022	202-J08-CX 202-J08 4/25/2022	202-J09-C1 202-J09 4/20/2022	202-J09-C2 202-J09 4/20/2022	202-J09-C3 202-J09 4/20/2022	202-J09-C4 202-J09 4/20/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.044 J (0.12)	0.055 J (0.12)	U (0.12)	U (0.11)	0.041 J (0.11)	0.038 J (0.11)	0.1 J (0.11)
Benzo(a)anthracene	130	340	0.062 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.06 J (0.13)	U (0.12)	U (0.12)	U (0.12)	0.048 J (0.11)	0.074 J (0.11)	0.14 (0.11)	0.17 (0.11)
Benzo(a)pyrene	91	46	0.06 J (0.16)	U (0.17)	U (0.16)	U (0.17)	U (0.16)	U (0.18)	U (0.16)	U (0.17)	U (0.16)	0.048 J (0.15)	0.078 J (0.15)	0.14 J (0.15)	0.13 J (0.15)
Benzo(b)fluoranthene	76	170	0.079 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.06 J (0.13)	U (0.12)	U (0.12)	U (0.12)	0.056 J (0.11)	0.066 J (0.11)	0.15 (0.11)	0.14 (0.11)
Benzo(g,h,i)perylene	190000	180	0.05 J (0.16)	U (0.17)	U (0.16)	U (0.17)	U (0.16)	0.03 J (0.18)	U (0.16)	U (0.17)	U (0.16)	0.038 J (0.15)	0.1 J (0.15)	0.13 J (0.15)	0.071 J (0.15)
Chrysene	760	230	0.074 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.051 J (0.13)	U (0.12)	U (0.12)	U (0.12)	0.049 J (0.11)	0.09 J (0.11)	0.14 (0.11)	0.17 (0.11)
Fluorene	130000	3800	U (0.2)	U (0.21)	U (0.2)	U (0.21)	U (0.2)	U (0.22)	0.17 J (0.2)	0.3 (0.21)	0.36 (0.2)	U (0.19)	0.027 J (0.19)	U (0.19)	0.044 J (0.19)
Naphthalene	66	25	U (0.2)	U (0.21)	U (0.2)	U (0.21)	U (0.2)	U (0.22)	0.028 J (0.2)	0.2 J (0.21)	U (0.2)	U (0.19)	0.026 J (0.19)	0.025 J (0.19)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.053 J (0.13)	0.53 (0.12)	0.7 (0.12)	0.42 (0.12)	0.045 J (0.11)	0.1 J (0.11)	0.16 (0.11)	0.38 (0.11)
Pyrene	96000	2200	0.097 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.083 J (0.13)	0.025 J (0.12)	0.029 J (0.12)	0.023 J (0.12)	0.063 J (0.11)	0.12 (0.11)	0.2 (0.11)	0.27 (0.11)
<b>Metals</b>															
Lead	1000	450	9.99 (2.34)	23.2 (2.38)	7.32 (2.39)	5.88 (2.54)	8.31 (2.28)	76.1 (12.6)	18 (2.39)	7.65 (2.45)	5.89 (2.44)	9.52 (2.24)	132 (11.1)	49.8 (11.2)	55 (2.21)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	202-J09-CX 202-J09	301-A01-C1 301-A01	301-AA01-C1 301-AA01	301-AA01-C2 301-AA01	301-AA01-C3 301-AA01	301-AA01-C4 301-AA01	301-AA06-C1 301-AA06	301-AA06-C2 301-AA06	301-AA06-C3 301-AA06	301-AA07-C1 301-AA07	301-AA07-C2 301-AA07	301-AA07-C3 301-AA07	301-AA08-C1 301-AA08	
Field Sample ID	Value (mg/kg)	Value (mg/kg)	202-J09-CX-COMP 4/20/2022	301-A01-C1-COMP 5/17/2022	301-AA01-C1-COMP 6/10/2022	301-AA01-C2-COMP 6/10/2022	301-AA01-C3-COMP 6/10/2022	301-AA01-C4-COMP 6/10/2022	301-AA06-C1-COMP 5/31/2022	301-AA06-C2-COMP 5/31/2022	301-AA06-C3-COMP 5/31/2022	301-AA07-C1-COMP 5/31/2022	301-AA07-C2-COMP 5/31/2022	301-AA07-C3-COMP 5/31/2022	301-AA08-C1-COMP 5/25/2022	
Sample Date	(mg/kg)	(mg/kg)														
<b>PAHs</b>																
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.53)	U (0.11)	U (0.11)	U (0.12)	0.052 J (0.13)	U (0.12)	0.1 J (0.11)	0.22 (0.12)	0.042 J (0.12)	U (0.12)	0.36 (0.12)	
Benzo(a)anthracene	130	340	0.039 J (0.12)	U (0.12)	U (0.53)	U (0.11)	0.021 J (0.11)	U (0.12)	0.028 J (0.13)	U (0.12)	0.035 J (0.11)	0.028 J (0.12)	0.094 J (0.12)	0.024 J (0.12)	0.1 J (0.12)	
Benzo(a)pyrene	91	46	U (0.15)	U (0.16)	U (0.7)	U (0.15)	U (0.14)	U (0.15)	U (0.17)	U (0.16)	U (0.15)	U (0.15)	0.094 J (0.15)	U (0.16)	U (0.16)	
Benzo(b)fluoranthene	76	170	0.035 J (0.12)	U (0.12)	U (0.53)	U (0.11)	U (0.11)	U (0.12)	U (0.13)	U (0.12)	U (0.11)	U (0.12)	0.1 J (0.12)	U (0.12)	0.056 J (0.12)	
Benzo(g,h,i)perylene	190000	180	0.064 J (0.15)	U (0.16)	U (0.7)	U (0.15)	U (0.14)	U (0.15)	U (0.17)	U (0.16)	U (0.15)	U (0.15)	0.059 J (0.15)	U (0.16)	0.026 J (0.16)	
Chrysene	760	230	0.044 J (0.12)	U (0.12)	U (0.53)	U (0.11)	U (0.11)	U (0.12)	0.035 J (0.13)	U (0.12)	0.047 J (0.11)	0.037 J (0.12)	0.11 J (0.12)	0.056 J (0.12)	0.2 (0.12)	
Fluorene	130000	3800	U (0.19)	U (0.2)	U (0.88)	U (0.18)	U (0.18)	U (0.19)	0.15 J (0.21)	U (0.2)	0.28 (0.19)	0.52 (0.19)	0.086 J (0.19)	0.13 J (0.2)	1.4 (0.2)	
Naphthalene	66	25	0.05 J (0.19)	U (0.2)	0.26 J (0.88)	U (0.18)	0.088 J (0.18)	0.063 J (0.19)	0.22 (0.21)	U (0.2)	0.32 (0.19)	0.053 J (0.19)	0.13 J (0.19)	0.27 (0.2)	0.36 (0.2)	
Phenanthrene	190000	10000	0.083 J (0.12)	U (0.12)	U (0.53)	U (0.11)	U (0.11)	U (0.12)	0.24 (0.13)	0.039 J (0.12)	0.88 (0.11)	1.3 (0.12)	0.27 (0.12)	0.25 (0.12)	3.3 (0.12)	
Pyrene	96000	2200	0.058 J (0.12)	U (0.12)	U (0.53)	U (0.11)	0.023 J (0.11)	U (0.12)	0.075 J (0.13)	0.027 J (0.12)	0.12 (0.11)	0.28 (0.12)	0.16 (0.12)	0.042 J (0.12)	0.51 (0.12)	
<b>Metals</b>																
Lead	1000	450	827 (2.26)	9.85 (2.33)	25.2 (2.04)	6.6 (2.18)	2.29 (2.13)	2.35 (2.3)	73.8 (2.44)	79.7 (2.27)	7.58 (4.57)	6.93 (2.32)	16.4 (2.25)	12.5 (4.79)	9.28 (2.44)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AA08-C2	301-AA08-C3	301-AA09-C1	301-AA09-C2	301-AA09-C3	301-AA09-C4	301-AA09-C5	301-AB02-C1	301-AB02-C2	301-AB02-C3	301-AB02-C4	301-AB03-C1	301-AB03-C2
			301-AA08	301-AA08	301-AA09	301-AA09	301-AA09	301-AA09	301-AA09	301-AA09	301-AB02	301-AB02	301-AB02	301-AB02	301-AB03
Field Sample ID	Value (0-2 ft bgs)	Value	301-AA08-C2-COMP	301-AA08-C3-COMP	301-AA09-C1-COMP	301-AA09-C2-COMP	301-AA09-C3-COMP	301-AA09-C4-COMP	301-AA09-C5-COMP	301-AB02-C1-COMP	301-AB02-C2-COMP	301-AB02-C3-COMP	301-AB02-C4-COMP	301-AB03-C1-COMP	301-AB03-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	5/25/2022	5/25/2022	6/24/2022	6/24/2022	6/24/2022	6/24/2022	6/24/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.11)	0.35 (0.11)	0.15 (0.13)	1.2 (0.12)	0.96 (0.13)	0.8 (0.12)	U (0.32)	U (0.1)	U (0.11)	U (0.11)	0.22 (0.11)	0.15 (0.11)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	1.5 (0.11)	0.48 (0.13)	2.4 (0.12)	2.2 (0.13)	3.9 (0.12)	U (0.32)	U (0.1)	U (0.11)	U (0.11)	0.4 (0.11)	0.21 (0.11)
Benzo(a)pyrene	91	46	U (0.14)	U (0.14)	2.1 (0.15)	0.56 (0.18)	2.4 (0.17)	2.5 (0.18)	4.4 (0.16)	U (0.43)	U (0.13)	U (0.15)	U (0.14)	0.36 (0.15)	0.2 (0.15)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	2.1 (0.11)	0.58 (0.13)	3 (0.12)	2.9 (0.13)	4.9 (0.12)	0.093 J (0.32)	U (0.1)	U (0.11)	U (0.11)	0.41 (0.11)	0.24 (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.14)	0.66 (0.15)	0.43 (0.18)	1.4 (0.17)	1.3 (0.18)	2.4 (0.16)	0.082 J (0.43)	0.022 J (0.13)	U (0.15)	U (0.14)	0.17 (0.15)	0.13 J (0.15)
Chrysene	760	230	U (0.11)	U (0.11)	1.4 (0.11)	0.48 (0.13)	2.4 (0.12)	2.2 (0.13)	3.6 (0.12)	0.17 J (0.32)	0.044 J (0.1)	U (0.11)	U (0.11)	0.37 (0.11)	0.21 (0.11)
Fluorene	130000	3800	U (0.18)	U (0.18)	0.32 (0.18)	0.094 J (0.22)	0.75 (0.21)	0.55 (0.22)	0.38 (0.2)	U (0.54)	0.022 J (0.17)	U (0.18)	U (0.18)	0.12 J (0.19)	0.095 J (0.19)
Naphthalene	66	25	U (0.18)	U (0.18)	1.5 (0.18)	0.78 (0.22)	0.83 (0.21)	2.3 (0.22)	1.3 (0.2)	U (0.54)	0.054 J (0.17)	U (0.18)	U (0.18)	0.23 (0.19)	0.39 (0.19)
Phenanthrene	190000	10000	U (0.11)	U (0.11)	1.1 (0.11)	0.48 (0.13)	4.3 (0.12)	2.9 (0.13)	2.2 (0.12)	U (0.32)	0.043 J (0.1)	U (0.11)	U (0.11)	0.86 (0.11)	0.49 (0.11)
Pyrene	96000	2200	U (0.11)	U (0.11)	2.1 (0.11)	0.68 (0.13)	4.5 (0.12)	3.6 (0.13)	4.2 (0.12)	0.065 J (0.32)	0.024 J (0.1)	U (0.11)	U (0.11)	0.7 (0.11)	0.7 (0.11)
<b>Metals</b>															
Lead	1000	450	5.11 (4.14)	4.65 (2.16)	147 (4.35)	1410 (2.53)	148 (5.01)	312 (5.27)	117 (2.35)	4.14 (2.12)	1.13 J (1.99)	3.7 (2.16)	1.69 J (2.08)	432 (2.15)	70 (2.25)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	301-AB03-C3	301-AB03-C4	301-AB03-C5	301-AB04-C1	301-AB04-C2	301-AB04-C3	301-AB04-C4	301-AB06-C1	301-AB06-C2	301-AB06-C3	301-AB06-C4	301-AB06-C5	301-AB07-C1
	Direct Contact	Groundwater	301-AB03	301-AB03	301-AB03	301-AB04	301-AB04	301-AB04	301-AB04	301-AB06	301-AB06	301-AB06	301-AB06	301-AB06	301-AB07
Field Sample ID	Value (0-2 ft bgs)	Value	301-AB03-C3-COMP	301-AB03-C4-COMP	301-AB03-C5-COMP	301-AB04-C1-COMP	301-AB04-C2-COMP	301-AB04-C3-COMP	301-AB04-C4-COMP	301-AB06-C1-COMP	301-AB06-C2-COMP	301-AB06-C3-COMP	301-AB06-C4-COMP	301-AB06-C5-COMP	301-AB07-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	6/13/2022	6/13/2022	6/13/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/2/2022	6/2/2022	6/2/2022	6/2/2022	6/2/2022	5/26/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	2.8 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	0.087 J (0.12)	0.12 (0.12)	2.5 (0.12)	0.1 J (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.056 J (0.11)
Benzo(a)pyrene	91	46	0.13 J (0.16)	0.17 (0.16)	2.5 (0.15)	0.13 J (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.14)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	0.063 J (0.15)
Benzo(b)fluoranthene	76	170	0.11 J (0.12)	0.16 (0.12)	2.2 (0.12)	0.15 (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.073 J (0.11)
Benzo(g,h,i)perylene	190000	180	0.12 J (0.16)	0.14 J (0.16)	1.3 (0.15)	0.086 J (0.16)	U (0.16)	U (0.15)	U (0.15)	U (0.14)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	0.035 J (0.15)
Chrysene	760	230	0.1 J (0.12)	0.14 (0.12)	2.4 (0.12)	0.1 J (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.056 J (0.11)
Fluorene	130000	3800	U (0.2)	U (0.2)	1.5 (0.19)	U (0.2)	U (0.2)	U (0.19)	U (0.18)	U (0.18)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)
Naphthalene	66	25	0.045 J (0.2)	0.047 J (0.2)	1.4 (0.19)	0.027 J (0.2)	U (0.2)	U (0.19)	U (0.18)	U (0.18)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)
Phenanthrene	190000	10000	0.05 J (0.12)	0.096 J (0.12)	9 (0.58)	0.085 J (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.053 J (0.11)
Pyrene	96000	2200	0.089 J (0.12)	0.15 (0.12)	4.4 (0.12)	0.17 (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.088 J (0.11)
<b>Metals</b>															
Lead	1000	450	44.2 (11.6)	190 (11.7)	181 (2.28)	9.49 (2.42)	6.56 (4.64)	5.56 (2.28)	7.82 (2.15)	64.1 (2.08)	28.7 (2.29)	11.8 (2.26)	4.55 (2.4)	5.41 (2.32)	7.61 (4.35)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-AB07-C2	301-AB07-C3	301-AB08-C1	301-AB08-C2	301-AB08-C3	301-AB08-C4	301-AB09-C1	301-AC04-C1	301-AC04-C2	301-AC04-C3	301-AC04-C4	301-AC04-C5	301-AC05-C1
			301-AB07	301-AB07	301-AB08	301-AB08	301-AB08	301-AB08	301-AB09	301-AC04	301-AC04	301-AC04	301-AC04	301-AC04	301-AC04
Field Sample ID	Value (0-2 ft bgs)	Value	301-AB07-C2-COMP	301-AB07-C3-COMP	301-AB08-C1-COMP	301-AB08-C2-COMP	301-AB08-C3-COMP	301-AB08-C4-COMP	301-AB09-C1-COMP	301-AC04-C1-COMP	301-AC04-C2-COMP	301-AC04-C3-COMP	301-AC04-C4-COMP	301-AC04-C5-COMP	301-AC05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	5/26/2022	5/26/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	6/1/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/14/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.1)	U (0.12)	U (0.11)	U (0.11)	U (0.1)	0.18 (0.13)	U (0.51)	U (1.5)	1.4 (0.12)	0.16 (0.13)	0.16 (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.11)	U (0.1)	U (0.12)	0.075 J (0.11)	0.038 J (0.11)	0.036 J (0.1)	0.54 (0.13)	U (0.51)	U (1.5)	4.4 (0.12)	0.63 (0.13)	0.45 (0.11)	U (0.11)
Benzo(a)pyrene	91	46	U (0.15)	U (0.14)	U (0.16)	0.099 J (0.14)	U (0.14)	U (0.14)	0.59 (0.18)	U (0.68)	U (2)	4.8 (0.16)	0.57 (0.18)	0.37 (0.15)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.1)	U (0.12)	0.11 (0.11)	0.044 J (0.11)	0.041 J (0.1)	0.61 (0.13)	U (0.51)	U (1.5)	5.8 (0.12)	0.69 (0.13)	0.46 (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.14)	U (0.16)	0.069 J (0.14)	0.028 J (0.14)	0.021 J (0.14)	0.36 (0.18)	U (0.68)	U (2)	2.6 (0.16)	0.28 (0.18)	0.17 (0.15)	U (0.15)
Chrysene	760	230	U (0.11)	U (0.1)	U (0.12)	0.074 J (0.11)	0.05 J (0.11)	0.035 J (0.1)	0.51 (0.13)	U (0.51)	U (1.5)	3.9 (0.12)	0.59 (0.13)	0.44 (0.11)	U (0.11)
Fluorene	130000	3800	U (0.19)	U (0.18)	U (0.2)	U (0.18)	U (0.18)	U (0.18)	0.066 J (0.22)	0.25 J (0.84)	0.47 J (2.6)	0.89 (0.2)	0.17 J (0.22)	0.46 (0.19)	U (0.19)
Naphthalene	66	25	U (0.19)	U (0.18)	U (0.2)	U (0.18)	U (0.18)	U (0.18)	0.041 J (0.22)	1.3 (0.84)	U (2.6)	0.18 J (0.2)	0.13 J (0.22)	0.27 (0.19)	U (0.19)
Phenanthrene	190000	10000	U (0.11)	U (0.1)	U (0.12)	0.071 J (0.11)	0.049 J (0.11)	0.041 J (0.1)	0.78 (0.13)	0.15 J (0.51)	0.58 J (1.5)	3.3 (0.12)	0.76 (0.13)	1.1 (0.11)	U (0.11)
Pyrene	96000	2200	U (0.11)	U (0.1)	0.02 J (0.12)	0.084 J (0.11)	0.056 J (0.11)	0.053 J (0.1)	0.82 (0.13)	U (0.51)	U (1.5)	7.5 (0.12)	0.87 (0.13)	0.61 (0.11)	U (0.11)
<b>Metals</b>															
Lead	1000	450	4.32 (2.22)	1.61 J (2.04)	8.24 (2.36)	26.6 (2.07)	21.5 (2.07)	55.4 (2.04)	80.2 (2.56)	63.3 (1.94)	62.9 (10)	9.48 (2.31)	81.4 (2.67)	5.79 (2.23)	2.85 (2.22)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-AC05-C2	301-AC05-C3	301-AC05-C4	301-AC05-C5	301-AC06-C1	301-AC06-C2	301-AC06-C3	301-AC06-C4	301-AC06-C5	301-AC07-C1	301-AC07-C2	301-AC07-C3	301-AC07-C4
			301-AC05	301-AC05	301-AC05	301-AC05	301-AC06	301-AC06	301-AC06	301-AC06	301-AC06	301-AC06	301-AC07	301-AC07	301-AC07
Field Sample ID	Value (0-2 ft bgs)	Value	301-AC05-C2-COMP	301-AC05-C3-COMP	301-AC05-C4-COMP	301-AC05-C5-COMP	301-AC06-C1-COMP	301-AC06-C2-COMP	301-AC06-C3-COMP	301-AC06-C4-COMP	301-AC06-C5-COMP	301-AC07-C1-COMP	301-AC07-C2-COMP	301-AC07-C3-COMP	301-AC07-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	6/14/2022	6/14/2022	6/14/2022	6/14/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	5/27/2022	6/1/2022	6/1/2022	6/1/2022	6/1/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.34)	U (0.31)	U (0.1)	0.037 J (0.11)	U (0.11)	U (0.12)	U (0.14)	U (0.12)	0.04 J (0.11)	U (0.12)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	0.051 J (0.12)	U (0.34)	U (0.31)	U (0.1)	0.084 J (0.11)	U (0.11)	0.078 J (0.12)	U (0.14)	U (0.12)	0.13 (0.11)	U (0.12)	0.059 J (0.11)	0.1 J (0.11)
Benzo(a)pyrene	91	46	0.06 J (0.16)	U (0.46)	U (0.41)	U (0.14)	0.065 J (0.15)	U (0.15)	0.06 J (0.16)	U (0.18)	U (0.16)	0.15 (0.15)	U (0.16)	0.071 J (0.15)	0.11 J (0.15)
Benzo(b)fluoranthene	76	170	0.064 J (0.12)	U (0.34)	U (0.31)	U (0.1)	0.082 J (0.11)	U (0.11)	0.079 J (0.12)	U (0.14)	U (0.12)	0.19 (0.11)	U (0.12)	0.076 J (0.11)	0.13 (0.11)
Benzo(g,h,i)perylene	190000	180	0.029 J (0.16)	U (0.46)	U (0.41)	U (0.14)	0.036 J (0.15)	U (0.15)	0.031 J (0.16)	U (0.18)	U (0.16)	0.11 J (0.15)	U (0.16)	0.044 J (0.15)	0.07 J (0.15)
Chrysene	760	230	0.048 J (0.12)	U (0.34)	U (0.31)	U (0.1)	0.074 J (0.11)	U (0.11)	0.068 J (0.12)	U (0.14)	U (0.12)	0.15 (0.11)	U (0.12)	0.065 J (0.11)	0.14 (0.11)
Fluorene	130000	3800	U (0.2)	U (0.58)	U (0.51)	U (0.18)	U (0.19)	U (0.19)	U (0.2)	U (0.23)	U (0.2)	0.018 J (0.19)	U (0.19)	U (0.18)	U (0.19)
Naphthalene	66	25	U (0.2)	U (0.58)	U (0.51)	U (0.18)	U (0.19)	U (0.19)	U (0.2)	U (0.23)	U (0.2)	0.032 J (0.19)	U (0.19)	U (0.18)	0.026 J (0.19)
Phenanthrene	190000	10000	0.046 J (0.12)	U (0.34)	U (0.31)	U (0.1)	0.15 (0.11)	U (0.11)	0.14 (0.12)	U (0.14)	U (0.12)	0.16 (0.11)	U (0.12)	0.057 J (0.11)	0.089 J (0.11)
Pyrene	96000	2200	0.09 J (0.12)	U (0.34)	U (0.31)	U (0.1)	0.14 (0.11)	U (0.11)	0.13 (0.12)	U (0.14)	U (0.12)	0.21 (0.11)	0.024 J (0.12)	0.08 J (0.11)	0.16 (0.11)
<b>Metals</b>															
Lead	1000	450	6.26 (2.25)	3.63 (2.24)	4.89 (2.08)	3.97 (2.05)	70.4 (2.23)	8.37 (2.22)	8.68 (2.35)	7.35 (2.67)	7.07 (2.42)	58.6 (2.21)	69.6 (2.21)	12 (2.22)	8.64 (2.23)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-AC07-C5	301-AC08-C1	301-AC08-C2	301-AC08-C3	301-AC08-C4	301-AC08-C5	301-AC09-C1	301-AC09-C2	301-AC09-C3	301-B01-C1	301-C01-C1	301-C02-C1	301-C02-C2
			301-AC07	301-AC08	301-AC08	301-AC08	301-AC08	301-AC08	301-AC08	301-AC09	301-AC09	301-AC09	301-B01	301-C01	301-C02
Field Sample ID	Value (0-2 ft bgs)	Value	301-AC07-C5-COMP	301-AC08-C1-COMP	301-AC08-C2-COMP	301-AC08-C3-COMP	301-AC08-C4-COMP	301-AC08-C5-COMP	301-AC09-C1-COMP	301-AC09-C2-COMP	301-AC09-C3-COMP	301-B01-C1-COMP	301-C01-C1-COMP	301-C02-C1-COMP	301-C02-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	6/1/2022	6/3/2022	6/3/2022	6/3/2022	6/3/2022	6/3/2022	6/9/2022	6/9/2022	6/9/2022	5/17/2022	5/17/2022	6/3/2022	6/3/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	0.11 (0.11)	U (0.12)	0.056 J (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.19 J (0.59)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.058 J (0.12)	0.33 (0.11)	0.18 (0.12)	0.24 (0.12)	0.091 J (0.12)	0.11 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.59)	0.14 (0.12)	U (0.12)
Benzo(a)pyrene	91	46	0.063 J (0.15)	0.42 (0.15)	0.24 (0.16)	0.32 (0.16)	0.1 J (0.16)	0.13 J (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.78)	0.14 J (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	0.076 J (0.12)	0.43 (0.11)	0.26 (0.12)	0.35 (0.12)	0.11 J (0.12)	0.13 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.23 J (0.59)	0.17 (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.034 J (0.15)	0.26 (0.15)	0.11 J (0.16)	0.18 (0.16)	0.059 J (0.16)	0.067 J (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.78)	0.091 J (0.16)	U (0.16)
Chrysene	760	230	0.075 J (0.12)	0.31 (0.11)	0.17 (0.12)	0.22 (0.12)	0.096 J (0.12)	0.11 (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.18 J (0.59)	0.15 (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	0.03 J (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	0.035 J (0.19)	0.83 J (0.98)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	0.21 (0.19)	2.2 (0.98)	U (0.2)	0.44 (0.2)
Phenanthrene	190000	10000	0.048 J (0.12)	0.48 (0.11)	0.15 (0.12)	0.18 (0.12)	0.045 J (0.12)	0.1 J (0.11)	U (0.12)	U (0.12)	U (0.12)	0.048 J (0.12)	1.1 (0.59)	0.11 J (0.12)	U (0.12)
Pyrene	96000	2200	0.091 J (0.12)	0.49 (0.11)	0.18 (0.12)	0.28 (0.12)	0.1 J (0.12)	0.16 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.022 J (0.12)	0.25 J (0.59)	0.19 (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	12.8 (2.32)	16.4 (2.19)	93.9 (11.6)	53.3 (11.7)	7.97 J (11.9)	39.1 (2.22)	9.19 (2.36)	6.46 (2.4)	7.06 (2.27)	11.9 (2.27)	65.5 (2.29)	91.8 (11.7)	14 (12.2)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-D01-C1 301-D01 301-D01-C1-COMP 6/6/2022	301-D01-C2 301-D01 301-D01-C2-COMP 6/6/2022	301-D01-C3 301-D01 301-D01-C3-COMP 6/6/2022	301-D01-C4 301-D01 301-D01-C4-COMP 6/6/2022	301-E01-C1 301-E01 301-E01-C1-COMP 5/17/2022	301-E02-C1 301-E02 301-E02-C1-COMP 6/7/2022	301-E02-C2 301-E02 301-E02-C2-COMP 6/7/2022	301-E02-C3 301-E02 301-E02-C3-COMP 6/7/2022	301-E02-C4 301-E02 301-E02-C4-COMP 6/7/2022	301-E02-C5 301-E02 301-E02-C5-COMP 6/7/2022	301-E03-C1 301-E03 301-E03-C1-COMP 6/6/2022	301-F01-C1 301-F01 301-F01-C1-COMP 5/18/2022	301-F01-C2 301-F01 301-F01-C2-COMP 5/18/2022
<b>PAHs</b>															
Anthracene	190000	350	0.16 (0.11)	0.1 J (0.12)	U (0.11)	0.19 (0.11)	0.05 J (0.12)	0.26 (0.12)	U (0.12)	U (0.12)	0.1 J (0.12)	U (0.12)	0.28 (0.12)	0.69 (0.12)	0.55 (0.11)
Benzo(a)anthracene	130	340	0.24 (0.11)	0.17 (0.12)	0.1 J (0.11)	0.15 (0.11)	0.081 J (0.12)	0.044 J (0.12)	U (0.12)	0.033 J (0.12)	0.026 J (0.12)	0.039 J (0.12)	0.39 (0.12)	2.2 (0.12)	0.5 (0.11)
Benzo(a)pyrene	91	46	0.21 (0.15)	0.14 J (0.16)	0.13 J (0.14)	0.15 (0.15)	0.066 J (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	0.063 J (0.16)	0.35 (0.16)	2.6 (0.16)	0.4 (0.15)
Benzo(b)fluoranthene	76	170	0.22 (0.11)	0.15 (0.12)	0.14 (0.11)	0.15 (0.11)	0.08 J (0.12)	0.045 J (0.12)	U (0.12)	0.048 J (0.12)	0.039 J (0.12)	0.072 J (0.12)	0.38 (0.12)	3 (0.12)	0.46 (0.11)
Benzo(g,h,i)perylene	190000	180	0.16 (0.15)	0.067 J (0.16)	0.063 J (0.14)	0.11 J (0.15)	0.03 J (0.16)	U (0.16)	U (0.16)	0.028 J (0.16)	0.032 J (0.15)	0.052 J (0.16)	0.17 (0.16)	1.3 (0.16)	0.17 (0.15)
Chrysene	760	230	0.23 (0.11)	0.16 (0.12)	0.098 J (0.11)	0.15 (0.11)	0.072 J (0.12)	0.11 J (0.12)	U (0.12)	0.035 J (0.12)	0.031 J (0.12)	0.044 J (0.12)	0.36 (0.12)	2.1 (0.12)	0.41 (0.11)
Fluorene	130000	3800	0.25 (0.19)	0.06 J (0.2)	0.051 J (0.18)	0.59 (0.18)	0.043 J (0.2)	1.1 (0.19)	U (0.2)	U (0.19)	0.38 (0.19)	U (0.2)	0.33 (0.2)	0.34 (0.2)	0.51 (0.19)
Naphthalene	66	25	0.92 (0.19)	0.15 J (0.2)	0.67 (0.18)	0.75 (0.18)	0.034 J (0.2)	0.88 (0.19)	0.073 J (0.2)	0.66 (0.19)	0.27 (0.19)	0.097 J (0.2)	0.083 J (0.2)	0.55 (0.2)	1 (0.19)
Phenanthrene	190000	10000	0.73 (0.11)	0.35 (0.12)	0.084 J (0.11)	1.1 (0.11)	0.13 (0.12)	1.8 (0.12)	0.028 J (0.12)	0.045 J (0.12)	0.52 (0.12)	0.043 J (0.12)	1.3 (0.12)	2.7 (0.12)	2.2 (0.11)
Pyrene	96000	2200	0.53 (0.11)	0.26 (0.12)	0.12 (0.11)	0.31 (0.11)	0.15 (0.12)	0.34 (0.12)	0.023 J (0.12)	0.054 J (0.12)	0.086 J (0.12)	0.052 J (0.12)	0.8 (0.12)	4.1 (0.12)	1.1 (0.11)
<b>Metals</b>															
Lead	1000	450	68.6 (2.25)	27 (2.34)	14.6 (2.14)	102 (4.42)	15.8 (2.4)	9.01 (2.3)	26.4 (2.26)	33.1 (11.1)	29.5 (2.26)	58.2 (2.35)	77.4 (2.37)	212 (2.38)	26.7 (2.16)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-F01-C3	301-F01-C4	301-F01-C5	301-F02-C1	301-F02-C2	301-G01-C1	301-G01-C2	301-G02-C1	301-G02-C2	301-G02-C3	301-G02-C4	301-G03-C1	301-G03-C2
			301-F01	301-F01	301-F01	301-F02	301-F02	301-G01	301-G01	301-G02	301-G02	301-G02	301-G02	301-G03	301-G03
Field Sample ID	Value (0-2 ft bgs)	Value	301-F01-C3-COMP	301-F01-C4-COMP	301-F01-C5-COMP	301-F02-C1-COMP	301-F02-C2-COMP	301-G01-C1-COMP	301-G01-C2-COMP	301-G02-C1-COMP	301-G02-C2-COMP	301-G02-C3-COMP	301-G02-C4-COMP	301-G03-C1-COMP	301-G03-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	5/18/2022	5/18/2022	5/18/2022	6/6/2022	6/6/2022	5/18/2022	5/18/2022	5/19/2022	5/19/2022	5/19/2022	5/19/2022	5/20/2022	5/20/2022
<b>PAHs</b>															
Anthracene	190000	350	0.073 J (0.12)	0.28 (0.12)	U (0.12)	0.12 (0.12)	0.087 J (0.12)	U (0.12)	1.1 (0.12)	0.35 (0.14)	U (0.12)	U (0.12)	U (0.12)	13 (1.2)	U (0.12)
Benzo(a)anthracene	130	340	0.048 J (0.12)	0.3 (0.12)	U (0.12)	0.093 J (0.12)	0.039 J (0.12)	0.024 J (0.12)	3.3 (0.12)	0.85 (0.14)	U (0.12)	0.022 J (0.12)	U (0.12)	28 (1.2)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	0.19 (0.16)	U (0.16)	0.094 J (0.15)	U (0.16)	U (0.16)	3.5 (0.16)	0.77 (0.18)	U (0.15)	U (0.16)	U (0.15)	34 (1.6)	U (0.16)
Benzo(b)fluoranthene	76	170	0.034 J (0.12)	0.22 (0.12)	U (0.12)	0.1 J (0.12)	0.055 J (0.12)	U (0.12)	3.9 (0.12)	0.89 (0.14)	U (0.12)	U (0.12)	U (0.12)	40 (1.2)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.064 J (0.16)	U (0.16)	0.058 J (0.15)	0.034 J (0.16)	U (0.16)	1.8 (0.16)	0.41 (0.18)	U (0.15)	U (0.16)	U (0.15)	16 (1.6)	U (0.16)
Chrysene	760	230	0.036 J (0.12)	0.24 (0.12)	U (0.12)	0.094 J (0.12)	0.036 J (0.12)	U (0.12)	3.2 (0.12)	0.86 (0.14)	U (0.12)	0.021 J (0.12)	U (0.12)	26 (1.2)	0.047 J (0.12)
Fluorene	130000	3800	0.1 J (0.2)	0.28 (0.2)	U (0.2)	0.37 (0.19)	0.38 (0.2)	U (0.2)	0.92 (0.2)	0.19 J (0.23)	U (0.19)	0.087 J (0.2)	U (0.19)	10 (2.1)	0.029 J (0.2)
Naphthalene	66	25	0.45 (0.2)	0.1 J (0.2)	U (0.2)	0.21 (0.19)	0.15 J (0.2)	0.21 (0.2)	1.1 (0.2)	2.7 (0.23)	0.025 J (0.19)	6 (0.2)	0.33 (0.19)	16 (2.1)	1.3 (0.2)
Phenanthrene	190000	10000	0.31 (0.12)	1.1 (0.12)	U (0.12)	0.64 (0.12)	0.53 (0.12)	0.05 J (0.12)	5.1 (0.12)	1.5 (0.14)	U (0.12)	0.2 (0.12)	U (0.12)	51 (1.2)	0.075 J (0.12)
Pyrene	96000	2200	0.12 (0.12)	0.71 (0.12)	U (0.12)	0.19 (0.12)	0.082 J (0.12)	0.042 J (0.12)	5.6 (0.12)	1.4 (0.14)	0.019 J (0.12)	0.05 J (0.12)	U (0.12)	55 (1.2)	0.029 J (0.12)
<b>Metals</b>															
Lead	1000	450	8.89 (2.34)	8.05 (2.29)	7.02 (2.36)	116 (2.32)	599 (2.33)	96.1 (2.39)	7.58 (2.37)	9.92 (2.73)	24.9 (2.23)	6.58 (2.32)	12.4 (2.27)	322 (2.4)	15.2 (2.32)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-G03-C3	301-G04-C1	301-H01-C1	301-H01-C2	301-H02-C1	301-H02-C2	301-H02-C3	301-H02-C4	301-H03-C1	301-H03-C2	301-H03-C3	301-I01-C1	301-I01-C2
			301-G03	301-G04	301-H01	301-H01	301-H02	301-H02	301-H02	301-H02	301-H02	301-H03	301-H03	301-H03	301-I01
Field Sample ID	Value (0-2 ft bgs)	Value	301-G03-C3-COMP	301-G04-C1-COMP	301-H01-C1-COMP	301-H01-C2-COMP	301-H02-C1-COMP	301-H02-C2-COMP	301-H02-C3-COMP	301-H02-C4-COMP	301-H03-C1-COMP	301-H03-C2-COMP	301-H03-C3-COMP	301-I01-C1-COMP	301-I01-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	5/20/2022	6/2/2022	5/19/2022	5/19/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/20/2022	5/20/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.12)	0.13 (0.12)	0.056 J (0.12)	U (0.12)	U (0.12)	0.087 J (0.12)	U (0.13)	U (0.11)	U (0.12)	0.072 J (0.12)	U (0.13)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.12)	0.052 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.049 J (0.11)	U (0.12)	0.038 J (0.12)	0.025 J (0.13)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	0.068 J (0.15)	U (0.16)	U (0.16)	U (0.17)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.12)	0.043 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.074 J (0.11)	U (0.12)	U (0.12)	U (0.13)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.17)	0.029 J (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	0.05 J (0.15)	U (0.16)	U (0.16)	U (0.17)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.12)	0.054 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	0.049 J (0.11)	U (0.12)	0.028 J (0.12)	U (0.13)	U (0.12)
Fluorene	130000	3800	0.069 J (0.19)	0.17 J (0.21)	0.45 (0.2)	0.21 (0.2)	0.023 J (0.2)	U (0.2)	0.39 (0.2)	0.025 J (0.21)	U (0.19)	0.032 J (0.2)	0.32 (0.2)	0.026 J (0.21)	U (0.2)
Naphthalene	66	25	1.2 (0.19)	0.063 J (0.21)	2.6 (0.2)	1.7 (0.2)	U (0.2)	U (0.2)	2.6 (0.2)	0.22 (0.21)	0.42 (0.19)	0.14 J (0.2)	49 (2)	0.085 J (0.21)	0.13 J (0.2)
Phenanthrene	190000	10000	0.11 (0.11)	0.19 (0.12)	1 (0.12)	0.47 (0.12)	0.044 J (0.12)	U (0.12)	0.57 (0.12)	0.045 J (0.13)	0.046 J (0.11)	0.05 J (0.12)	0.39 (0.12)	0.053 J (0.13)	U (0.12)
Pyrene	96000	2200	0.027 J (0.11)	0.042 J (0.12)	0.12 (0.12)	0.034 J (0.12)	0.022 J (0.12)	U (0.12)	0.037 J (0.12)	U (0.13)	0.063 J (0.11)	U (0.12)	0.12 (0.12)	0.028 J (0.13)	U (0.12)
<b>Metals</b>															
Lead	1000	450	7.65 (2.2)	38.2 (2.4)	348 (2.33)	519 (2.42)	7.7 (2.39)	6.54 (2.31)	15.6 (2.42)	6.28 (2.5)	34.5 (2.26)	6.86 (2.53)	5.08 (2.42)	259 (2.53)	18 (2.39)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-I01-C3 301-I01 301-I01-C3-COMP 5/20/2022	301-I02-C1 301-I02 301-I02-C1-COMP 5/24/2022	301-I02-C2 301-I02 301-I02-C2-COMP 5/24/2022	301-I02-C3 301-I02 301-I02-C3-COMP 5/24/2022	301-I02-C4 301-I02 301-I02-C4-COMP 5/24/2022	301-I02-C5 301-I02 301-I02-C5-COMP 5/24/2022	301-I03-C1 301-I03 301-I03-C1-COMP 6/2/2022	301-J01-C1 301-J01 301-J01-C1-COMP 6/3/2022	301-J01-C2 301-J01 301-J01-C2-COMP 6/3/2022	301-J01-C3 301-J01 301-J01-C3-COMP 6/3/2022	301-J01-C4 301-J01 301-J01-C4-COMP 6/3/2022	301-J02-C1 301-J02 301-J02-C1-COMP 5/25/2022	301-J02-C2 301-J02 301-J02-C2-COMP 5/25/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	0.14 (0.12)	U (0.12)	0.087 J (0.12)	0.17 (0.12)	0.15 (0.12)	1.1 (0.12)	0.2 (0.12)	0.1 J (0.11)	U (0.13)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	0.025 J (0.12)	0.091 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.65 (0.12)	2.9 (0.12)	0.082 J (0.12)	0.079 J (0.11)	0.032 J (0.13)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.15)	0.073 J (0.16)	U (0.17)	U (0.16)	U (0.16)	0.69 (0.16)	3 (0.17)	U (0.16)	0.064 J (0.14)	U (0.17)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	0.039 J (0.12)	0.078 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.82 (0.12)	3.6 (0.12)	0.074 J (0.12)	0.081 J (0.11)	U (0.13)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.027 J (0.15)	0.035 J (0.16)	U (0.17)	U (0.16)	U (0.16)	0.4 (0.16)	1.8 (0.17)	U (0.16)	0.036 J (0.14)	U (0.17)	U (0.16)	U (0.15)
Chrysene	760	230	U (0.12)	0.026 J (0.12)	0.079 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.62 (0.12)	2.8 (0.12)	0.098 J (0.12)	0.079 J (0.11)	0.025 J (0.13)	U (0.12)	U (0.11)
Fluorene	130000	3800	0.14 J (0.2)	0.02 J (0.19)	0.32 (0.2)	0.063 J (0.21)	0.33 (0.2)	0.73 (0.21)	0.055 J (0.19)	0.91 (0.21)	0.36 (0.2)	0.76 (0.18)	0.16 J (0.21)	U (0.2)	U (0.19)
Naphthalene	66	25	0.65 (0.2)	0.25 (0.19)	2.8 (0.2)	0.85 (0.21)	0.32 (0.2)	2.6 (0.21)	0.047 J (0.19)	0.38 (0.21)	0.28 (0.2)	5.9 (0.18)	0.58 (0.21)	0.49 (0.2)	U (0.19)
Phenanthrene	190000	10000	0.24 (0.12)	0.047 J (0.12)	0.77 (0.12)	0.12 (0.12)	0.6 (0.12)	1.3 (0.12)	0.33 (0.12)	2.9 (0.12)	0.81 (0.12)	0.63 (0.11)	0.16 (0.13)	0.027 J (0.12)	U (0.11)
Pyrene	96000	2200	0.03 J (0.12)	0.032 J (0.12)	0.27 (0.12)	0.022 J (0.12)	0.028 J (0.12)	0.064 J (0.12)	0.9 (0.12)	4.5 (0.12)	0.26 (0.12)	0.18 (0.11)	0.063 J (0.13)	U (0.12)	U (0.11)
<b>Metals</b>															
Lead	1000	450	12.7 (2.38)	43.8 (2.27)	7.9 (2.41)	12.1 (2.54)	9.47 (2.3)	6.65 (2.48)	388 (2.19)	137 (2.43)	8.13 (2.43)	5.88 (2.12)	20 (2.46)	19 (4.67)	7.46 (4.42)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-J02-C3 301-J02 301-J02-C3-COMP 5/25/2022	301-J02-C4 301-J02 301-J02-C4-COMP 5/25/2022	301-K01-C1 301-K01 301-K01-C1-COMP 5/25/2022	301-K01-C2 301-K01 301-K01-C2-COMP 5/25/2022	301-K01-C3 301-K01 301-K01-C3-COMP 5/25/2022	301-K01-C4 301-K01 301-K01-C4-COMP 5/25/2022	301-K02-C1 301-K02 301-K02-C1-COMP 5/26/2022	301-K02-C2 301-K02 301-K02-C2-COMP 5/26/2022	301-K02-C3 301-K02 301-K02-C3-COMP 5/26/2022	301-L02-C1 301-L02 301-L02-C1-COMP 5/27/2022	301-L02-C2 301-L02 301-L02-C2-COMP 5/27/2022	301-L02-C3 301-L02 301-L02-C3-COMP 5/27/2022	301-L02-C4 301-L02 301-L02-C4-COMP 5/27/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.13)	0.037 J (0.11)	U (0.12)	U (0.12)	U (0.6)	U (0.12)	U (0.12)	U (0.59)	U (0.11)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.13)	0.043 J (0.11)	U (0.12)	U (0.12)	U (0.6)	U (0.12)	U (0.12)	U (0.59)	0.078 J (0.11)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.18)	0.049 J (0.15)	U (0.16)	U (0.16)	U (0.79)	U (0.16)	U (0.17)	U (0.79)	0.078 J (0.15)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.13)	0.036 J (0.11)	U (0.12)	U (0.12)	U (0.6)	U (0.12)	U (0.12)	U (0.59)	0.093 J (0.11)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.18)	0.048 J (0.15)	U (0.16)	U (0.16)	U (0.79)	U (0.16)	U (0.17)	U (0.79)	0.082 J (0.15)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.13)	0.06 J (0.11)	U (0.12)	U (0.12)	U (0.6)	U (0.12)	U (0.12)	U (0.59)	0.091 J (0.11)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.092 J (0.18)	0.055 J (0.22)	U (0.19)	0.11 J (0.2)	0.089 J (0.19)	0.96 J (0.99)	0.094 J (0.2)	U (0.21)	2 (0.99)	U (0.19)	0.037 J (0.2)	0.023 J (0.2)	U (0.2)
Naphthalene	66	25	0.44 (0.18)	0.45 (0.22)	0.17 J (0.19)	0.037 J (0.2)	0.045 J (0.19)	20 (0.99)	0.098 J (0.2)	U (0.21)	4.4 (0.99)	0.079 J (0.19)	0.025 J (0.2)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	0.067 J (0.11)	0.06 J (0.13)	0.17 (0.11)	0.17 (0.12)	0.2 (0.12)	0.78 (0.6)	0.069 J (0.12)	U (0.12)	1 (0.59)	0.068 J (0.11)	0.042 J (0.12)	0.027 J (0.12)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.13)	0.12 (0.11)	U (0.12)	0.037 J (0.12)	U (0.6)	U (0.12)	U (0.12)	U (0.59)	0.076 J (0.11)	U (0.12)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	7.42 (2.09)	9.57 (5.17)	230 (2.2)	15.5 (4.49)	4.77 (2.29)	24.5 (2.37)	16.9 (2.36)	10.5 (4.8)	5.98 (2.33)	209 (2.25)	24.1 (11.8)	12.5 (2.36)	6.82 (2.27)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-L03-C1 301-L03 301-L03-C1-COMP 5/27/2022	301-L03-C2 301-L03 301-L03-C2-COMP 5/27/2022	301-L03-C3 301-L03 301-L03-C3-COMP 5/27/2022	301-M02-C1 301-M02 301-M02-C1-COMP 5/31/2022	301-M02-C2 301-M02 301-M02-C2-COMP 5/31/2022	301-M02-C3 301-M02 301-M02-C3-COMP 5/31/2022	301-M02-C4 301-M02 301-M02-C4-COMP 5/31/2022	301-M03-C1 301-M03 301-M03-C1-COMP 5/31/2022	301-M03-C2 301-M03 301-M03-C2-COMP 5/31/2022	301-M04-C1 301-M04 301-M04-C1-COMP 6/2/2022	301-N02-C1 301-N02 301-N02-C1-COMP 6/1/2022	301-N02-C2 301-N02 301-N02-C2-COMP 6/1/2022	301-N02-C3 301-N02 301-N02-C3-COMP 6/1/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.12)	0.061 J (0.12)	0.048 J (0.11)	0.051 J (0.12)	U (0.11)	U (0.11)	U (0.12)	0.89 J (1.3)	0.1 J (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.12)	U (0.12)	0.039 J (0.12)	0.025 J (0.11)	0.023 J (0.12)	U (0.11)	0.046 J (0.11)	U (0.12)	1.1 J (1.3)	0.046 J (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.14)	0.075 J (0.14)	U (0.16)	1.2 J (1.7)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.12)	U (0.12)	0.057 J (0.12)	U (0.11)	U (0.12)	U (0.11)	0.062 J (0.11)	U (0.12)	1.1 J (1.3)	0.054 J (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.16)	U (0.16)	0.051 J (0.16)	U (0.15)	U (0.16)	U (0.14)	0.061 J (0.14)	U (0.16)	0.97 J (1.7)	0.03 J (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.12)	U (0.12)	0.13 (0.12)	0.026 J (0.11)	0.021 J (0.12)	U (0.11)	0.057 J (0.11)	U (0.12)	2 (1.3)	0.077 J (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.047 J (0.19)	U (0.2)	U (0.2)	0.17 J (0.2)	0.16 J (0.19)	0.09 J (0.2)	U (0.18)	U (0.18)	U (0.2)	1 J (2.1)	0.14 J (0.2)	U (0.2)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.2)	U (0.2)	0.7 (0.2)	0.17 J (0.19)	0.089 J (0.2)	U (0.18)	U (0.18)	U (0.2)	2.2 (2.1)	0.052 J (0.2)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	0.044 J (0.11)	U (0.12)	U (0.12)	0.28 (0.12)	0.27 (0.11)	0.16 (0.12)	U (0.11)	U (0.11)	U (0.12)	2.4 (1.3)	0.66 (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.12)	U (0.12)	0.13 (0.12)	0.085 J (0.11)	0.06 J (0.12)	U (0.11)	0.021 J (0.11)	0.022 J (0.12)	3.2 (1.3)	0.22 (0.12)	U (0.12)	U (0.12)
<b>Metals</b>															
Lead	1000	450	14.1 (2.26)	7.72 (2.31)	5.08 (2.44)	130 (2.38)	10.2 (2.24)	6.73 (2.29)	7.73 (2.2)	299 (2.08)	10.5 (4.77)	15.4 (4.96)	18.1 (2.32)	9.29 (2.34)	7.33 (2.37)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-N02-C4 301-N02 301-N02-C4-COMP 6/1/2022	301-N03-C1 301-N03 301-N03-C1-COMP 6/1/2022	301-O02-C1 301-O02 301-O02-C1-COMP 6/1/2022	301-O02-C2 301-O02 301-O02-C2-COMP 6/1/2022	301-O02-C3 301-O02 301-O02-C3-COMP 6/1/2022	301-P02-C1 301-P02 301-P02-C1-COMP 6/2/2022	301-P02-C2 301-P02 301-P02-C2-COMP 6/2/2022	301-P02-C3 301-P02 301-P02-C3-COMP 6/2/2022	301-P02-C4 301-P02 301-P02-C4-COMP 6/2/2022	301-P02-C5 301-P02 301-P02-C5-COMP 6/2/2022	301-Q02-C1 301-Q02 301-Q02-C1-COMP 5/19/2022	301-Q02-C2 301-Q02 301-Q02-C2-COMP 5/19/2022	301-Q02-C3 301-Q02 301-Q02-C3-COMP 5/19/2022	
<b>PAHs</b>																
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.11)	0.075 J (0.11)	0.084 J (0.12)	0.12 (0.11)	0.28 (0.12)	0.2 (0.12)	0.41 (0.12)	0.069 J (0.11)	0.12 (0.12)	U (0.11)	U (0.1)	
Benzo(a)anthracene	130	340	0.022 J (0.12)	0.093 J (0.12)	0.069 J (0.11)	0.088 J (0.11)	0.095 J (0.12)	0.24 (0.11)	0.29 (0.12)	0.074 J (0.12)	0.16 (0.12)	U (0.11)	2.2 (0.12)	0.066 J (0.11)	U (0.1)	
Benzo(a)pyrene	91	46	U (0.16)	0.12 J (0.16)	0.084 J (0.14)	0.058 J (0.14)	0.072 J (0.16)	0.4 (0.15)	0.37 (0.16)	0.065 J (0.15)	0.16 (0.15)	U (0.15)	6.3 (0.16)	0.066 J (0.15)	U (0.14)	
Benzo(b)fluoranthene	76	170	U (0.12)	0.13 (0.12)	0.11 (0.11)	0.077 J (0.11)	0.088 J (0.12)	0.26 (0.11)	0.37 (0.12)	0.081 J (0.12)	0.19 (0.12)	U (0.11)	6.2 (0.12)	0.083 J (0.11)	U (0.1)	
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.084 J (0.16)	0.072 J (0.14)	0.028 J (0.14)	0.033 J (0.16)	0.33 (0.15)	0.22 (0.16)	0.062 J (0.15)	0.14 J (0.15)	U (0.15)	9.4 (0.82)	0.082 J (0.15)	U (0.14)	
Chrysene	760	230	U (0.12)	0.095 J (0.12)	0.11 (0.11)	0.081 J (0.11)	0.085 J (0.12)	0.32 (0.11)	0.28 (0.12)	0.1 J (0.12)	0.2 (0.12)	U (0.11)	6.5 (0.12)	0.15 (0.11)	U (0.1)	
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.18)	0.23 (0.18)	0.18 J (0.2)	0.49 (0.19)	1.3 (0.2)	0.91 (0.19)	1.7 (0.19)	0.23 (0.19)	0.13 J (0.21)	U (0.18)	U (0.17)	
Naphthalene	66	25	U (0.2)	0.16 J (0.2)	1.3 (0.18)	0.13 J (0.18)	0.13 J (0.2)	4.2 (0.19)	0.61 (0.2)	0.62 (0.19)	2 (0.19)	0.19 (0.19)	0.4 (0.21)	0.059 J (0.18)	U (0.17)	
Phenanthrene	190000	10000	0.034 J (0.12)	0.086 J (0.12)	0.076 J (0.11)	0.42 (0.11)	0.43 (0.12)	0.7 (0.11)	1.8 (0.12)	1.2 (0.12)	2.5 (0.12)	0.098 J (0.11)	1.4 (0.12)	0.12 (0.11)	U (0.1)	
Pyrene	96000	2200	0.025 J (0.12)	0.099 J (0.12)	0.1 J (0.11)	0.2 (0.11)	0.22 (0.12)	0.34 (0.11)	0.43 (0.12)	0.26 (0.12)	0.54 (0.12)	0.074 J (0.11)	4.6 (0.12)	0.13 (0.11)	U (0.1)	
<b>Metals</b>																
Lead	1000	450	16.1 (11.4)	150 (2.29)	26 (2.02)	8.53 (2.1)	23.8 (11.8)	39.3 (4.29)	37.3 (2.39)	62.8 (2.27)	109 (2.2)	8.13 (4.43)	7.06 (2.42)	74 (2.18)	2.05 (2.04)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	301-Q03-C1	301-Q03-C2	301-Q04-C1	301-R02-C1	301-R02-C2	301-R02-C3	301-R02-C4	301-R03-C1	301-R03-C2	301-S02-C1	301-S02-C2	301-S02-C3	301-S02-C4
			301-Q03	301-Q03	301-Q04	301-R02	301-R02	301-R02	301-R02	301-R03	301-R03	301-S02	301-S02	301-S02	301-S02
Field Sample ID	Value (0-2 ft bgs)	Value	301-Q03-C1-COMP	301-Q03-C2-COMP	301-Q04-C1-COMP	301-R02-C1-COMP	301-R02-C2-COMP	301-R02-C3-COMP	301-R02-C4-COMP	301-R03-C1-COMP	301-R03-C2-COMP	301-S02-C1-COMP	301-S02-C2-COMP	301-S02-C3-COMP	301-S02-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	5/18/2022	5/18/2022	6/10/2022	5/19/2022	5/19/2022	5/19/2022	5/19/2022	5/18/2022	5/18/2022	5/19/2022	5/19/2022	5/19/2022	5/19/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	0.058 J (0.12)	0.13 (0.11)	0.038 J (0.11)	2.2 (0.6)	0.092 J (0.1)	0.16 (0.13)	0.045 J (0.12)	U (0.12)	U (0.12)	0.057 J (0.11)	U (0.11)	U (0.14)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.43 (0.11)	0.022 J (0.11)	4.2 (0.6)	0.026 J (0.1)	U (0.13)	0.11 J (0.12)	0.058 J (0.12)	0.21 (0.12)	0.06 J (0.11)	0.063 J (0.11)	U (0.14)
Benzo(a)pyrene	91	46	U (0.16)	U (0.17)	0.48 (0.15)	U (0.14)	3.7 (0.8)	U (0.14)	U (0.17)	0.21 (0.16)	0.053 J (0.16)	0.058 J (0.16)	0.059 J (0.15)	U (0.15)	U (0.18)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.44 (0.11)	U (0.11)	4.2 (0.6)	U (0.1)	U (0.13)	0.2 (0.12)	0.073 J (0.12)	0.072 J (0.12)	0.057 J (0.11)	U (0.11)	U (0.14)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.17)	0.25 (0.15)	U (0.14)	1.9 (0.8)	U (0.14)	U (0.17)	0.14 J (0.16)	0.044 J (0.16)	0.043 J (0.16)	0.17 (0.15)	0.075 J (0.15)	U (0.18)
Chrysene	760	230	U (0.12)	0.022 J (0.12)	0.68 (0.11)	0.048 J (0.11)	4.2 (0.6)	0.047 J (0.1)	U (0.13)	0.096 J (0.12)	0.098 J (0.12)	0.53 (0.12)	0.22 (0.11)	0.18 (0.11)	U (0.14)
Fluorene	130000	3800	0.049 J (0.2)	0.25 (0.21)	0.048 J (0.19)	0.038 J (0.18)	1.1 (1)	0.46 (0.17)	1.3 (0.21)	0.038 J (0.2)	0.11 J (0.2)	U (0.2)	0.074 J (0.18)	U (0.19)	U (0.23)
Naphthalene	66	25	0.034 J (0.2)	0.5 (0.21)	0.052 J (0.19)	0.049 J (0.18)	2.1 (1)	0.11 J (0.17)	0.3 (0.21)	0.066 J (0.2)	0.79 (0.2)	0.049 J (0.2)	0.038 J (0.18)	U (0.19)	U (0.23)
Phenanthrene	190000	10000	0.047 J (0.12)	0.32 (0.12)	0.55 (0.11)	0.12 (0.11)	8.3 (0.6)	0.82 (0.1)	2.4 (0.13)	0.16 (0.12)	0.18 (0.12)	0.26 (0.12)	1.3 (0.11)	0.16 (0.11)	U (0.14)
Pyrene	96000	2200	U (0.12)	0.067 J (0.12)	0.99 (0.11)	0.18 (0.11)	6.6 (0.6)	0.097 J (0.1)	0.082 J (0.13)	0.12 (0.12)	0.13 (0.12)	0.7 (0.12)	0.31 (0.11)	0.18 (0.11)	U (0.14)
<b>Metals</b>															
Lead	1000	450	124 (2.38)	9.24 (2.48)	81.4 (11.2)	18 (2.12)	15.4 (2.33)	15.8 (2)	5.15 (2.49)	22 (2.38)	14.1 (2.3)	19.4 (2.4)	4.49 (2.11)	9.14 (2.18)	10.8 (2.68)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	301-S02-C5	301-S03-C1	301-T04-C1	301-T04-C2	301-T04-C3	301-U04-C1	301-U04-C2	301-U04-C3	301-U04-C4	301-V04-C1	301-V04-C2	301-V04-C3	301-V04-C4	
	Direct Contact	Groundwater	301-S02	301-S03	301-T04	301-T04	301-T04	301-U04	301-U04	301-U04	301-U04	301-V04	301-V04	301-V04	301-V04	
Field Sample ID	Value (0-2 ft bgs)	Value	301-S02-C5-COMP	301-S03-C1-COMP	301-T04-C1-COMP	301-T04-C2-COMP	301-T04-C3-COMP	301-U04-C1-COMP	301-U04-C2-COMP	301-U04-C3-COMP	301-U04-C4-COMP	301-V04-C1-COMP	301-V04-C2-COMP	301-V04-C3-COMP	301-V04-C4-COMP	
Sample Date	(mg/kg)	(mg/kg)	5/19/2022	5/17/2022	5/17/2022	5/17/2022	5/17/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	5/20/2022	
<b>PAHs</b>																
Anthracene	190000	350	U (0.12)	U (0.57)	U (0.11)	0.058 J (0.11)	U (0.12)	0.11 (0.1)	0.082 J (0.11)	0.28 (0.11)	0.56 (0.12)	U (0.12)	0.14 (0.12)	U (0.12)	U (0.1)	
Benzo(a)anthracene	130	340	U (0.12)	U (0.57)	0.043 J (0.11)	0.033 J (0.11)	U (0.12)	0.12 (0.1)	0.18 (0.11)	0.06 J (0.11)	0.11 J (0.12)	0.036 J (0.12)	0.14 (0.12)	U (0.12)	U (0.1)	
Benzo(a)pyrene	91	46	U (0.16)	U (0.76)	0.05 J (0.15)	U (0.14)	U (0.16)	0.066 J (0.14)	0.13 J (0.14)	U (0.15)	0.09 J (0.16)	U (0.16)	0.11 J (0.16)	U (0.16)	U (0.14)	
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.57)	0.051 J (0.11)	0.046 J (0.11)	U (0.12)	0.12 (0.1)	0.19 (0.11)	0.051 J (0.11)	0.11 J (0.12)	0.048 J (0.12)	0.14 (0.12)	U (0.12)	U (0.1)	
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.76)	0.026 J (0.15)	0.029 J (0.14)	U (0.16)	0.051 J (0.14)	0.11 J (0.14)	0.036 J (0.15)	0.065 J (0.16)	0.025 J (0.16)	0.1 J (0.16)	U (0.16)	U (0.14)	
Chrysene	760	230	U (0.12)	U (0.57)	0.037 J (0.11)	0.066 J (0.11)	U (0.12)	0.22 (0.1)	0.2 (0.11)	0.074 J (0.11)	0.15 (0.12)	0.026 J (0.12)	0.24 (0.12)	U (0.12)	U (0.1)	
Fluorene	130000	3800	U (0.19)	0.74 J (0.96)	0.052 J (0.18)	0.31 (0.18)	0.23 (0.19)	0.16 J (0.17)	0.11 J (0.18)	0.44 (0.19)	1.4 (0.2)	0.054 J (0.2)	0.31 (0.2)	U (0.2)	U (0.18)	
Naphthalene	66	25	U (0.19)	U (0.96)	U (0.18)	0.086 J (0.18)	0.041 J (0.19)	0.71 (0.17)	0.35 (0.18)	0.041 J (0.19)	0.1 J (0.2)	0.064 J (0.2)	0.16 J (0.2)	U (0.2)	U (0.18)	
Phenanthrene	190000	10000	U (0.12)	0.74 (0.57)	0.048 J (0.11)	0.38 (0.11)	0.23 (0.12)	0.6 (0.1)	0.45 (0.11)	1.3 (0.11)	3.4 (0.12)	0.12 (0.12)	0.67 (0.12)	0.024 J (0.12)	U (0.1)	
Pyrene	96000	2200	U (0.12)	U (0.57)	0.054 J (0.11)	0.087 J (0.11)	0.032 J (0.12)	0.38 (0.1)	0.29 (0.11)	0.3 (0.11)	0.41 (0.12)	0.069 J (0.12)	0.41 (0.12)	0.02 J (0.12)	U (0.1)	
<b>Metals</b>																
Lead	1000	450	7.74 (2.32)	10.4 (2.25)	25.4 (2.21)	9.34 (2.18)	10.1 (2.31)	11 (2.02)	123 (2.15)	28.4 (2.22)	123 (2.35)	295 (2.32)	228 (2.35)	18 (2.41)	8.43 (2.12)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	301-W03-C1	301-W03-C2	301-W03-C3	301-W04-C1	301-X03-C1	301-X03-C2	301-X03-C3	301-X03-C4	301-Y03-C1	301-Y03-C2	301-Y03-C3	301-Y04-C1	301-Y04-C2
	Direct Contact	Groundwater	301-W03	301-W03	301-W03	301-W04	301-X03	301-X03	301-X03	301-X03	301-Y03	301-Y03	301-Y03	301-Y04	301-Y04
Field Sample ID	Value (0-2 ft bgs)	Value	301-W03-C1-COMP	301-W03-C2-COMP	301-W03-C3-COMP	301-W04-C1-COMP	301-X03-C1-COMP	301-X03-C2-COMP	301-X03-C3-COMP	301-X03-C4-COMP	301-Y03-C1-COMP	301-Y03-C2-COMP	301-Y03-C3-COMP	301-Y04-C1-COMP	301-Y04-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	5/23/2022	5/23/2022	5/23/2022	6/10/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/23/2022	5/25/2022	5/25/2022
<b>PAHs</b>															
Anthracene	190000	350	0.21 (0.13)	U (0.1)	U (0.1)	0.038 J (0.11)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.1)	U (0.1)	0.13 (0.11)	U (0.13)	U (0.11)
Benzo(a)anthracene	130	340	0.28 (0.13)	U (0.1)	U (0.1)	0.2 (0.11)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.1)	U (0.1)	0.054 J (0.11)	0.028 J (0.13)	U (0.11)
Benzo(a)pyrene	91	46	0.16 J (0.17)	U (0.14)	U (0.14)	0.4 (0.15)	U (0.14)	U (0.14)	U (0.14)	U (0.14)	U (0.13)	0.058 J (0.13)	U (0.15)	U (0.17)	U (0.15)
Benzo(b)fluoranthene	76	170	0.15 (0.13)	U (0.1)	U (0.1)	0.4 (0.11)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.13)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.14 J (0.17)	U (0.14)	U (0.14)	0.46 (0.15)	U (0.14)	U (0.14)	U (0.14)	U (0.14)	U (0.13)	U (0.13)	U (0.15)	U (0.17)	U (0.15)
Chrysene	760	230	0.78 (0.13)	U (0.1)	U (0.1)	0.22 (0.11)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	0.027 J (0.1)	0.044 J (0.1)	0.082 J (0.11)	0.023 J (0.13)	U (0.11)
Fluorene	130000	3800	0.25 (0.21)	U (0.18)	U (0.17)	U (0.19)	U (0.18)	U (0.18)	U (0.17)	U (0.18)	0.043 J (0.17)	U (0.17)	0.54 (0.19)	U (0.21)	U (0.19)
Naphthalene	66	25	0.31 (0.21)	U (0.18)	U (0.17)	0.045 J (0.19)	U (0.18)	U (0.18)	U (0.17)	U (0.18)	0.11 J (0.17)	U (0.17)	0.32 (0.19)	U (0.21)	U (0.19)
Phenanthrene	190000	10000	1.7 (0.13)	U (0.1)	U (0.1)	0.17 (0.11)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	0.082 J (0.1)	0.032 J (0.1)	0.96 (0.11)	U (0.13)	U (0.11)
Pyrene	96000	2200	1 (0.13)	U (0.1)	U (0.1)	0.36 (0.11)	U (0.11)	U (0.1)	U (0.1)	U (0.11)	0.023 J (0.1)	0.019 J (0.1)	0.16 (0.11)	0.03 J (0.13)	U (0.11)
<b>Metals</b>															
Lead	1000	450	6.33 (2.51)	21.6 (2.1)	15.5 (4.14)	73.3 (2.22)	9.69 (2.12)	3.12 (2)	3.32 (2.02)	3.08 (2.19)	37.6 (1.98)	215 (1.99)	5.43 (2.19)	29.9 (2.52)	15.7 (2.26)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-Y04-C3 301-Y04	301-Y04-C4 301-Y04	301-Y05-C1 301-Y05	301-Y05-C2 301-Y05	301-Z04-C1 301-Z04	301-Z04-C2 301-Z04	301-Z04-C3 301-Z04	301-Z04-C4 301-Z04	301-Z04-C5 301-Z04	301-Z05-C1 301-Z05	301-Z05-C2 301-Z05	301-Z05-C3 301-Z05	301-Z06-C1 301-Z06
Field Sample ID	Value (0-2 ft bgs)	Value	301-Y04-C3-COMP	301-Y04-C4-COMP	301-Y05-C1-COMP	301-Y05-C2-COMP	301-Z04-C1-COMP	301-Z04-C2-COMP	301-Z04-C3-COMP	301-Z04-C4-COMP	301-Z04-C5-COMP	301-Z05-C1-COMP	301-Z05-C2-COMP	301-Z05-C3-COMP	301-Z06-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	5/25/2022	5/25/2022	6/9/2022	6/9/2022	5/26/2022	5/26/2022	5/26/2022	5/26/2022	5/26/2022	5/24/2022	5/24/2022	5/24/2022	5/24/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.13)	U (0.11)	U (0.12)	U (0.12)	0.21 (0.12)	0.052 J (0.12)	0.062 J (0.12)	0.057 J (0.11)	0.11 J (0.12)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	0.028 J (0.13)	U (0.11)	0.033 J (0.12)	0.032 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.12)	0.07 J (0.11)
Benzo(a)pyrene	91	46	U (0.18)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.14)	U (0.16)	U (0.16)	0.089 J (0.15)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.11)	0.039 J (0.12)	0.049 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.1)	U (0.12)	U (0.12)	0.097 J (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.18)	U (0.15)	0.029 J (0.16)	0.037 J (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.14)	U (0.16)	U (0.16)	0.061 J (0.15)
Chrysene	760	230	0.023 J (0.13)	U (0.11)	0.031 J (0.12)	0.034 J (0.12)	0.02 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.035 J (0.1)	0.052 J (0.12)	U (0.12)	0.076 J (0.11)
Fluorene	130000	3800	0.032 J (0.22)	U (0.18)	U (0.2)	U (0.2)	0.98 (0.2)	0.25 (0.2)	0.4 (0.2)	0.25 (0.19)	0.5 (0.2)	0.017 J (0.18)	0.2 J (0.21)	0.068 J (0.2)	0.074 J (0.19)
Naphthalene	66	25	0.042 J (0.22)	U (0.18)	U (0.2)	U (0.2)	0.28 (0.2)	0.055 J (0.2)	0.13 J (0.2)	0.054 J (0.19)	0.1 J (0.2)	U (0.18)	U (0.21)	U (0.2)	0.054 J (0.19)
Phenanthrene	190000	10000	0.15 (0.13)	U (0.11)	0.025 J (0.12)	0.028 J (0.12)	1.8 (0.12)	0.5 (0.12)	0.68 (0.12)	0.58 (0.11)	1.1 (0.12)	0.035 J (0.1)	0.049 J (0.12)	0.12 (0.12)	0.18 (0.11)
Pyrene	96000	2200	0.063 J (0.13)	U (0.11)	0.034 J (0.12)	0.042 J (0.12)	0.07 J (0.12)	U (0.12)	0.022 J (0.12)	0.021 J (0.11)	0.036 J (0.12)	0.017 J (0.1)	0.047 J (0.12)	U (0.12)	0.11 (0.11)
<b>Metals</b>															
Lead	1000	450	5.34 (2.63)	24.1 (2.14)	30.4 (2.31)	118 (2.33)	12.7 (4.61)	8.09 (4.8)	6.26 (4.64)	8.53 (4.4)	10.7 (4.69)	9.6 (2.06)	7.48 (2.42)	6.02 (2.3)	56.6 (2.23)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	301-Z06-C2 301-Z06 301-Z06-C2-COMP 5/24/2022	301-Z06-C3 301-Z06 301-Z06-C3-COMP 5/24/2022	301-Z06-C4 301-Z06 301-Z06-C4-COMP 5/24/2022	301-Z06-C5 301-Z06 301-Z06-C5-COMP 5/24/2022	302-AD08-C1 302-AD08 302-AD08-C1-COMP 6/2/2022	302-AD08-C2 302-AD08 302-AD08-C2-COMP 6/2/2022	302-AD08-C3 302-AD08 302-AD08-C3-COMP 6/2/2022	302-AD08-C4 302-AD08 302-AD08-C4-COMP 6/2/2022	302-AD09-C1 302-AD09 302-AD09-C1-COMP 6/1/2022	302-AD09-C2 302-AD09 302-AD09-C2-COMP 6/1/2022	302-AD09-C3 302-AD09 302-AD09-C3-COMP 6/1/2022	302-AD09-C4 302-AD09 302-AD09-C4-COMP 6/1/2022	302-AD09-C5 302-AD09 302-AD09-C5-COMP 6/1/2022
Field Sample ID	Value (0-2 ft bgs)	Value													
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	0.036 J (0.11)	U (0.11)	U (0.11)	0.086 J (0.11)	U (0.12)	U (0.11)	U (0.11)	0.038 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	0.052 J (0.11)	0.027 J (0.11)	0.048 J (0.11)	0.035 J (0.12)	0.092 J (0.11)	0.058 J (0.11)	0.095 J (0.12)	U (0.12)	0.04 J (0.12)	0.023 J (0.11)	U (0.12)	0.039 J (0.12)
Benzo(a)pyrene	91	46	U (0.14)	0.067 J (0.15)	U (0.15)	U (0.15)	U (0.15)	0.12 J (0.15)	0.068 J (0.15)	0.15 (0.15)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	0.075 J (0.11)	0.038 J (0.11)	0.045 J (0.11)	0.038 J (0.12)	0.12 (0.11)	0.077 J (0.11)	0.16 (0.12)	U (0.12)	0.049 J (0.12)	U (0.11)	U (0.12)	0.043 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	0.053 J (0.15)	0.025 J (0.15)	0.03 J (0.15)	0.026 J (0.15)	0.071 J (0.15)	0.052 J (0.15)	0.12 J (0.15)	U (0.16)	0.034 J (0.16)	U (0.15)	U (0.16)	0.024 J (0.16)
Chrysene	760	230	0.082 J (0.11)	0.068 J (0.11)	0.035 J (0.11)	0.19 (0.11)	0.05 J (0.12)	0.11 (0.11)	0.074 J (0.11)	0.12 (0.12)	U (0.12)	0.044 J (0.12)	0.026 J (0.11)	U (0.12)	0.037 J (0.12)
Fluorene	130000	3800	0.31 (0.18)	0.023 J (0.18)	0.049 J (0.18)	0.81 (0.19)	0.038 J (0.19)	0.02 J (0.19)	0.019 J (0.19)	0.03 J (0.19)	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.19)
Naphthalene	66	25	U (0.18)	0.023 J (0.18)	U (0.18)	U (0.19)	U (0.19)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	0.027 J (0.2)	U (0.19)	U (0.2)	U (0.19)
Phenanthrene	190000	10000	0.3 (0.11)	0.076 J (0.11)	0.068 J (0.11)	1.4 (0.11)	0.049 J (0.12)	0.056 J (0.11)	0.072 J (0.11)	0.13 (0.12)	U (0.12)	0.074 J (0.12)	0.026 J (0.11)	U (0.12)	0.037 J (0.12)
Pyrene	96000	2200	0.066 J (0.11)	0.092 J (0.11)	0.041 J (0.11)	0.16 (0.11)	0.062 J (0.12)	0.13 (0.11)	0.089 J (0.11)	0.15 (0.12)	U (0.12)	0.063 J (0.12)	0.054 J (0.11)	U (0.12)	0.052 J (0.12)
<b>Metals</b>															
Lead	1000	450	5.96 (2.11)	72.7 (2.12)	4.85 (2.17)	6.73 (2.18)	5.13 (2.26)	63.9 (2.27)	42.9 (2.22)	48.8 (2.3)	258 (2.33)	11.9 (2.25)	86.2 (2.16)	7.12 (2.38)	45.1 (2.33)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AD10-C1	302-AD10-C2	302-AD10-C3	302-AD10-C4	302-AD11-C1	302-AD11-C2	302-AD11-C3	302-AD11-C4	302-AD12-C1	302-AD12-C2	302-AD12-C3	302-AD12-C4	302-AD12-C5
			302-AD10	302-AD10	302-AD10	302-AD10	302-AD11	302-AD11	302-AD11	302-AD11	302-AD12	302-AD12	302-AD12	302-AD12	302-AD12
Field Sample ID	Value (0-2 ft bgs)	Value	302-AD10-C1-COMP	302-AD10-C2-COMP	302-AD10-C3-COMP	302-AD10-C4-COMP	302-AD11-C1-COMP	302-AD11-C2-COMP	302-AD11-C3-COMP	302-AD11-C4-COMP	302-AD12-C1-COMP	302-AD12-C2-COMP	302-AD12-C3-COMP	302-AD12-C4-COMP	302-AD12-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	6/3/2022	6/3/2022	6/3/2022	6/3/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022
<b>PAHs</b>															
Anthracene	190000	350	0.22 (0.11)	U (0.13)	0.47 (0.11)	2.1 (0.11)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.13)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.18 (0.11)	U (0.13)	0.47 (0.11)	5.1 (0.11)	0.028 J (0.11)	0.022 J (0.11)	0.029 J (0.12)	0.085 J (0.12)	U (0.12)	U (0.14)	U (0.13)	0.15 (0.12)	0.048 J (0.12)
Benzo(a)pyrene	91	46	0.15 (0.15)	U (0.17)	0.36 (0.15)	5 (0.15)	U (0.15)	U (0.15)	U (0.16)	0.11 J (0.16)	U (0.16)	U (0.18)	U (0.17)	0.15 J (0.16)	0.056 J (0.16)
Benzo(b)fluoranthene	76	170	0.18 (0.11)	U (0.13)	0.48 (0.11)	6.4 (0.11)	0.033 J (0.11)	U (0.11)	0.04 J (0.12)	0.14 (0.12)	U (0.12)	U (0.14)	U (0.13)	0.15 (0.12)	0.057 J (0.12)
Benzo(g,h,i)perylene	190000	180	0.1 J (0.15)	U (0.17)	0.35 (0.15)	3.3 (0.15)	U (0.15)	U (0.15)	U (0.16)	0.068 J (0.16)	U (0.16)	U (0.18)	U (0.17)	0.08 J (0.16)	0.04 J (0.16)
Chrysene	760	230	0.21 (0.11)	U (0.13)	0.63 (0.11)	4.6 (0.11)	0.024 J (0.11)	U (0.11)	0.028 J (0.12)	0.078 J (0.12)	U (0.12)	U (0.14)	U (0.13)	0.17 (0.12)	0.045 J (0.12)
Fluorene	130000	3800	0.43 (0.18)	U (0.21)	0.81 (0.19)	0.78 (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.19)	U (0.2)	U (0.23)	U (0.21)	U (0.2)	U (0.2)
Naphthalene	66	25	0.58 (0.18)	U (0.21)	0.79 (0.19)	0.6 (0.19)	U (0.19)	U (0.19)	U (0.2)	U (0.19)	U (0.2)	U (0.23)	U (0.21)	U (0.2)	U (0.2)
Phenanthrene	190000	10000	0.98 (0.11)	U (0.13)	1.3 (0.11)	9.4 (0.56)	U (0.11)	U (0.11)	U (0.12)	0.058 J (0.12)	U (0.12)	U (0.14)	U (0.13)	0.05 J (0.12)	0.051 J (0.12)
Pyrene	96000	2200	0.5 (0.11)	0.024 J (0.13)	0.98 (0.11)	10 (0.56)	0.035 J (0.11)	0.029 J (0.11)	0.041 J (0.12)	0.1 J (0.12)	U (0.12)	U (0.14)	U (0.13)	0.2 (0.12)	0.061 J (0.12)
<b>Metals</b>															
Lead	1000	450	70.6 (2.18)	230 (12.9)	256 (2.22)	107 (2.24)	34.8 (2.24)	38.3 (2.2)	6.71 (2.32)	26.7 (2.3)	5.44 (2.4)	6.88 (2.66)	9.78 (2.5)	108 (4.65)	35.6 (2.34)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AD13-C1	302-AD13-C2	302-AD13-C3	302-AE09-C1	302-AE09-C2	302-AE09-C3	302-AE09-C4	302-AE10-C1	302-AE10-C2	302-AE10-C3	302-AE10-C4	302-AF06-C1	302-AF06-C2
			302-AD13	302-AD13	302-AD13	302-AE09	302-AE09	302-AE09	302-AE09	302-AE10	302-AE10	302-AE10	302-AE10	302-AE10	302-AF06
Field Sample ID	Value (0-2 ft bgs)	Value	302-AD13-C1-COMP	302-AD13-C2-COMP	302-AD13-C3-COMP	302-AE09-C1-COMP	302-AE09-C2-COMP	302-AE09-C3-COMP	302-AE09-C4-COMP	302-AE10-C1-COMP	302-AE10-C2-COMP	302-AE10-C3-COMP	302-AE10-C4-COMP	302-AF06-C1-COMP	302-AF06-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	6/9/2022	6/9/2022	6/9/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/14/2022	6/14/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	0.052 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.11)	U (0.1)	U (0.12)	1.5 (0.12)	0.083 J (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.18 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.11)	0.08 J (0.1)	0.035 J (0.12)	3.8 (0.12)	0.48 (0.11)
Benzo(a)pyrene	91	46	U (0.15)	U (0.16)	0.19 (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.14)	U (0.15)	U (0.15)	0.079 J (0.14)	U (0.16)	3.8 (0.15)	0.51 (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.2 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.11)	0.091 J (0.1)	0.04 J (0.12)	4.8 (0.12)	0.61 (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.16)	0.079 J (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.14)	U (0.15)	U (0.15)	0.044 J (0.14)	U (0.16)	1.9 (0.15)	0.26 (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	0.16 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.11)	0.08 J (0.1)	0.033 J (0.12)	3.6 (0.12)	0.43 (0.11)
Fluorene	130000	3800	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.18)	U (0.18)	U (0.18)	U (0.18)	U (0.18)	U (0.19)	0.49 (0.19)	0.028 J (0.19)
Naphthalene	66	25	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.18)	U (0.18)	U (0.18)	U (0.18)	U (0.18)	U (0.19)	0.035 J (0.19)	0.033 J (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.17 (0.12)	U (0.12)	0.024 J (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.11)	0.1 (0.1)	0.026 J (0.12)	4.6 (0.12)	0.22 (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	0.23 (0.12)	U (0.12)	0.025 J (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.11)	0.13 (0.1)	0.046 J (0.12)	5.9 (0.12)	0.68 (0.11)
<b>Metals</b>															
Lead	1000	450	15.2 (2.22)	42.8 (2.31)	11.8 (2.33)	7.2 (2.33)	18 (2.3)	6.95 (2.21)	3.84 (2.15)	8.09 (2.16)	14.1 (4.31)	21.6 (2.08)	6.05 (2.27)	7.74 (2.32)	5.5 (2.16)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AF06-C3	302-AF06-C4	302-AF06-C5	302-AG07-C1	302-AG07-C2	302-AG07-C3	302-AJ09-C1	302-AJ09-C2	302-AJ09-C3	302-AJ09-C4	302-AJ09-C5	302-AK06-C1	302-AK06-C2
			302-AF06	302-AF06	302-AF06	302-AG07	302-AG07	302-AG07	302-AJ09	302-AJ09	302-AJ09	302-AJ09	302-AJ09	302-AK06	302-AK06
Field Sample ID	Value (0-2 ft bgs)	Value	302-AF06-C3-COMP	302-AF06-C4-COMP	302-AF06-C5-COMP	302-AG07-C1-COMP	302-AG07-C2-COMP	302-AG07-C3-COMP	302-AJ09-C1-COMP	302-AJ09-C2-COMP	302-AJ09-C3-COMP	302-AJ09-C4-COMP	302-AJ09-C5-COMP	302-AK06-C1-COMP	302-AK06-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/7/2022	6/7/2022
<b>PAHs</b>															
Anthracene	190000	350	0.13 (0.12)	U (0.12)	0.069 J (0.11)	U (0.12)	U (0.11)	U (0.12)	0.04 J (0.12)	0.1 J (0.11)	0.085 J (0.11)	0.065 J (0.11)	0.18 (0.11)	0.077 J (0.11)	0.12 (0.11)
Benzo(a)anthracene	130	340	0.68 (0.12)	0.029 J (0.12)	0.28 (0.11)	0.08 J (0.12)	U (0.11)	U (0.12)	0.12 (0.12)	0.48 (0.11)	0.3 (0.11)	0.26 (0.11)	0.12 (0.11)	0.23 (0.11)	0.32 (0.11)
Benzo(a)pyrene	91	46	1.1 (0.16)	U (0.16)	0.28 (0.15)	0.081 J (0.15)	U (0.15)	U (0.16)	0.12 J (0.15)	0.5 (0.15)	0.38 (0.15)	0.32 (0.15)	0.082 J (0.15)	0.3 (0.15)	0.4 (0.15)
Benzo(b)fluoranthene	76	170	1.2 (0.12)	U (0.12)	0.35 (0.11)	0.097 J (0.12)	U (0.11)	U (0.12)	0.14 (0.12)	0.59 (0.11)	0.42 (0.11)	0.36 (0.11)	0.071 J (0.11)	0.31 (0.11)	0.47 (0.11)
Benzo(g,h,i)perylene	190000	180	0.8 (0.16)	U (0.16)	0.16 (0.15)	0.043 J (0.15)	U (0.15)	U (0.16)	0.086 J (0.15)	0.31 (0.15)	0.24 (0.15)	0.2 (0.15)	0.058 J (0.15)	0.29 (0.15)	0.29 (0.15)
Chrysene	760	230	0.8 (0.12)	0.025 J (0.12)	0.31 (0.11)	0.074 J (0.12)	U (0.11)	U (0.12)	0.12 (0.12)	0.45 (0.11)	0.3 (0.11)	0.26 (0.11)	0.19 (0.11)	0.27 (0.11)	0.34 (0.11)
Fluorene	130000	3800	0.064 J (0.2)	U (0.2)	0.046 J (0.19)	U (0.19)	U (0.19)	U (0.2)	0.03 J (0.19)	0.027 J (0.18)	0.039 J (0.18)	0.027 J (0.19)	0.67 (0.19)	0.028 J (0.18)	0.039 J (0.19)
Naphthalene	66	25	U (0.2)	U (0.2)	0.059 J (0.19)	U (0.19)	U (0.19)	U (0.2)	0.042 J (0.19)	0.025 J (0.18)	0.061 J (0.18)	0.18 J (0.19)	0.15 J (0.19)	0.28 (0.18)	0.34 (0.19)
Phenanthrene	190000	10000	0.45 (0.12)	0.026 J (0.12)	0.33 (0.11)	0.11 J (0.12)	U (0.11)	U (0.12)	0.14 (0.12)	0.37 (0.11)	0.26 (0.11)	0.23 (0.11)	1.1 (0.11)	0.24 (0.11)	0.32 (0.11)
Pyrene	96000	2200	0.97 (0.12)	0.04 J (0.12)	0.47 (0.11)	0.12 (0.12)	U (0.11)	U (0.12)	0.19 (0.12)	0.78 (0.11)	0.48 (0.11)	0.34 (0.11)	0.41 (0.11)	0.29 (0.11)	0.44 (0.11)
<b>Metals</b>															
Lead	1000	450	55.4 (2.37)	21.6 (2.43)	8.11 (2.21)	5.75 (2.33)	4.77 (2.13)	7.43 J (12)	209 (4.56)	186 (2.21)	170 (2.25)	136 (2.25)	10.3 (2.28)	5.23 (2.12)	194 (2.24)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AK06-C3 302-AK06	302-AK06-C4 302-AK06	302-AL06-C1 302-AL06	302-AL06-C2 302-AL06	302-AL06-C3 302-AL06	302-AL06-C4 302-AL06	302-AL06-C5 302-AL06	302-AN02-C1 302-AN02	302-AN02-C2 302-AN02	302-AN02-C3 302-AN02	302-AN02-C4 302-AN02	302-AN02-C5 302-AN02	302-AO03-C1 302-AO03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AK06-C3-COMP	302-AK06-C4-COMP	302-AL06-C1-COMP	302-AL06-C2-COMP	302-AL06-C3-COMP	302-AL06-C4-COMP	302-AL06-C5-COMP	302-AN02-C1-COMP	302-AN02-C2-COMP	302-AN02-C3-COMP	302-AN02-C4-COMP	302-AN02-C5-COMP	302-AO03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	6/7/2022	6/7/2022	6/7/2022	6/7/2022	6/7/2022	6/7/2022	6/7/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022	6/8/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	0.26 (0.11)	0.14 (0.11)	U (0.12)	U (0.11)	U (0.12)	0.13 (0.12)	U (0.11)	0.054 J (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	0.056 J (0.12)	0.84 (0.11)	0.4 (0.11)	0.049 J (0.12)	0.06 J (0.11)	0.043 J (0.12)	0.44 (0.12)	0.058 J (0.11)	0.12 (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)pyrene	91	46	0.062 J (0.16)	1.1 (0.15)	0.55 (0.14)	0.062 J (0.15)	0.087 J (0.15)	0.054 J (0.16)	0.78 (0.17)	0.06 J (0.15)	0.11 J (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	0.067 J (0.12)	1.3 (0.11)	0.68 (0.11)	0.073 J (0.12)	0.095 J (0.11)	0.06 J (0.12)	0.85 (0.12)	0.066 J (0.11)	0.12 (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.051 J (0.16)	0.74 (0.15)	0.44 (0.14)	0.049 J (0.15)	0.067 J (0.15)	0.031 J (0.16)	0.61 (0.17)	0.047 J (0.15)	0.069 J (0.14)	U (0.16)	U (0.16)	U (0.15)	U (0.16)
Chrysene	760	230	0.061 J (0.12)	0.89 (0.11)	0.46 (0.11)	0.054 J (0.12)	0.062 J (0.11)	0.041 J (0.12)	0.58 (0.12)	0.059 J (0.11)	0.12 (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Fluorene	130000	3800	U (0.2)	0.088 J (0.19)	0.045 J (0.18)	U (0.19)	U (0.19)	U (0.19)	0.059 J (0.21)	U (0.18)	0.021 J (0.18)	U (0.2)	U (0.2)	U (0.19)	U (0.2)
Naphthalene	66	25	0.024 J (0.2)	0.24 (0.19)	0.26 (0.18)	0.083 J (0.19)	0.047 J (0.19)	0.043 J (0.19)	0.54 (0.21)	U (0.18)	0.023 J (0.18)	U (0.2)	U (0.2)	U (0.19)	U (0.2)
Phenanthrene	190000	10000	0.051 J (0.12)	0.85 (0.11)	0.36 (0.11)	0.058 J (0.12)	0.065 J (0.11)	0.036 J (0.12)	0.3 (0.12)	0.074 J (0.11)	0.28 (0.11)	U (0.12)	U (0.12)	U (0.11)	U (0.12)
Pyrene	96000	2200	0.078 J (0.12)	1.4 (0.11)	0.51 (0.11)	0.082 J (0.12)	0.083 J (0.11)	0.069 J (0.12)	0.63 (0.12)	0.086 J (0.11)	0.24 (0.11)	0.021 J (0.12)	U (0.12)	U (0.11)	U (0.12)
<b>Metals</b>															
Lead	1000	450	230 (2.31)	230 (2.22)	75.7 (2.12)	107 (2.26)	161 (2.27)	30.1 (2.26)	206 (2.43)	72.9 (4.35)	203 (10.6)	252 (2.31)	7.13 (2.43)	6.84 (2.24)	42.8 (2.39)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs)	Non-Residential Soil to Groundwater Numeric Value	302-AO03-C2	302-AO03-C3	302-AO03-C4	302-AQ02-C1	302-AQ02-C2	302-AQ02-C3	302-AQ02-C4	302-AQ02-C5	302-AR02-C1	302-AR02-C2	302-AR02-C3	302-AR02-C4	302-AS03-C1
			302-AO03	302-AO03	302-AO03	302-AQ02	302-AQ02	302-AQ02	302-AQ02	302-AQ02	302-AQ02	302-AR02	302-AR02	302-AR02	302-AR02
Field Sample ID	Value (mg/kg)	Value (mg/kg)	302-AO03-C2-COMP	302-AO03-C3-COMP	302-AO03-C4-COMP	302-AQ02-C1-COMP	302-AQ02-C2-COMP	302-AQ02-C3-COMP	302-AQ02-C4-COMP	302-AQ02-C5-COMP	302-AR02-C1-COMP	302-AR02-C2-COMP	302-AR02-C3-COMP	302-AR02-C4-COMP	302-AS03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	6/8/2022	6/8/2022	6/8/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.14 (0.12)	0.17 (0.11)	0.17 (0.12)	0.11 J (0.13)	0.4 (0.11)	0.14 (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.11)	0.08 J (0.11)	0.039 J (0.12)	0.096 J (0.11)	0.11 J (0.12)	0.039 J (0.13)	0.79 (0.11)	0.13 (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.17)	U (0.15)	0.22 (0.15)	U (0.15)	0.089 J (0.14)	0.068 J (0.16)	U (0.18)	0.74 (0.15)	0.11 J (0.16)	U (0.16)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.11)	0.2 (0.11)	U (0.12)	0.11 (0.11)	0.071 J (0.12)	U (0.13)	0.84 (0.11)	0.07 J (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.17)	U (0.15)	0.16 (0.15)	0.031 J (0.15)	0.06 J (0.14)	0.069 J (0.16)	U (0.18)	0.28 (0.15)	0.096 J (0.16)	U (0.16)	U (0.16)	U (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.11)	0.086 J (0.11)	0.063 J (0.12)	0.1 J (0.11)	0.17 (0.12)	0.05 J (0.13)	0.72 (0.11)	0.14 (0.12)	U (0.12)	U (0.12)	U (0.11)
Fluorene	130000	3800	U (0.19)	U (0.21)	U (0.19)	U (0.18)	0.72 (0.19)	1.2 (0.18)	0.53 (0.2)	0.31 (0.22)	0.099 J (0.19)	0.15 J (0.2)	U (0.19)	U (0.2)	U (0.19)
Naphthalene	66	25	U (0.19)	U (0.21)	U (0.19)	0.032 J (0.18)	1.4 (0.19)	2.9 (0.18)	1.1 (0.2)	0.14 J (0.22)	0.064 J (0.19)	0.17 J (0.2)	U (0.19)	U (0.2)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.11)	0.091 J (0.11)	1 (0.12)	1.4 (0.11)	0.59 (0.12)	0.53 (0.13)	1 (0.11)	0.43 (0.12)	U (0.12)	U (0.12)	U (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.11)	0.081 J (0.11)	0.16 (0.12)	0.18 (0.11)	0.3 (0.12)	0.17 (0.13)	0.76 (0.11)	0.31 (0.12)	U (0.12)	U (0.12)	U (0.11)
<b>Metals</b>															
Lead	1000	450	5.83 (2.33)	8.19 (2.44)	8.02 J (11)	665 (2.15)	600 (2.29)	88.4 (4.27)	578 (2.38)	723 (2.67)	298 (4.58)	160 (2.32)	18.2 (4.48)	12.1 (4.75)	159 (2.28)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact Value (0-2 ft bgs) (mg/kg)	Non-Residential Soil to Groundwater Value (mg/kg)	302-AS03-C2	302-AS03-C3	302-AV01-C1	302-AV01-C2	302-AV01-C3	302-AV03-C1	302-AV03-C2	302-AV03-C3	302-AV03-C4	302-AW01-C1	302-AW01-C2	302-AW01-C3	302-AW03-C1
			302-AS03	302-AS03	302-AV01	302-AV01	302-AV01	302-AV03	302-AV03	302-AV03	302-AV03	302-AW01	302-AW01	302-AW01	302-AW03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AS03-C2-COMP	302-AS03-C3-COMP	302-AV01-C1-COMP	302-AV01-C2-COMP	302-AV01-C3-COMP	302-AV03-C1-COMP	302-AV03-C2-COMP	302-AV03-C3-COMP	302-AV03-C4-COMP	302-AW01-C1-COMP	302-AW01-C2-COMP	302-AW01-C3-COMP	302-AW03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/15/2022	6/14/2022	6/14/2022	6/14/2022	6/14/2022	6/15/2022	6/15/2022	6/15/2022	6/14/2022
<b>PAHs</b>															
Anthracene	190000	350	0.13 (0.11)	U (0.12)	0.1 J (0.12)	1.2 (0.12)	0.93 J (1.5)	U (0.12)	U (0.12)	U (0.6)	U (0.12)	0.11 J (0.12)	0.64 (0.16)	1.7 (0.14)	U (0.12)
Benzo(a)anthracene	130	340	0.048 J (0.11)	U (0.12)	0.21 (0.12)	3.2 (0.12)	3.7 (1.5)	U (0.12)	U (0.12)	U (0.6)	0.023 J (0.12)	0.52 (0.12)	2.6 (0.16)	5.5 (0.14)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	0.25 (0.16)	3.2 (0.17)	3.7 (2)	U (0.16)	U (0.16)	U (0.8)	U (0.15)	0.52 (0.16)	2.9 (0.22)	4.8 (0.19)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.12)	0.36 (0.12)	3.6 (0.12)	3.9 (1.5)	U (0.12)	U (0.12)	U (0.6)	U (0.12)	0.67 (0.12)	3.1 (0.16)	5.4 (0.14)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.15)	0.27 (0.16)	1.7 (0.17)	2.3 (2)	U (0.16)	U (0.16)	U (0.8)	U (0.15)	0.29 (0.16)	1.4 (0.22)	2.4 (0.19)	U (0.16)
Chrysene	760	230	0.054 J (0.11)	U (0.12)	0.25 (0.12)	2.9 (0.12)	3.8 (1.5)	U (0.12)	U (0.12)	U (0.6)	0.16 (0.12)	0.62 (0.12)	2.6 (0.16)	4.6 (0.14)	U (0.12)
Fluorene	130000	3800	0.15 J (0.19)	U (0.19)	0.031 J (0.2)	0.34 (0.21)	0.52 J (2.4)	U (0.2)	U (0.2)	U (1)	U (0.19)	0.061 J (0.2)	0.56 (0.28)	1.5 (0.23)	U (0.2)
Naphthalene	66	25	U (0.19)	0.048 J (0.19)	0.47 (0.2)	1.1 (0.21)	1.7 J (2.4)	U (0.2)	U (0.2)	U (1)	U (0.19)	0.17 J (0.2)	4.9 (0.28)	12 (1.2)	U (0.2)
Phenanthrene	190000	10000	0.26 (0.11)	0.073 J (0.12)	0.17 (0.12)	4 (0.12)	1.7 (1.5)	U (0.12)	U (0.12)	0.54 J (0.6)	0.07 J (0.12)	0.32 (0.12)	2.1 (0.16)	4.7 (0.14)	0.026 J (0.12)
Pyrene	96000	2200	0.064 J (0.11)	0.037 J (0.12)	0.25 (0.12)	4.8 (0.12)	4.8 (1.5)	U (0.12)	U (0.12)	0.59 J (0.6)	0.055 J (0.12)	0.69 (0.12)	4 (0.16)	9.1 (0.14)	0.023 J (0.12)
<b>Metals</b>															
Lead	1000	450	10.5 (2.17)	1420 (2.29)	291 (2.34)	164 (4.74)	590 (2.89)	11.7 J (11.8)	6.34 (4.76)	10.8 J (11.7)	254 (11.5)	44.7 (2.34)	116 (3.2)	176 (5.36)	298 (2.26)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-AW03-C2 302-AW03 302-AW03-C2-COMP 6/14/2022	302-AW03-C3 302-AW03 302-AW03-C3-COMP 6/14/2022	302-AW03-C4 302-AW03 302-AW03-C4-COMP 6/14/2022	302-AW03-C5 302-AW03 302-AW03-C5-COMP 6/14/2022	302-AX01-C1 302-AX01 302-AX01-C1-COMP 6/15/2022	302-AX01-C2 302-AX01 302-AX01-C2-COMP 6/15/2022	302-AX01-C3 302-AX01 302-AX01-C3-COMP 6/15/2022	302-AX01-C4 302-AX01 302-AX01-C4-COMP 6/15/2022	302-AX04-C1 302-AX04 302-AX04-C1-COMP 6/13/2022	302-AX04-C2 302-AX04 302-AX04-C2-COMP 6/13/2022	302-AX04-C3 302-AX04 302-AX04-C3-COMP 6/13/2022	302-AX04-C4 302-AX04 302-AX04-C4-COMP 6/13/2022	302-AX04-C5 302-AX04 302-AX04-C5-COMP 6/13/2022
Field Sample ID	Value (0-2 ft bgs)	Value													
Sample Date	(mg/kg)	(mg/kg)													
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.25 (0.14)	0.39 (0.16)	0.42 (0.15)	0.37 (0.18)	U (0.12)	0.16 (0.12)	U (0.12)	U (0.12)	0.056 J (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.63 (0.14)	0.36 (0.16)	0.56 (0.15)	0.93 (0.18)	U (0.12)	0.15 (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	U (0.15)	U (0.16)	0.86 (0.18)	0.54 (0.21)	0.76 (0.2)	0.99 (0.24)	U (0.16)	0.22 (0.16)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.97 (0.14)	0.53 (0.16)	0.81 (0.15)	1 (0.18)	U (0.12)	0.24 (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	0.024 J (0.15)	U (0.15)	U (0.16)	0.46 (0.18)	0.38 (0.21)	0.51 (0.2)	0.45 (0.24)	U (0.16)	0.14 J (0.16)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.66 (0.14)	0.42 (0.16)	0.61 (0.15)	0.96 (0.18)	U (0.12)	0.15 (0.12)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.19)	U (0.2)	0.16 J (0.23)	0.35 (0.26)	0.32 (0.26)	0.54 (0.29)	U (0.2)	0.67 (0.2)	U (0.2)	0.046 J (0.2)	0.42 (0.2)
Naphthalene	66	25	0.032 J (0.19)	0.036 J (0.19)	U (0.19)	U (0.2)	3.6 (0.23)	6.4 (0.26)	6.4 (0.26)	2.2 (0.29)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	0.029 J (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.87 (0.14)	1.1 (0.16)	1.2 (0.15)	1.2 (0.18)	U (0.12)	1.3 (0.12)	U (0.12)	0.081 J (0.12)	0.81 (0.12)
Pyrene	96000	2200	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.63 (0.14)	0.51 (0.16)	0.77 (0.15)	1.5 (0.18)	U (0.12)	0.32 (0.12)	U (0.12)	U (0.12)	0.064 J (0.12)
<b>Metals</b>															
Lead	1000	450	10.6 (2.21)	24.4 (4.31)	5.98 (2.27)	57.8 (2.36)	117 (2.69)	277 (14.9)	257 (14.6)	250 (16.8)	5.82 (2.39)	7.97 (2.48)	6.04 (4.6)	4.54 (2.43)	9.11 (4.83)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	302-AX05-C1	302-AX05-C2	302-AX05-C3	302-AX05-C4	302-AY06-C1	302-AY06-C2	302-AY06-C3	302-AY06-C4	302-AZ05-C1	302-AZ05-C2	302-AZ05-C3	302-AZ05-C4	302-BA05-C1	
	Direct Contact	Groundwater	302-AX05	302-AX05	302-AX05	302-AX05	302-AY06	302-AY06	302-AY06	302-AY06	302-AZ05	302-AZ05	302-AZ05	302-AZ05	302-BA05	
Field Sample ID	Value (0-2 ft bgs)	Value	302-AX05-C1-COMP	302-AX05-C2-COMP	302-AX05-C3-COMP	302-AX05-C4-COMP	302-AY06-C1-COMP	302-AY06-C2-COMP	302-AY06-C3-COMP	302-AY06-C4-COMP	302-AZ05-C1-COMP	302-AZ05-C2-COMP	302-AZ05-C3-COMP	302-AZ05-C4-COMP	302-BA05-C1-COMP	
Sample Date	(mg/kg)	(mg/kg)	6/13/2022	6/13/2022	6/13/2022	6/13/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	6/10/2022	
<b>PAHs</b>																
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.49 (0.12)	U (0.12)	
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.028 J (0.12)	U (0.12)	U (0.13)	U (0.12)	0.12 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	0.2 (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	0.19 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)	U (0.16)	0.18 (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.024 J (0.12)	U (0.12)	U (0.13)	U (0.12)	0.14 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	0.023 J (0.2)	0.029 J (0.21)	U (0.2)	U (0.19)	U (0.19)	U (0.2)	2.1 (0.2)	U (0.2)	
Naphthalene	66	25	0.076 J (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.21)	U (0.2)	0.04 J (0.19)	U (0.19)	U (0.2)	4.6 (0.2)	U (0.2)	
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.043 J (0.12)	0.057 J (0.12)	0.08 J (0.13)	U (0.12)	0.15 (0.12)	U (0.12)	U (0.12)	4.1 (0.12)	U (0.12)	
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.042 J (0.12)	U (0.12)	U (0.13)	U (0.12)	0.23 (0.12)	U (0.12)	U (0.12)	0.14 (0.12)	U (0.12)	
<b>Metals</b>																
Lead	1000	450	9.11 (2.4)	7.29 (2.45)	17.8 (2.39)	19.7 (4.72)	42.4 (11.6)	6.55 (2.39)	5.13 (2.42)	5.36 (2.29)	328 (2.28)	7.97 (2.26)	6.12 (2.31)	7.02 (2.41)	81 (2.35)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-BA05-C2	302-BA05-C3	302-BA05-C4	302-BB06-C1	302-BB06-C2	302-BB06-C3	302-BB06-C4	302-BC05-C1	302-BC05-C2	302-BC05-C3	302-BC05-C4	302-BC05-C5	302-BD05-C1
			302-BA05	302-BA05	302-BA05	302-BB06	302-BB06	302-BB06	302-BB06	302-BC05	302-BC05	302-BC05	302-BC05	302-BC05	302-BC05
Field Sample ID	Value (0-2 ft bgs)	Value	302-BA05-C2-COMP	302-BA05-C3-COMP	302-BA05-C4-COMP	302-BB06-C1-COMP	302-BB06-C2-COMP	302-BB06-C3-COMP	302-BB06-C4-COMP	302-BC05-C1-COMP	302-BC05-C2-COMP	302-BC05-C3-COMP	302-BC05-C4-COMP	302-BC05-C5-COMP	302-BD05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	6/10/2022	6/10/2022	6/10/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/9/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.56)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.56)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.065 J (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	U (0.19)	U (0.16)	U (0.16)	U (0.16)	U (0.74)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	0.081 J (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.56)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.087 J (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	U (0.19)	U (0.16)	U (0.16)	U (0.16)	U (0.74)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	0.058 J (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	U (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.56)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.063 J (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.23)	U (0.2)	U (0.2)	U (0.2)	U (0.92)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.23)	U (0.2)	U (0.2)	U (0.2)	U (0.92)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	0.039 J (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.56)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	0.029 J (0.14)	U (0.12)	U (0.12)	U (0.12)	U (0.56)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.068 J (0.12)
<b>Metals</b>															
Lead	1000	450	6.27 (2.33)	7.1 (2.44)	5.23 (2.46)	42.1 (2.76)	4.59 (2.34)	6.88 (2.44)	5.98 (2.4)	564 (2.17)	6.23 (2.24)	6.81 (2.32)	5.69 (2.28)	6.44 (2.35)	34.2 (2.32)

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.



**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	302-BD05-C2	302-BD05-C3	302-BD05-C4	302-BE04-C1	303-AY01-C1	303-AY01-C2	303-AY01-C3	303-AZ01-C1	303-AZ01-C2	303-AZ01-C3	303-BA01-C1	303-BA01-C2	303-BA02-C1
			302-BD05	302-BD05	302-BD05	302-BE04	303-AY01	303-AY01	303-AY01	303-AZ01	303-AZ01	303-AZ01	303-BA01	303-BA01	303-BA02
Field Sample ID	Value (0-2 ft bgs)	Value	302-BD05-C2-COMP	302-BD05-C3-COMP	302-BD05-C4-COMP	302-BE04-C1-COMP	303-AY01-C1-COMP	303-AY01-C2-COMP	303-AY01-C3-COMP	303-AZ01-C1-COMP	303-AZ01-C2-COMP	303-AZ01-C3-COMP	303-BA01-C1-COMP	303-BA01-C2-COMP	303-BA02-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	6/9/2022	6/9/2022	6/9/2022	6/9/2022	6/22/2022	6/22/2022	6/22/2022	6/21/2022	6/21/2022	6/21/2022	6/22/2022	6/22/2022	6/21/2022
<b>PAHs</b>															
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.5 (0.16)	0.96 (0.19)	0.96 (0.16)	0.51 (0.17)	0.56 (0.13)	0.043 J (0.12)	0.13 (0.11)	0.67 (0.15)	1.6 (0.15)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	0.09 J (0.12)	0.94 (0.16)	1.7 (0.19)	1.7 (0.16)	0.74 (0.17)	0.9 (0.13)	0.13 (0.12)	0.38 (0.11)	1.8 (0.15)	1.2 (0.15)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	0.13 J (0.16)	1.5 (0.21)	2.2 (0.25)	3 (0.22)	0.69 (0.23)	1.1 (0.17)	0.13 J (0.16)	0.47 (0.15)	2.9 (0.2)	1.4 (0.2)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	0.12 (0.12)	1.4 (0.16)	2.7 (0.19)	3 (0.16)	0.66 (0.17)	1.1 (0.13)	0.16 (0.12)	0.53 (0.11)	3 (0.15)	1.8 (0.15)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	0.14 J (0.16)	1.1 (0.21)	1.1 (0.25)	0.84 (0.22)	0.29 (0.23)	0.66 (0.17)	0.068 J (0.16)	0.52 (0.15)	1.8 (0.2)	1 (0.2)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	0.096 J (0.12)	0.99 (0.16)	2 (0.19)	2 (0.16)	0.76 (0.17)	1.1 (0.13)	0.12 (0.12)	0.36 (0.11)	2.1 (0.15)	1.5 (0.15)
Fluorene	130000	3800	U (0.19)	U (0.2)	U (0.2)	U (0.2)	0.34 (0.27)	1.4 (0.31)	0.74 (0.28)	0.33 (0.29)	0.48 (0.22)	U (0.2)	0.033 J (0.19)	0.42 (0.25)	1.6 (0.26)
Naphthalene	66	25	0.036 J (0.19)	U (0.2)	0.087 J (0.2)	0.029 J (0.2)	5.6 (0.27)	7.4 (0.31)	8.4 (0.28)	1.5 (0.29)	4.8 (0.22)	0.12 J (0.2)	0.61 (0.19)	6.7 (0.25)	13 (1.3)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	U (0.12)	0.11 J (0.12)	1.2 (0.16)	4.4 (0.19)	2.5 (0.16)	1.6 (0.17)	2 (0.13)	0.18 (0.12)	0.34 (0.11)	1.6 (0.15)	5.5 (0.15)
Pyrene	96000	2200	U (0.12)	U (0.12)	U (0.12)	0.13 (0.12)	1.2 (0.16)	3.4 (0.19)	3 (0.16)	1.6 (0.17)	1.9 (0.13)	0.2 (0.12)	0.39 (0.11)	2.3 (0.15)	2.3 (0.15)
<b>Metals</b>															
Lead	1000	450	7.17 (2.27)	6.48 (2.36)	5.93 (2.28)	623 (4.54)	23.6 (3.25)	170 (3.6)	176 (3.24)	44.8 (3.33)	62.6 (2.51)	60.8 (2.47)	260 (2.23)	479 (3.04)	131 (2.99)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BB01-C1 303-BB01	303-BB02-C1 303-BB02	303-BB02-C2 303-BB02	303-BB02-C3 303-BB02	303-BC01-C1 303-BC01	303-BC01-C2 303-BC01	303-BD01-C1 303-BD01	303-BD01-C2 303-BD01	303-BD04-C1 303-BD04	303-BD04-C2 303-BD04	303-BE01-C1 303-BE01	303-BE01-C2 303-BE01	303-BE03-C1 303-BE03	
Field Sample ID	Value (0-2 ft bgs)	Value	303-BB01-C1-COMP 6/23/2022	303-BB02-C1-COMP 6/22/2022	303-BB02-C2-COMP 6/22/2022	303-BB02-C3-COMP 6/22/2022	303-BC01-C1-COMP 6/22/2022	303-BC01-C2-COMP 6/22/2022	303-BD01-C1-COMP 6/17/2022	303-BD01-C2-COMP 6/17/2022	303-BD04-C1-COMP 6/20/2022	303-BD04-C2-COMP 6/20/2022	303-BE01-C1-COMP 6/24/2022	303-BE01-C2-COMP 6/24/2022	303-BE03-C1-COMP 6/20/2022	
Sample Date	(mg/kg)	(mg/kg)														
<b>PAHs</b>																
Anthracene	190000	350	0.23 J (0.36)	0.21 (0.12)	2.3 (0.13)	1.1 (0.13)	2.5 (0.12)	0.43 (0.12)	0.66 (0.13)	7.9 (0.15)	U (0.55)	U (0.12)	0.32 (0.12)	0.55 (0.1)	0.67 (0.57)	
Benzo(a)anthracene	130	340	0.61 (0.36)	0.61 (0.12)	3.1 (0.13)	2.6 (0.13)	3.5 (0.12)	0.65 (0.12)	1.3 (0.13)	14 (1.5)	0.27 J (0.55)	0.06 J (0.12)	1.2 (0.12)	1.9 (0.1)	1.7 (0.57)	
Benzo(a)pyrene	91	46	0.93 (0.48)	0.58 (0.16)	4 (0.17)	1.9 (0.17)	2.4 (0.16)	0.75 (0.17)	1.5 (0.17)	14 (2.1)	U (0.73)	0.059 J (0.15)	1.6 (0.16)	2.2 (0.14)	2.6 (0.76)	
Benzo(b)fluoranthene	76	170	0.9 (0.36)	0.71 (0.12)	3.6 (0.13)	2.1 (0.13)	2.7 (0.12)	0.82 (0.12)	1.6 (0.13)	14 (1.5)	0.27 J (0.55)	0.07 J (0.12)	1.5 (0.12)	2.5 (0.1)	2.9 (0.57)	
Benzo(g,h,i)perylene	190000	180	0.6 (0.48)	0.42 (0.16)	1.1 (0.17)	1.3 (0.17)	1.6 (0.16)	0.45 (0.17)	0.73 (0.17)	4.7 (0.21)	0.2 J (0.73)	0.034 J (0.15)	0.77 (0.16)	1.2 (0.14)	1.1 (0.76)	
Chrysene	760	230	0.66 (0.36)	0.58 (0.12)	2.9 (0.13)	2.3 (0.13)	3.1 (0.12)	0.67 (0.12)	1.3 (0.13)	13 (1.5)	0.26 J (0.55)	0.052 J (0.12)	1.2 (0.12)	1.9 (0.1)	1.6 (0.57)	
Fluorene	130000	3800	0.07 J (0.6)	0.097 J (0.2)	2.4 (0.22)	0.92 (0.21)	1.7 (0.21)	0.4 (0.21)	0.67 (0.21)	3.7 (0.26)	U (0.91)	U (0.19)	0.29 (0.19)	0.31 (0.18)	0.33 J (0.95)	
Naphthalene	66	25	0.68 (0.6)	0.75 (0.2)	11 (2.2)	7.7 (0.21)	11 (2.1)	2.8 (0.21)	2.8 (0.21)	4.3 (0.26)	U (0.91)	U (0.19)	0.51 (0.19)	0.84 (0.18)	7.1 (0.95)	
Phenanthrene	190000	10000	0.47 (0.36)	0.72 (0.12)	10 (1.3)	4.8 (0.13)	12 (1.2)	1.2 (0.12)	1.8 (0.13)	32 (1.5)	0.23 J (0.55)	0.054 J (0.12)	1.1 (0.12)	1.6 (0.1)	2.2 (0.57)	
Pyrene	96000	2200	0.79 (0.36)	0.81 (0.12)	4.6 (0.13)	3.9 (0.13)	6.2 (0.12)	1.3 (0.12)	1.4 (0.13)	28 (1.5)	0.38 J (0.55)	0.072 J (0.12)	1.6 (0.12)	2.9 (0.1)	1.6 (0.57)	
<b>Metals</b>																
Lead	1000	450	107 (2.28)	128 (2.28)	152 (5.14)	99.2 (2.52)	170 (2.42)	141 (2.55)	152 (2.56)	306 (2.93)	122 (2.15)	51.6 (2.26)	163 (11.4)	41.4 (2.06)	16.4 (2.23)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BE03-C2 303-BE03	303-BF01-C1 303-BF01	303-BF01-C2 303-BF01	303-BF05-C1 303-BF05	303-BF05-C2 303-BF05	303-BF05-C3 303-BF05	303-BF05-C4 303-BF05	303-BG01-C1 303-BG01	303-BG04-C1 303-BG04	303-BG04-C2 303-BG04	303-BG04-C3 303-BG04	303-BG04-C4 303-BG04	303-BH01-C1 303-BH01	
Field Sample ID	Value (0-2 ft bgs)	Value	303-BE03-C2-COMP 6/20/2022	303-BF01-C1-COMP 6/24/2022	303-BF01-C2-COMP 6/24/2022	303-BF05-C1-COMP 6/20/2022	303-BF05-C2-COMP 6/20/2022	303-BF05-C3-COMP 6/20/2022	303-BF05-C4-COMP 6/20/2022	303-BG01-C1-COMP 6/24/2022	303-BG04-C1-COMP 6/21/2022	303-BG04-C2-COMP 6/21/2022	303-BG04-C3-COMP 6/21/2022	303-BG04-C4-COMP 6/21/2022	303-BH01-C1-COMP 6/23/2022	
Sample Date	(mg/kg)	(mg/kg)														
<b>PAHs</b>																
Anthracene	190000	350	U (0.12)	0.15 (0.12)	0.35 (0.13)	U (0.12)	0.2 (0.15)	0.068 J (0.11)	0.13 (0.11)	1.2 (0.16)	U (0.11)	0.14 (0.11)	0.24 (0.15)	0.13 (0.11)	0.16 (0.14)	
Benzo(a)anthracene	130	340	0.067 J (0.12)	0.1 J (0.12)	0.69 (0.13)	0.091 J (0.12)	0.53 (0.15)	0.16 (0.11)	0.38 (0.11)	5.1 (0.16)	0.07 J (0.11)	0.56 (0.11)	0.76 (0.15)	0.34 (0.11)	0.61 (0.14)	
Benzo(a)pyrene	91	46	0.067 J (0.17)	0.084 J (0.16)	0.62 (0.17)	0.14 J (0.16)	0.66 (0.2)	0.16 (0.15)	0.52 (0.14)	6.6 (0.22)	0.099 J (0.15)	0.78 (0.15)	0.77 (0.2)	0.34 (0.15)	0.71 (0.18)	
Benzo(b)fluoranthene	76	170	0.084 J (0.12)	0.093 J (0.12)	0.69 (0.13)	0.16 (0.12)	0.72 (0.15)	0.18 (0.11)	0.52 (0.11)	6.7 (0.16)	0.1 J (0.11)	0.83 (0.11)	0.88 (0.15)	0.41 (0.11)	0.77 (0.14)	
Benzo(g,h,i)perylene	190000	180	0.034 J (0.17)	0.055 J (0.16)	0.29 (0.17)	0.1 J (0.16)	0.42 (0.2)	0.11 J (0.15)	0.3 (0.14)	3.1 (0.22)	0.052 J (0.15)	0.49 (0.15)	0.48 (0.2)	0.17 (0.15)	0.41 (0.18)	
Chrysene	760	230	0.058 J (0.12)	0.29 (0.12)	0.67 (0.13)	0.092 J (0.12)	0.53 (0.15)	0.16 (0.11)	0.39 (0.11)	4.6 (0.16)	0.091 J (0.11)	0.95 (0.11)	0.78 (0.15)	0.33 (0.11)	0.62 (0.14)	
Fluorene	130000	3800	U (0.21)	1.1 (0.2)	0.35 (0.21)	U (0.2)	0.084 J (0.25)	0.044 J (0.19)	0.079 J (0.18)	0.56 (0.27)	U (0.18)	0.06 J (0.18)	0.17 J (0.25)	0.1 J (0.19)	0.04 J (0.23)	
Naphthalene	66	25	U (0.21)	0.086 J (0.2)	0.1 J (0.21)	0.05 J (0.2)	0.64 (0.25)	1 (0.19)	1.1 (0.18)	3.2 (0.27)	0.038 J (0.18)	0.39 (0.18)	3.2 (0.25)	1.8 (0.19)	0.16 J (0.23)	
Phenanthrene	190000	10000	0.068 J (0.12)	2.2 (0.12)	1.5 (0.13)	0.036 J (0.12)	0.52 (0.15)	0.26 (0.11)	0.35 (0.11)	2.8 (0.16)	0.099 J (0.11)	0.41 (0.11)	0.95 (0.15)	0.5 (0.11)	0.51 (0.14)	
Pyrene	96000	2200	0.1 J (0.12)	0.21 (0.12)	1.1 (0.13)	0.1 J (0.12)	0.62 (0.15)	0.24 (0.11)	0.39 (0.11)	5 (0.16)	0.12 (0.11)	0.73 (0.11)	1.1 (0.15)	0.44 (0.11)	1 (0.14)	
<b>Metals</b>																
Lead	1000	450	8.05 (2.4)	241 (4.7)	64.8 (2.52)	150 (2.46)	462 (3.06)	123 (2.27)	89.1 (2.12)	103 (3.15)	75.4 (2.1)	4.74 (4.34)	66.8 (2.93)	13.8 (2.24)	305 (2.62)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	303-BH02-C1	303-BH02-C2	303-BH02-C3	303-BH02-C4	303-BH02-C5	303-BI01-C1	303-BI01-C2	303-BI03-C1	303-BI03-C2	303-BI03-C3	303-BI03-C4	303-BJ01-C1	303-BJ01-C2
	Direct Contact	Groundwater	303-BH02	303-BH02	303-BH02	303-BH02	303-BH02	303-BI01	303-BI01	303-BI03	303-BI03	303-BI03	303-BI03	303-BJ01	303-BJ01
Field Sample ID	Value (0-2 ft bgs)	Value	303-BH02-C1-COMP	303-BH02-C2-COMP	303-BH02-C3-COMP	303-BH02-C4-COMP	303-BH02-C5-COMP	303-BI01-C1-COMP	303-BI01-C2-COMP	303-BI03-C1-COMP	303-BI03-C2-COMP	303-BI03-C3-COMP	303-BI03-C4-COMP	303-BJ01-C1-COMP	303-BJ01-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	6/17/2022	6/17/2022	6/17/2022	6/17/2022	6/17/2022	6/23/2022	6/23/2022	6/17/2022	6/17/2022	6/17/2022	6/17/2022	6/23/2022	6/23/2022
<b>PAHs</b>															
Anthracene	190000	350	0.22 (0.12)	U (0.12)	0.11 J (0.15)	0.058 J (0.12)	U (0.12)	0.25 (0.14)	0.36 (0.12)	2 (0.15)	4.6 (0.16)	0.54 (0.15)	18 (0.69)	U (0.46)	U (0.12)
Benzo(a)anthracene	130	340	0.38 (0.12)	0.11 J (0.12)	0.28 (0.15)	0.2 (0.12)	0.11 J (0.12)	1 (0.14)	1.1 (0.12)	3.6 (0.15)	7.7 (0.16)	0.88 (0.15)	41 (0.69)	0.34 J (0.46)	0.11 J (0.12)
Benzo(a)pyrene	91	46	0.4 (0.16)	0.12 J (0.16)	0.41 (0.19)	0.18 (0.16)	0.13 J (0.16)	1.3 (0.18)	1.3 (0.16)	3.2 (0.2)	6 (0.21)	1.2 (0.2)	41 (0.92)	0.57 J (0.61)	0.079 J (0.15)
Benzo(b)fluoranthene	76	170	0.42 (0.12)	0.14 (0.12)	0.39 (0.15)	0.18 (0.12)	0.16 (0.12)	1.4 (0.14)	1.3 (0.12)	3.9 (0.15)	7.2 (0.16)	1.2 (0.15)	38 (6.9)	0.72 (0.46)	0.12 (0.12)
Benzo(g,h,i)perylene	190000	180	0.18 (0.16)	0.07 J (0.16)	0.15 J (0.19)	0.16 (0.16)	0.096 J (0.16)	0.68 (0.18)	0.58 (0.16)	1.7 (0.2)	3.6 (0.21)	0.84 (0.2)	18 (0.92)	0.35 J (0.61)	0.048 J (0.15)
Chrysene	760	230	0.34 (0.12)	0.1 J (0.12)	0.27 (0.15)	0.17 (0.12)	0.1 J (0.12)	0.98 (0.14)	0.98 (0.12)	3.4 (0.15)	7.2 (0.16)	0.91 (0.15)	37 (0.69)	0.51 (0.46)	0.099 J (0.12)
Fluorene	130000	3800	0.12 J (0.2)	U (0.2)	0.085 J (0.24)	0.028 J (0.2)	U (0.2)	0.076 J (0.23)	0.14 J (0.2)	1.3 (0.25)	2.6 (0.26)	0.49 (0.26)	8.1 (1.2)	U (0.77)	U (0.19)
Naphthalene	66	25	0.26 (0.2)	0.054 J (0.2)	1.7 (0.24)	0.17 J (0.2)	0.092 J (0.2)	0.7 (0.23)	0.48 (0.2)	1.1 (0.25)	3.2 (0.26)	4.7 (0.26)	13 (1.2)	0.3 J (0.77)	U (0.19)
Phenanthrene	190000	10000	0.74 (0.12)	0.066 J (0.12)	0.54 (0.15)	0.19 (0.12)	0.061 J (0.12)	0.63 (0.14)	0.97 (0.12)	8.4 (0.15)	19 (0.79)	1.7 (0.15)	42 (6.9)	0.26 J (0.46)	0.11 J (0.12)
Pyrene	96000	2200	0.58 (0.12)	0.14 (0.12)	0.38 (0.15)	0.31 (0.12)	0.14 (0.12)	1.2 (0.14)	1.5 (0.12)	6.5 (0.15)	16 (0.79)	1.6 (0.15)	44 (6.9)	0.82 (0.46)	0.15 (0.12)
<b>Metals</b>															
Lead	1000	450	10.3 (2.44)	111 (2.26)	62.5 (2.97)	14.2 (2.32)	442 (2.31)	140 (2.74)	152 (2.31)	74.5 (2.91)	159 (3.12)	106 (3)	133 (2.64)	44.7 (3.06)	36.6 (4.5)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BJ02-C1 303-BJ02	303-BJ02-C2 303-BJ02	303-BJ02-C3 303-BJ02	303-BK01-C1 303-BK01	303-BK03-C1 303-BK03	303-BK03-C2 303-BK03	303-BK03-C3 303-BK03	303-BL02-C1 303-BL02	303-BL02-C2 303-BL02	303-BL02-C3 303-BL02	303-BM02-C1 303-BM02	303-BM02-C2 303-BM02	303-BM02-C3 303-BM02	
Field Sample ID	Value (0-2 ft bgs)	Value	303-BJ02-C1-COMP	303-BJ02-C2-COMP	303-BJ02-C3-COMP	303-BK01-C1-COMP	303-BK03-C1-COMP	303-BK03-C2-COMP	303-BK03-C3-COMP	303-BL02-C1-COMP	303-BL02-C2-COMP	303-BL02-C3-COMP	303-BM02-C1-COMP	303-BM02-C2-COMP	303-BM02-C3-COMP	
Sample Date	(mg/kg)	(mg/kg)	6/17/2022	6/17/2022	6/17/2022	6/23/2022	6/17/2022	6/17/2022	6/17/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	6/16/2022	
<b>PAHs</b>																
Anthracene	190000	350	0.05 J (0.13)	0.87 (0.14)	0.87 (0.13)	0.81 (0.61)	0.4 (0.11)	1.8 (0.11)	0.17 (0.13)	0.037 J (0.11)	0.054 J (0.14)	2.6 (0.14)	0.38 (0.11)	U (0.12)	0.78 (0.46)	
Benzo(a)anthracene	130	340	0.12 J (0.13)	0.54 (0.14)	1.6 (0.13)	0.66 (0.61)	1.8 (0.11)	3.3 (0.11)	0.49 (0.13)	0.049 J (0.11)	0.18 (0.14)	4.4 (0.14)	1.5 (0.11)	0.087 J (0.12)	0.98 (0.46)	
Benzo(a)pyrene	91	46	0.11 J (0.17)	0.49 (0.19)	1.6 (0.17)	0.67 J (0.82)	1.4 (0.14)	3.7 (0.15)	0.55 (0.17)	0.047 J (0.15)	0.22 (0.19)	4 (0.18)	1.4 (0.15)	0.076 J (0.15)	1.2 (0.62)	
Benzo(b)fluoranthene	76	170	0.13 (0.13)	0.69 (0.14)	1.6 (0.13)	0.84 (0.61)	1.6 (0.11)	4.1 (0.11)	0.58 (0.13)	0.038 J (0.11)	0.22 (0.14)	4.2 (0.14)	1.7 (0.11)	0.084 J (0.12)	1 (0.46)	
Benzo(g,h,i)perylene	190000	180	0.07 J (0.17)	0.33 (0.19)	1 (0.17)	0.43 J (0.82)	0.57 (0.14)	1.3 (0.15)	0.26 (0.17)	0.035 J (0.15)	0.13 J (0.19)	1.9 (0.18)	0.93 (0.15)	0.051 J (0.15)	1.1 (0.62)	
Chrysene	760	230	0.11 J (0.13)	0.6 (0.14)	1.7 (0.13)	0.66 (0.61)	1.5 (0.11)	3 (0.11)	0.45 (0.13)	0.068 J (0.11)	0.18 (0.14)	4.2 (0.14)	1.5 (0.11)	0.077 J (0.12)	1.5 (0.46)	
Fluorene	130000	3800	0.021 J (0.21)	0.96 (0.24)	1.2 (0.22)	2.9 (1)	0.093 J (0.18)	0.78 (0.18)	0.096 J (0.21)	0.084 J (0.19)	0.046 J (0.24)	2.7 (0.23)	0.19 (0.19)	U (0.19)	1.4 (0.78)	
Naphthalene	66	25	U (0.21)	1.1 (0.24)	4 (0.22)	0.6 J (1)	0.15 J (0.18)	0.16 J (0.18)	0.31 (0.21)	0.033 J (0.19)	0.26 (0.24)	2.1 (0.23)	0.21 (0.19)	0.038 J (0.19)	1.2 (0.78)	
Phenanthrene	190000	10000	0.15 (0.13)	2.7 (0.14)	4.5 (0.13)	6.8 (0.61)	1.2 (0.11)	5.6 (0.11)	0.63 (0.13)	0.22 (0.11)	0.17 (0.14)	8.9 (0.14)	1 (0.11)	0.084 J (0.12)	3.3 (0.46)	
Pyrene	96000	2200	0.17 (0.13)	0.82 (0.14)	3.2 (0.13)	1.2 (0.61)	2 (0.11)	5.5 (0.11)	0.72 (0.13)	0.082 J (0.11)	0.2 (0.14)	5.8 (0.14)	2.4 (0.11)	0.13 (0.12)	3.1 (0.46)	
<b>Metals</b>																
Lead	1000	450	50.3 (2.55)	439 (2.88)	59.9 (2.66)	11.9 (2.48)	19.5 (2.13)	11 (2.17)	142 (5.12)	436 (2.28)	63.1 (2.82)	90.4 (2.69)	74.6 (2.2)	60 (2.27)	168 (6.2)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil	Non-Residential Soil to	303-BN02-C1	303-BN02-C2	303-BN02-C3	303-BN03-C1	303-BO02-C1	303-BO02-C2	303-BO02-C3	303-BP02-C1	303-BP02-C2	303-BP02-C3	303-BQ01-C1	303-BQ02-C1	303-BQ02-C2	
	Direct Contact	Groundwater	303-BN02	303-BN02	303-BN02	303-BN03	303-BO02	303-BO02	303-BO02	303-BP02	303-BP02	303-BP02	303-BQ01	303-BQ02	303-BQ02	
Field Sample ID	Value (0-2 ft bgs)	Value	303-BN02-C1-COMP	303-BN02-C2-COMP	303-BN02-C3-COMP	303-BN03-C1-COMP	303-BO02-C1-COMP	303-BO02-C2-COMP	303-BO02-C3-COMP	303-BP02-C1-COMP	303-BP02-C2-COMP	303-BP02-C3-COMP	303-BQ01-C1-COMP	303-BQ02-C1-COMP	303-BQ02-C2-COMP	
Sample Date	(mg/kg)	(mg/kg)	6/16/2022	6/16/2022	6/16/2022	6/20/2022	6/16/2022	6/16/2022	6/16/2022	6/17/2022	6/17/2022	6/17/2022	6/23/2022	6/17/2022	6/17/2022	
<b>PAHs</b>																
Anthracene	190000	350	0.38 (0.1)	0.13 (0.11)	0.096 J (0.11)	0.83 (0.59)	0.13 (0.11)	0.12 (0.12)	0.42 (0.13)	0.48 (0.12)	0.081 J (0.12)	0.25 (0.11)	0.25 (0.14)	2.2 (0.14)	0.51 (0.13)	
Benzo(a)anthracene	130	340	0.59 (0.1)	0.61 (0.11)	0.15 (0.11)	2.1 (0.59)	0.14 (0.11)	0.07 J (0.12)	1.8 (0.13)	1.1 (0.12)	0.093 J (0.12)	0.26 (0.11)	0.56 (0.14)	3.4 (0.14)	0.52 (0.13)	
Benzo(a)pyrene	91	46	0.42 (0.14)	0.56 (0.15)	0.12 J (0.15)	2 (0.78)	0.16 (0.15)	0.098 J (0.16)	1.7 (0.18)	0.94 (0.16)	0.11 J (0.15)	0.14 J (0.15)	0.85 (0.19)	3.3 (0.18)	1.2 (0.17)	
Benzo(b)fluoranthene	76	170	0.54 (0.1)	0.62 (0.11)	0.14 (0.11)	2.3 (0.59)	0.18 (0.11)	0.096 J (0.12)	1.6 (0.13)	1.2 (0.12)	0.11 J (0.12)	0.18 (0.11)	0.97 (0.14)	3.3 (0.14)	1.3 (0.13)	
Benzo(g,h,i)perylene	190000	180	0.34 (0.14)	0.26 (0.15)	0.062 J (0.15)	1.4 (0.78)	0.11 J (0.15)	0.071 J (0.16)	0.84 (0.18)	0.52 (0.16)	0.046 J (0.15)	0.074 J (0.15)	0.5 (0.19)	1.4 (0.18)	1.2 (0.17)	
Chrysene	760	230	0.52 (0.1)	0.54 (0.11)	0.15 (0.11)	2 (0.59)	0.18 (0.11)	0.07 J (0.12)	1.5 (0.13)	1.2 (0.12)	0.093 J (0.12)	0.22 (0.11)	0.56 (0.14)	3.2 (0.14)	0.58 (0.13)	
Fluorene	130000	3800	0.22 (0.18)	0.026 J (0.19)	0.073 J (0.19)	0.33 J (0.98)	0.85 (0.18)	0.13 J (0.2)	0.27 (0.22)	0.38 (0.2)	0.084 J (0.19)	0.45 (0.18)	0.12 J (0.24)	3 (0.23)	4.4 (0.22)	
Naphthalene	66	25	0.29 (0.18)	0.29 (0.19)	0.082 J (0.19)	1.3 (0.98)	8.6 (0.91)	0.42 (0.2)	0.99 (0.22)	0.12 J (0.2)	0.65 (0.19)	1.3 (0.18)	1.2 (0.24)	11 (1.2)	2.1 (0.22)	
Phenanthrene	190000	10000	1.6 (0.1)	0.14 (0.11)	0.32 (0.11)	3 (0.59)	0.68 (0.11)	0.06 J (0.12)	1 (0.13)	1.3 (0.12)	0.29 (0.12)	1 (0.11)	0.73 (0.14)	12 (0.69)	2 (0.13)	
Pyrene	96000	2200	1.1 (0.1)	0.62 (0.11)	0.23 (0.11)	3.2 (0.59)	0.35 (0.11)	0.16 (0.12)	2.8 (0.13)	2.1 (0.12)	0.17 (0.12)	0.5 (0.11)	0.75 (0.14)	6.9 (0.14)	0.79 (0.13)	
<b>Metals</b>																
Lead	1000	450	112 (2.1)	10.3 (2.2)	6.78 (2.25)	86.7 (2.33)	47.8 (2.11)	90.4 (2.36)	83.9 (2.59)	279 (2.26)	222 (2.28)	113 (2.25)	88.4 (2.83)	95.5 (2.7)	168 (2.61)	

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2a**  
**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1A)**

Soil Management Plan Addendum No. 3

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

Location Cell	Non-Residential Soil Direct Contact	Non-Residential Soil to Groundwater	303-BQ02-C3 303-BQ02	303-BR02-C1 303-BR02	303-BR02-C2 303-BR02	303-BS02-C1 303-BS02	303-BS02-C2 303-BS02	303-BS03-C1 303-BS03	303-BT01-C1 303-BT01	303-BT01-C2 303-BT01	303-BT01-C3 303-BT01	303-BU01-C1 303-BU01	303-BU01-C2 303-BU01	303-BV01-C1 303-BV01	303-BW01-C1 303-BW01	
Field Sample ID	Value (0-2 ft bgs)	Value	303-BQ02-C3-COMP 6/17/2022	303-BR02-C1-COMP 6/16/2022	303-BR02-C2-COMP 6/16/2022	303-BS02-C1-COMP 6/16/2022	303-BS02-C2-COMP 6/16/2022	303-BS03-C1-COMP 6/14/2022	303-BT01-C1-COMP 6/16/2022	303-BT01-C2-COMP 6/16/2022	303-BT01-C3-COMP 6/16/2022	303-BU01-C1-COMP 6/16/2022	303-BU01-C2-COMP 6/16/2022	303-BV01-C1-COMP 6/15/2022	303-BW01-C1-COMP 6/14/2022	
Sample Date	(mg/kg)	(mg/kg)														
<b>PAHs</b>																
Anthracene	190000	350	0.6 (0.13)	0.059 J (0.12)	0.05 J (0.12)	0.2 J (0.35)	U (0.13)	U (0.12)	U (0.33)	0.14 J (0.34)	U (0.32)	0.63 (0.12)	0.98 (0.12)	1.2 (0.12)	0.17 (0.12)	
Benzo(a)anthracene	130	340	0.64 (0.13)	0.28 (0.12)	0.26 (0.12)	0.34 J (0.35)	0.035 J (0.13)	U (0.12)	0.56 (0.33)	0.18 J (0.34)	0.16 J (0.32)	1.3 (0.12)	1.7 (0.12)	2 (0.12)	0.48 (0.12)	
Benzo(a)pyrene	91	46	0.5 (0.18)	0.33 (0.16)	0.25 (0.16)	0.63 (0.47)	U (0.17)	U (0.16)	0.52 (0.44)	0.15 J (0.46)	0.16 J (0.42)	1.3 (0.16)	1.9 (0.16)	1.9 (0.16)	0.57 (0.16)	
Benzo(b)fluoranthene	76	170	0.68 (0.13)	0.38 (0.12)	0.31 (0.12)	0.45 (0.35)	U (0.13)	U (0.12)	0.61 (0.33)	0.19 J (0.34)	0.16 J (0.32)	1.4 (0.12)	2.1 (0.12)	2.1 (0.12)	0.65 (0.12)	
Benzo(g,h,i)perylene	190000	180	0.3 (0.18)	0.16 (0.16)	0.21 (0.16)	0.26 J (0.47)	U (0.17)	U (0.16)	0.28 J (0.44)	U (0.46)	0.092 J (0.42)	0.75 (0.16)	1 (0.16)	0.84 (0.16)	0.32 (0.16)	
Chrysene	760	230	0.75 (0.13)	0.26 (0.12)	0.25 (0.12)	0.42 (0.35)	0.032 J (0.13)	U (0.12)	0.5 (0.33)	0.17 J (0.34)	0.15 J (0.32)	1.4 (0.12)	1.6 (0.12)	1.9 (0.12)	0.52 (0.12)	
Fluorene	130000	3800	2.9 (0.22)	0.042 J (0.19)	U (0.2)	0.22 J (0.59)	U (0.21)	U (0.19)	U (0.56)	0.14 J (0.58)	0.074 J (0.53)	0.87 (0.2)	3.1 (0.21)	1.2 (0.2)	0.12 J (0.19)	
Naphthalene	66	25	12 (1.1)	0.2 (0.19)	0.5 (0.2)	2 (0.59)	U (0.21)	U (0.19)	0.11 J (0.56)	0.12 J (0.58)	0.085 J (0.53)	0.71 (0.2)	1.1 (0.21)	1.4 (0.2)	0.4 (0.19)	
Phenanthrene	190000	10000	5 (0.13)	0.15 (0.12)	0.11 J (0.12)	0.72 (0.35)	0.055 J (0.13)	U (0.12)	0.18 J (0.33)	0.5 (0.34)	0.14 J (0.32)	2.1 (0.12)	4.2 (0.12)	4.2 (0.12)	0.29 (0.12)	
Pyrene	96000	2200	1.2 (0.13)	0.32 (0.12)	0.3 (0.12)	0.74 (0.35)	0.052 J (0.13)	U (0.12)	0.49 (0.33)	0.34 (0.34)	0.2 J (0.32)	1.9 (0.12)	2.6 (0.12)	3.5 (0.12)	0.73 (0.12)	
<b>Metals</b>																
Lead	1000	450	1650 (2.65)	369 (2.34)	89.1 (2.41)	215 (4.92)	154 (2.49)	39.2 (11.5)	98.9 (2.3)	105 (2.41)	4.53 (2.16)	57.2 (2.36)	126 (2.45)	442 (2.24)	162 (2.25)	

**Notes:**

- Concentrations are presented in mg/kg.
- Yellow shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
ft bgs -- Feet Below Ground Surface.  
mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-AA02-C1	301-AA02-C2	301-AA02-C3	301-AA02-C4	301-AA03-C1	301-AA03-C2	301-AA03-C3	301-AA03-C4	301-AA04-C1	301-AA04-C2	301-AA04-C3
Cell	Direct Contact Numeric	Groundwater Numeric	301-AA02	301-AA02	301-AA02	301-AA02	301-AA03	301-AA03	301-AA03	301-AA03	301-AA04	301-AA04	301-AA04
Field Sample ID	Value (0-2 ft bgs)	Value	301-AA02-C1-COMP	301-AA02-C2-COMP	301-AA02-C3-COMP	301-AA02-C4-COMP	301-AA03-C1-COMP	301-AA03-C2-COMP	301-AA03-C3-COMP	301-AA03-C4-COMP	301-AA04-C1-COMP	301-AA04-C2-COMP	301-AA04-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022	8/8/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.1)	U (1.1)	U (0.1)	U (0.1)	U (0.12)	U (0.12)	0.11 J (0.12)	U (0.12)	U (1)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.1)	U (1.1)	0.067 J (0.1)	0.072 J (0.1)	U (0.12)	0.093 J (0.12)	0.18 (0.12)	U (0.12)	0.19 J (1)	0.14 (0.11)	0.14 (0.11)
Benzo(a)pyrene	91	46	U (0.14)	U (1.5)	0.071 J (0.14)	0.078 J (0.14)	U (0.15)	0.1 J (0.16)	0.15 J (0.16)	U (0.15)	U (1.4)	0.15 (0.15)	0.18 (0.15)
Benzo(b)fluoranthene	76	170	U (0.1)	U (1.1)	0.082 J (0.1)	0.09 J (0.1)	U (0.12)	0.12 (0.12)	0.18 (0.12)	U (0.12)	U (1)	0.17 (0.11)	0.13 (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (1.5)	0.034 J (0.14)	0.045 J (0.14)	U (0.15)	0.056 J (0.16)	0.066 J (0.16)	U (0.15)	0.21 J (1.4)	0.13 J (0.15)	0.14 J (0.15)
Chrysene	760	230	U (0.1)	U (1.1)	0.065 J (0.1)	0.073 J (0.1)	U (0.12)	0.1 J (0.12)	0.16 (0.12)	U (0.12)	0.22 J (1)	0.2 (0.11)	0.26 (0.11)
Fluorene	130000	3800	U (0.18)	U (1.9)	U (0.17)	U (0.17)	U (0.19)	0.02 J (0.2)	0.058 J (0.2)	U (0.19)	U (1.7)	U (0.19)	U (0.19)
Naphthalene	66	25	U (0.18)	U (1.9)	U (0.17)	U (0.17)	U (0.19)	0.062 J (0.2)	U (0.2)	U (0.19)	U (1.7)	U (0.19)	U (0.19)
Phenanthrene	190000	10000	U (0.1)	U (1.1)	0.056 J (0.1)	0.076 J (0.1)	U (0.12)	0.17 (0.12)	0.39 (0.12)	U (0.12)	0.22 J (1)	0.078 J (0.11)	U (0.11)
Pyrene	96000	2200	0.022 J (0.1)	0.21 J (1.1)	0.089 J (0.1)	0.096 J (0.1)	U (0.12)	0.21 (0.12)	0.31 (0.12)	U (0.12)	0.25 J (1)	0.16 (0.11)	0.19 (0.11)
<b>Metals</b>													
Lead	1000	450	4.64 (2.08)	5.9 (2.16)	14.8 (2.06)	62.5 (2.05)	5.98 (2.24)	35.2 (2.31)	343 (2.3)	48.4 (22.1)	13.9 (1.97)	21.3 (4.31)	57.9 (2.15)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-AA04-C4	301-AA04-C5	301-AA05-C1	301-AA05-C2	301-AA05-C3	301-AA05-C4	301-AA05-C5	301-AB01-C1	301-AB01-C2	301-AB01-C3	301-AB01-C4
Cell	Direct Contact Numeric	Groundwater Numeric	301-AA04	301-AA04	301-AA05	301-AA05	301-AA05	301-AA05	301-AA05	301-AB01	301-AB01	301-AB01	301-AB01
Field Sample ID	Value (0-2 ft bgs)	Value	301-AA04-C4-COMP	301-AA04-C5-COMP	301-AA05-C1-COMP	301-AA05-C2-COMP	301-AA05-C3-COMP	301-AA05-C4-COMP	301-AA05-C5-COMP	301-AB01-C1-COMP	301-AB01-C2-COMP	301-AB01-C3-COMP	301-AB01-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	8/8/2022	8/8/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/15/2022	8/15/2022	8/15/2022	8/15/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.34)	0.22 (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	0.17 J (0.34)	0.67 (0.11)	0.1 J (0.11)	0.094 J (0.12)	U (0.11)	0.22 (0.12)	0.08 J (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	0.2 J (0.45)	0.8 (0.15)	0.12 J (0.14)	0.089 J (0.16)	U (0.14)	0.34 (0.16)	U (0.15)	U (0.13)	U (0.16)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	0.2 J (0.34)	1.4 (0.11)	0.15 (0.11)	0.12 (0.12)	U (0.11)	0.26 (0.12)	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.16 J (0.45)	0.7 (0.15)	0.15 (0.14)	0.067 J (0.16)	U (0.14)	0.38 (0.16)	U (0.15)	U (0.13)	U (0.16)	U (0.16)	U (0.15)
Chrysene	760	230	0.18 J (0.34)	1.1 (0.11)	0.15 (0.11)	0.19 (0.12)	U (0.11)	0.34 (0.12)	0.047 J (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
Fluorene	130000	3800	U (0.56)	0.06 J (0.19)	0.021 J (0.18)	0.026 J (0.19)	0.058 J (0.18)	U (0.2)	U (0.19)	U (0.17)	U (0.2)	U (0.19)	U (0.19)
Naphthalene	66	25	U (0.56)	0.5 (0.19)	0.093 J (0.18)	0.037 J (0.19)	0.046 J (0.18)	0.047 J (0.2)	U (0.19)	U (0.17)	U (0.2)	U (0.19)	U (0.19)
Phenanthrene	190000	10000	0.1 J (0.34)	0.97 (0.11)	0.16 (0.11)	0.11 J (0.12)	0.11 (0.11)	0.13 (0.12)	U (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
Pyrene	96000	2200	0.21 J (0.34)	0.98 (0.11)	0.16 (0.11)	0.15 (0.12)	U (0.11)	0.15 (0.12)	0.12 (0.11)	U (0.1)	U (0.12)	U (0.12)	U (0.11)
<b>Metals</b>													
Lead	1000	450	23.2 (2.24)	37.9 (2.21)	68.1 (10.5)	68.6 (11.4)	3.93 J (10.3)	7.16 (2.33)	7.62 (4.31)	2.68 (1.95)	3.99 (2.32)	6.02 (2.25)	7.22 (2.29)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-AB05-C1	301-AB05-C2	301-AB05-C3	301-AB05-C4	301-AB05-C5	301-AC02-C1	301-AC02-C2	301-AC02-C3	301-AC02-C4	301-AC02-C5	301-AC03-C1
Cell	Direct Contact Numeric	Groundwater Numeric	301-AB05	301-AB05	301-AB05	301-AB05	301-AB05	301-AC02	301-AC02	301-AC02	301-AC02	301-AC02	301-AC03
Field Sample ID	Value (0-2 ft bgs)	Value	301-AB05-C1-COMP	301-AB05-C2-COMP	301-AB05-C3-COMP	301-AB05-C4-COMP	301-AB05-C5-COMP	301-AC02-C1-COMP	301-AC02-C2-COMP	301-AC02-C3-COMP	301-AC02-C4-COMP	301-AC02-C5-COMP	301-AC03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022	8/16/2022	8/16/2022	8/16/2022	8/16/2022	8/16/2022	8/17/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.15)	U (0.11)	0.039 J (0.12)	U (0.11)	0.069 J (0.12)	0.087 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.1)	U (0.11)
Benzo(a)anthracene	130	340	0.25 (0.15)	U (0.11)	0.087 J (0.12)	0.026 J (0.11)	0.034 J (0.12)	0.46 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.033 J (0.1)	0.027 J (0.11)
Benzo(a)pyrene	91	46	0.25 (0.2)	U (0.15)	0.074 J (0.16)	U (0.15)	U (0.16)	0.56 (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.14)	U (0.15)
Benzo(b)fluoranthene	76	170	0.4 (0.15)	U (0.11)	0.08 J (0.12)	U (0.11)	U (0.12)	0.64 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.035 J (0.1)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.2 (0.2)	U (0.15)	0.047 J (0.16)	U (0.15)	U (0.16)	0.38 (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.14)	U (0.15)
Chrysene	760	230	0.32 (0.15)	U (0.11)	0.084 J (0.12)	0.025 J (0.11)	0.097 J (0.12)	0.46 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.034 J (0.1)	0.026 J (0.11)
Fluorene	130000	3800	U (0.24)	U (0.19)	0.021 J (0.2)	U (0.19)	0.4 (0.2)	0.027 J (0.19)	U (0.2)	U (0.2)	U (0.2)	0.14 J (0.18)	U (0.19)
Naphthalene	66	25	0.034 J (0.24)	U (0.19)	U (0.2)	U (0.19)	0.067 J (0.2)	0.05 J (0.19)	U (0.2)	U (0.2)	U (0.2)	0.087 J (0.18)	U (0.19)
Phenanthrene	190000	10000	0.2 (0.15)	U (0.11)	0.16 (0.12)	U (0.11)	0.73 (0.12)	0.35 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.28 (0.1)	U (0.11)
Pyrene	96000	2200	0.42 (0.15)	0.02 J (0.11)	0.14 (0.12)	0.032 J (0.11)	0.12 (0.12)	0.73 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.062 J (0.1)	0.039 J (0.11)
<b>Metals</b>													
Lead	1000	450	102 (2.78)	65.3 (2.2)	37.2 (4.69)	37.6 (2.13)	13.3 (2.36)	74.8 (2.31)	5.14 (2.36)	4.74 (2.4)	5.74 (2.28)	35.8 (2.1)	6.09 (2.24)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-AC03-C2	301-AC03-C3	301-AC03-C4	301-T01-C1	301-T01-C2	301-T01-C3	301-T01-C4	301-T01-C5	301-T02-C1	301-U01-C1	301-U01-C2
Cell	Direct Contact Numeric	Groundwater Numeric	301-AC03	301-AC03	301-AC03	301-T01	301-T01	301-T01	301-T01	301-T01	301-T02	301-U01	301-U01
Field Sample ID	Value (0-2 ft bgs)	Value	301-AC03-C2-COMP	301-AC03-C3-COMP	301-AC03-C4-COMP	301-T01-C1-COMP	301-T01-C2-COMP	301-T01-C3-COMP	301-T01-C4-COMP	301-T01-C5-COMP	301-T02-C1-COMP	301-U01-C1-COMP	301-U01-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	8/17/2022	8/17/2022	8/17/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.12)	0.39 (0.11)	0.24 (0.11)	0.06 J (0.11)	0.47 (0.11)	0.21 (0.12)	0.37 (0.12)	0.38 J (0.57)	0.07 J (0.13)
Benzo(a)anthracene	130	340	0.033 J (0.11)	U (0.12)	U (0.12)	1.2 (0.11)	0.69 (0.11)	0.22 (0.11)	0.43 (0.11)	0.81 (0.12)	0.46 (0.12)	1.2 (0.57)	0.095 J (0.13)
Benzo(a)pyrene	91	46	U (0.15)	U (0.16)	U (0.16)	1.3 (0.15)	0.74 (0.15)	0.27 (0.14)	0.32 (0.15)	1.2 (0.15)	0.44 (0.16)	1.6 (0.76)	0.074 J (0.17)
Benzo(b)fluoranthene	76	170	0.044 J (0.11)	U (0.12)	U (0.12)	1.7 (0.11)	0.83 (0.11)	0.31 (0.11)	0.35 (0.11)	1.4 (0.12)	0.48 (0.12)	1.7 (0.57)	0.094 J (0.13)
Benzo(g,h,i)perylene	190000	180	0.029 J (0.15)	U (0.16)	U (0.16)	0.69 (0.15)	0.38 (0.15)	0.13 J (0.14)	0.12 J (0.15)	0.64 (0.15)	0.26 (0.16)	0.86 (0.76)	0.037 J (0.17)
Chrysene	760	230	0.042 J (0.11)	U (0.12)	U (0.12)	1.1 (0.11)	0.64 (0.11)	0.22 (0.11)	0.41 (0.11)	0.76 (0.12)	0.6 (0.12)	1.3 (0.57)	0.12 J (0.13)
Fluorene	130000	3800	U (0.19)	U (0.2)	U (0.21)	0.1 J (0.19)	0.094 J (0.18)	U (0.18)	1.1 (0.18)	0.05 J (0.19)	0.75 (0.2)	0.21 J (0.94)	0.39 (0.21)
Naphthalene	66	25	U (0.19)	U (0.2)	U (0.21)	0.097 J (0.19)	0.088 J (0.18)	0.025 J (0.18)	0.62 (0.18)	0.051 J (0.19)	0.37 (0.2)	0.18 J (0.94)	U (0.21)
Phenanthrene	190000	10000	0.033 J (0.11)	U (0.12)	U (0.12)	1.5 (0.11)	0.76 (0.11)	0.16 (0.11)	3.2 (0.11)	0.42 (0.12)	1.5 (0.12)	1.5 (0.57)	0.72 (0.13)
Pyrene	96000	2200	0.048 J (0.11)	U (0.12)	U (0.12)	1.8 (0.11)	1 (0.11)	0.32 (0.11)	1 (0.11)	0.98 (0.12)	0.81 (0.12)	1.6 (0.57)	0.18 (0.13)
<b>Metals</b>													
Lead	1000	450	10 (2.25)	3.4 (2.3)	4.88 (2.4)	142 (2.13)	43.9 (2.16)	15.2 (2.07)	6.48 (2.19)	64.3 (2.29)	17.5 (2.34)	73.9 (2.22)	157 (2.49)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-U01-C3	301-U01-C4	301-U01-C5	301-U02-C1	301-U02-C2	301-U02-C3	301-U02-C4	301-U02-C5	301-U03-C1	301-U03-C2	301-U03-C3
Cell	Direct Contact Numeric	Groundwater Numeric	301-U01	301-U01	301-U01	301-U02	301-U02	301-U02	301-U02	301-U02	301-U03	301-U03	301-U03
Field Sample ID	Value (0-2 ft bgs)	Value	301-U01-C3-COMP	301-U01-C4-COMP	301-U01-C5-COMP	301-U02-C1-COMP	301-U02-C2-COMP	301-U02-C3-COMP	301-U02-C4-COMP	301-U02-C5-COMP	301-U03-C1-COMP	301-U03-C2-COMP	301-U03-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/4/2022	8/5/2022	8/5/2022	8/5/2022
<b>PAHs</b>													
Anthracene	190000	350	0.54 (0.12)	0.28 J (0.58)	0.38 J (0.59)	0.062 J (0.13)	U (0.12)	0.28 J (0.62)	0.34 J (0.56)	0.29 (0.11)	U (0.12)	0.08 J (0.1)	U (0.1)
Benzo(a)anthracene	130	340	0.46 (0.12)	0.33 J (0.58)	0.17 J (0.59)	0.19 (0.13)	U (0.12)	0.21 J (0.62)	2.3 (0.56)	1.3 (0.11)	0.073 J (0.12)	0.11 (0.1)	0.05 J (0.1)
Benzo(a)pyrene	91	46	0.34 (0.16)	0.26 J (0.78)	U (0.79)	0.23 (0.17)	U (0.16)	U (0.83)	5.2 (0.75)	2.9 (0.14)	0.1 J (0.16)	0.11 J (0.14)	0.056 J (0.14)
Benzo(b)fluoranthene	76	170	0.39 (0.12)	0.31 J (0.58)	0.2 J (0.59)	0.25 (0.13)	U (0.12)	U (0.62)	3.2 (0.56)	2.1 (0.11)	0.12 (0.12)	0.11 (0.1)	0.068 J (0.1)
Benzo(g,h,i)perylene	190000	180	0.13 J (0.16)	0.14 J (0.78)	U (0.79)	0.096 J (0.17)	U (0.16)	U (0.83)	5.7 (0.75)	3.4 (0.14)	0.11 J (0.16)	0.13 J (0.14)	0.046 J (0.14)
Chrysene	760	230	0.42 (0.12)	0.41 J (0.58)	0.21 J (0.59)	0.18 (0.13)	U (0.12)	0.83 (0.62)	3 (0.56)	1.7 (0.11)	0.1 J (0.12)	0.21 (0.1)	0.056 J (0.1)
Fluorene	130000	3800	1.2 (0.2)	0.58 J (0.98)	1.1 (0.99)	U (0.22)	U (0.19)	0.5 J (1)	0.22 J (0.94)	0.15 J (0.18)	0.024 J (0.2)	0.13 J (0.17)	U (0.17)
Naphthalene	66	25	0.64 (0.2)	U (0.98)	0.25 J (0.99)	0.037 J (0.22)	U (0.19)	0.19 J (1)	0.9 J (0.94)	0.87 (0.18)	0.044 J (0.2)	0.14 J (0.17)	0.061 J (0.17)
Phenanthrene	190000	10000	3.4 (0.12)	1.5 (0.58)	2 (0.59)	0.18 (0.13)	U (0.12)	1.9 (0.62)	1.3 (0.56)	1.2 (0.11)	0.067 J (0.12)	0.27 (0.1)	0.054 J (0.1)
Pyrene	96000	2200	1.1 (0.12)	0.69 (0.58)	0.47 J (0.59)	0.3 (0.13)	U (0.12)	0.44 J (0.62)	1.3 (0.56)	1.1 (0.11)	0.1 J (0.12)	0.43 (0.1)	0.083 J (0.1)
<b>Metals</b>													
Lead	1000	450	11.1 (2.32)	111 (4.66)	11.4 (2.29)	179 (2.52)	163 (2.27)	37.4 (2.46)	3.16 (2.22)	134 (2.06)	60.2 (2.39)	12.3 (2.09)	7.31 (2.04)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-U03-C4	301-U03-C5	301-V01-C1	301-V01-C2	301-V01-C3	301-V01-C4	301-V02-C1	301-V02-C2	301-V02-C3	301-V02-C4	301-V02-C5
Cell	Direct Contact Numeric	Groundwater Numeric	301-U03	301-U03	301-V01	301-V01	301-V01	301-V01	301-V02	301-V02	301-V02	301-V02	301-V02
Field Sample ID	Value (0-2 ft bgs)	Value	301-U03-C4-COMP	301-U03-C5-COMP	301-V01-C1-COMP	301-V01-C2-COMP	301-V01-C3-COMP	301-V01-C4-COMP	301-V02-C1-COMP	301-V02-C2-COMP	301-V02-C3-COMP	301-V02-C4-COMP	301-V02-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022	8/5/2022
<b>PAHs</b>													
Anthracene	190000	350	0.045 J (0.11)	0.66 (0.55)	U (0.1)	0.053 J (0.12)	0.065 J (0.11)	0.068 J (0.12)	0.044 J (0.11)	U (0.12)	U (0.11)	U (0.57)	0.074 J (0.11)
Benzo(a)anthracene	130	340	0.074 J (0.11)	0.47 J (0.55)	0.081 J (0.1)	0.36 (0.12)	0.2 (0.11)	0.22 (0.12)	0.16 (0.11)	0.13 (0.12)	0.1 J (0.11)	U (0.57)	0.028 J (0.11)
Benzo(a)pyrene	91	46	0.087 J (0.15)	U (0.74)	0.16 (0.13)	0.45 (0.16)	0.2 (0.15)	0.21 (0.16)	0.17 (0.15)	0.12 J (0.16)	0.12 J (0.15)	U (0.76)	U (0.15)
Benzo(b)fluoranthene	76	170	0.12 (0.11)	U (0.55)	0.12 (0.1)	0.53 (0.12)	0.23 (0.11)	0.26 (0.12)	0.2 (0.11)	0.15 (0.12)	0.14 (0.11)	U (0.57)	0.04 J (0.11)
Benzo(g,h,i)perylene	190000	180	0.095 J (0.15)	0.27 J (0.74)	0.16 (0.13)	0.31 (0.16)	0.088 J (0.15)	0.097 J (0.16)	0.098 J (0.15)	0.061 J (0.16)	0.079 J (0.15)	U (0.76)	0.03 J (0.15)
Chrysene	760	230	0.11 (0.11)	0.87 (0.55)	0.099 J (0.1)	0.38 (0.12)	0.21 (0.11)	0.23 (0.12)	0.17 (0.11)	0.13 (0.12)	0.12 (0.11)	0.18 J (0.57)	0.095 J (0.11)
Fluorene	130000	3800	0.13 J (0.19)	3.2 (0.92)	U (0.17)	U (0.19)	0.039 J (0.19)	0.024 J (0.2)	U (0.19)	U (0.2)	U (0.19)	0.22 J (0.95)	0.27 (0.19)
Naphthalene	66	25	0.26 (0.19)	1.5 (0.92)	0.04 J (0.17)	U (0.19)	U (0.19)	U (0.2)	0.034 J (0.19)	U (0.2)	0.086 J (0.19)	U (0.95)	0.36 (0.19)
Phenanthrene	190000	10000	0.3 (0.11)	7.4 (0.55)	0.065 J (0.1)	0.27 (0.12)	0.31 (0.11)	0.3 (0.12)	0.2 (0.11)	0.16 (0.12)	0.088 J (0.11)	0.43 J (0.57)	0.45 (0.11)
Pyrene	96000	2200	0.16 (0.11)	1.2 (0.55)	0.063 J (0.1)	0.53 (0.12)	0.36 (0.11)	0.39 (0.12)	0.25 (0.11)	0.22 (0.12)	0.16 (0.11)	0.29 J (0.57)	0.12 (0.11)
<b>Metals</b>													
Lead	1000	450	19.4 (2.26)	32.5 (2.28)	110 (2.03)	54.6 (2.25)	0.522 J (2.26)	11.8 (2.38)	37.8 (2.25)	31 (2.34)	61.8 (2.19)	51.4 (2.22)	116 (2.3)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-V03-C1	301-V03-C2	301-V03-C3	301-V03-C4	301-V03-C5	301-W01-C1	301-W01-C2	301-W01-C3	301-W01-C4	301-W02-C1	301-W02-C2
Cell	Direct Contact Numeric	Groundwater Numeric	301-V03	301-V03	301-V03	301-V03	301-V03	301-W01	301-W01	301-W01	301-W01	301-W02	301-W02
Field Sample ID	Value (0-2 ft bgs)	Value	301-V03-C1-COMP	301-V03-C2-COMP	301-V03-C3-COMP	301-V03-C4-COMP	301-V03-C5-COMP	301-W01-C1-COMP	301-W01-C2-COMP	301-W01-C3-COMP	301-W01-C4-COMP	301-W02-C1-COMP	301-W02-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	10/20/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022
<b>PAHs</b>													
Anthracene	190000	350	0.097 J (0.22)	0.068 J (0.11)	U (0.12)	0.95 (0.12)	0.25 (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.058 J (0.11)	U (0.11)
Benzo(a)anthracene	130	340	0.84 (0.22)	0.54 (0.11)	0.031 J (0.12)	0.15 (0.12)	0.1 J (0.12)	0.13 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.16 (0.11)	0.048 J (0.11)
Benzo(a)pyrene	91	46	0.9 (0.29)	0.69 (0.15)	U (0.16)	0.087 J (0.16)	0.094 J (0.16)	0.17 (0.15)	U (0.16)	U (0.16)	U (0.16)	0.19 (0.15)	0.051 J (0.15)
Benzo(b)fluoranthene	76	170	1 (0.22)	0.82 (0.11)	0.036 J (0.12)	0.18 (0.12)	0.11 J (0.12)	0.18 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.21 (0.11)	0.058 J (0.11)
Benzo(g,h,i)perylene	190000	180	0.5 (0.29)	0.38 (0.15)	U (0.16)	0.062 J (0.16)	0.058 J (0.16)	0.15 (0.15)	U (0.16)	U (0.16)	U (0.16)	0.18 (0.15)	0.042 J (0.15)
Chrysene	760	230	0.82 (0.22)	0.57 (0.11)	0.03 J (0.12)	0.19 (0.12)	0.35 (0.12)	0.29 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.16 (0.11)	0.056 J (0.11)
Fluorene	130000	3800	0.04 J (0.36)	U (0.18)	U (0.2)	2.3 (0.2)	1.1 (0.2)	0.064 J (0.18)	U (0.2)	U (0.21)	U (0.2)	0.031 J (0.18)	U (0.19)
Naphthalene	66	25	0.14 J (0.36)	0.044 J (0.18)	U (0.2)	0.58 (0.2)	0.41 (0.2)	0.11 J (0.18)	U (0.2)	U (0.21)	U (0.2)	0.095 J (0.18)	U (0.19)
Phenanthrene	190000	10000	0.24 (0.22)	0.27 (0.11)	U (0.12)	3.8 (0.12)	1.9 (0.12)	0.17 (0.11)	U (0.12)	U (0.12)	0.031 J (0.12)	0.22 (0.11)	0.041 J (0.11)
Pyrene	96000	2200	0.9 (0.22)	0.99 (0.11)	0.04 J (0.12)	0.87 (0.12)	0.36 (0.12)	0.23 (0.11)	U (0.12)	U (0.12)	0.023 J (0.12)	0.25 (0.11)	0.068 J (0.11)
<b>Metals</b>													
Lead	1000	450	62.8 (2.22)	48 (2.24)	147 (2.36)	490 (2.3)	6.56 (2.32)	30.2 (2.2)	9.09 (2.49)	5.96 (2.47)	267 (2.32)	59.7 (2.22)	35.5 (2.19)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-W02-C3	301-W02-C4	301-W02-C5	301-X01-C1	301-X01-C2	301-X01-C3	301-X01-C4	301-X02-C1	301-X02-C2	301-X02-C3	301-X02-C4
Cell	Direct Contact Numeric	Groundwater Numeric	301-W02	301-W02	301-W02	301-X01	301-X01	301-X01	301-X01	301-X02	301-X02	301-X02	301-X02
Field Sample ID	Value (0-2 ft bgs)	Value	301-W02-C3-COMP	301-W02-C4-COMP	301-W02-C5-COMP	301-X01-C1-COMP	301-X01-C2-COMP	301-X01-C3-COMP	301-X01-C4-COMP	301-X02-C1-COMP	301-X02-C2-COMP	301-X02-C3-COMP	301-X02-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	8/12/2022	8/12/2022	8/12/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	8/12/2022	8/12/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.1)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	0.18 (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	0.022 J (0.11)	U (0.1)	U (0.12)	0.036 J (0.13)	0.056 J (0.12)	U (0.12)	0.088 J (0.12)	0.2 (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.14)	U (0.16)	U (0.17)	U (0.16)	U (0.16)	0.098 J (0.16)	0.12 J (0.16)	U (0.16)	U (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.1)	U (0.12)	0.038 J (0.13)	0.046 J (0.12)	U (0.12)	0.11 J (0.12)	0.14 (0.12)	U (0.12)	U (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.14)	U (0.16)	0.026 J (0.17)	0.023 J (0.16)	U (0.16)	0.059 J (0.16)	0.092 J (0.16)	U (0.16)	U (0.15)	U (0.16)
Chrysene	760	230	0.023 J (0.11)	U (0.1)	U (0.12)	0.038 J (0.13)	0.12 (0.12)	U (0.12)	0.095 J (0.12)	0.5 (0.12)	U (0.12)	U (0.11)	U (0.12)
Fluorene	130000	3800	U (0.18)	U (0.17)	U (0.2)	0.031 J (0.21)	0.43 (0.2)	U (0.2)	0.024 J (0.2)	0.083 J (0.2)	U (0.2)	U (0.19)	U (0.2)
Naphthalene	66	25	U (0.18)	U (0.17)	U (0.2)	U (0.21)	0.21 (0.2)	U (0.2)	U (0.2)	0.031 J (0.2)	U (0.2)	U (0.19)	U (0.2)
Phenanthrene	190000	10000	0.033 J (0.11)	U (0.1)	U (0.12)	0.064 J (0.13)	0.85 (0.12)	U (0.12)	0.24 (0.12)	0.73 (0.12)	U (0.12)	U (0.11)	U (0.12)
Pyrene	96000	2200	0.051 J (0.11)	U (0.1)	U (0.12)	0.053 J (0.13)	0.14 (0.12)	U (0.12)	0.2 (0.12)	1.4 (0.12)	U (0.12)	U (0.11)	U (0.12)
<b>Metals</b>													
Lead	1000	450	19 (2.15)	5.08 (2.06)	5.78 (2.45)	49 (2.58)	6.78 (2.4)	6.42 (2.37)	31.4 (2.27)	70.9 (2.28)	8.39 (4.64)	6.82 (2.19)	11.2 J (11.5)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-X02-C5	301-Y01-C1	301-Y01-C2	301-Y01-C3	301-Y01-C4	301-Y02-C1	301-Y02-C2	301-Y02-C3	301-Y02-C4	301-Z01-C1	301-Z01-C2
Cell	Direct Contact Numeric	Groundwater Numeric	301-X02	301-Y01	301-Y01	301-Y01	301-Y01	301-Y02	301-Y02	301-Y02	301-Y02	301-Z01	301-Z01
Field Sample ID	Value (0-2 ft bgs)	Value	301-X02-C5-COMP	301-Y01-C1-COMP	301-Y01-C2-COMP	301-Y01-C3-COMP	301-Y01-C4-COMP	301-Y02-C1-COMP	301-Y02-C2-COMP	301-Y02-C3-COMP	301-Y02-C4-COMP	301-Z01-C1-COMP	301-Z01-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	8/12/2022	8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	8/12/2022	8/12/2022	8/5/2022	8/5/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	0.12 (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.11)	0.1 J (0.12)	0.4 (0.12)	0.72 (0.12)	U (0.1)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	0.42 (0.12)	0.065 J (0.11)	U (0.13)	0.035 J (0.12)	0.038 J (0.11)	0.03 J (0.12)	0.15 (0.12)	0.19 (0.12)	U (0.1)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	0.38 (0.17)	0.072 J (0.15)	U (0.18)	U (0.17)	U (0.15)	U (0.16)	U (0.16)	0.066 J (0.17)	U (0.14)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	0.27 (0.12)	0.085 J (0.11)	U (0.13)	U (0.12)	0.053 J (0.11)	U (0.12)	0.05 J (0.12)	0.061 J (0.12)	U (0.1)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	0.24 (0.17)	0.054 J (0.15)	U (0.18)	U (0.17)	0.036 J (0.15)	U (0.16)	0.042 J (0.16)	0.05 J (0.17)	U (0.14)	U (0.15)
Chrysene	760	230	U (0.12)	0.95 (0.12)	0.064 J (0.11)	0.039 J (0.13)	0.055 J (0.12)	0.045 J (0.11)	0.15 (0.12)	0.6 (0.12)	0.66 (0.12)	U (0.1)	U (0.11)
Fluorene	130000	3800	U (0.2)	0.055 J (0.21)	U (0.18)	0.026 J (0.22)	0.12 J (0.21)	0.025 J (0.19)	0.64 (0.2)	2.3 (0.2)	3.6 (0.21)	U (0.18)	U (0.19)
Naphthalene	66	25	U (0.2)	0.18 J (0.21)	U (0.18)	U (0.22)	0.05 J (0.21)	U (0.19)	U (0.2)	U (0.2)	U (0.21)	U (0.18)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	0.86 (0.12)	0.058 J (0.11)	U (0.13)	0.23 (0.12)	0.094 J (0.11)	1.2 (0.12)	5.2 (0.12)	8.2 (0.12)	U (0.1)	U (0.11)
Pyrene	96000	2200	U (0.12)	0.87 (0.12)	0.1 J (0.11)	0.03 J (0.13)	0.054 J (0.12)	0.061 J (0.11)	0.14 (0.12)	0.48 (0.12)	0.59 (0.12)	U (0.1)	U (0.11)
<b>Metals</b>													
Lead	1000	450	4.38 (2.33)	5.18 (2.52)	8.82 (2.16)	10.1 (2.68)	46 (2.41)	86.3 (2.33)	13.4 (2.43)	6.61 (2.4)	4.62 (2.4)	4.88 (2.12)	4.77 (2.22)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	301-Z01-C3	301-Z01-C4	301-Z02-C1	301-Z02-C2	301-Z02-C3	301-Z02-C4	301-Z02-C5	301-Z03-C1	301-Z03-C2	301-Z03-C3	301-Z03-C4
Cell	Direct Contact Numeric	Groundwater Numeric	301-Z01	301-Z01	301-Z02	301-Z02	301-Z02	301-Z02	301-Z02	301-Z03	301-Z03	301-Z03	301-Z03
Field Sample ID	Value (0-2 ft bgs)	Value	301-Z01-C3-COMP	301-Z01-C4-COMP	301-Z02-C1-COMP	301-Z02-C2-COMP	301-Z02-C3-COMP	301-Z02-C4-COMP	301-Z02-C5-COMP	301-Z03-C1-COMP	301-Z03-C2-COMP	301-Z03-C3-COMP	301-Z03-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	8/5/2022	8/5/2022	8/9/2022	8/9/2022	8/9/2022	8/9/2022	8/9/2022	8/10/2022	8/10/2022	8/10/2022	8/10/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.13)	U (0.11)	U (0.12)	0.61 (0.11)	U (0.12)	U (0.12)	0.18 (0.14)	0.66 (0.58)	0.05 J (0.12)	U (0.14)	U (0.13)
Benzo(a)anthracene	130	340	U (0.13)	U (0.11)	U (0.12)	2.7 (0.11)	U (0.12)	0.031 J (0.12)	0.078 J (0.14)	0.36 J (0.58)	U (0.12)	0.031 J (0.14)	0.065 J (0.13)
Benzo(a)pyrene	91	46	U (0.17)	U (0.14)	U (0.16)	3.5 (0.15)	U (0.16)	U (0.16)	0.11 J (0.18)	U (0.77)	U (0.16)	U (0.19)	0.064 J (0.17)
Benzo(b)fluoranthene	76	170	U (0.13)	U (0.11)	U (0.12)	3.9 (0.11)	U (0.12)	0.048 J (0.12)	0.13 J (0.14)	U (0.58)	U (0.12)	U (0.14)	0.069 J (0.13)
Benzo(g,h,i)perylene	190000	180	0.025 J (0.17)	U (0.14)	U (0.16)	1.6 (0.15)	U (0.16)	U (0.16)	0.13 J (0.18)	U (0.77)	U (0.16)	U (0.19)	0.046 J (0.17)
Chrysene	760	230	U (0.13)	U (0.11)	U (0.12)	2.5 (0.11)	U (0.12)	0.032 J (0.12)	0.094 J (0.14)	0.58 (0.58)	U (0.12)	0.06 J (0.14)	0.062 J (0.13)
Fluorene	130000	3800	U (0.22)	U (0.18)	U (0.2)	0.13 J (0.18)	U (0.21)	U (0.2)	1.2 (0.23)	1.9 (0.96)	0.32 (0.2)	0.16 J (0.24)	U (0.21)
Naphthalene	66	25	U (0.22)	U (0.18)	U (0.2)	0.22 (0.18)	U (0.21)	U (0.2)	0.88 (0.23)	0.54 J (0.96)	0.055 J (0.2)	0.031 J (0.24)	U (0.21)
Phenanthrene	190000	10000	U (0.13)	U (0.11)	U (0.12)	1.8 (0.11)	U (0.12)	U (0.12)	1.9 (0.14)	3 (0.58)	0.48 (0.12)	0.26 (0.14)	0.08 J (0.13)
Pyrene	96000	2200	U (0.13)	U (0.11)	U (0.12)	3.4 (0.11)	U (0.12)	0.039 J (0.12)	0.32 (0.14)	1.2 (0.58)	0.1 J (0.12)	0.076 J (0.14)	0.093 J (0.13)
<b>Metals</b>													
Lead	1000	450	22.6 (2.52)	8.42 (2.1)	0.456 J (2.38)	12.2 (2.12)	8.41 J (23.9)	115 (4.63)	5.68 (5.29)	12.7 (2.24)	31.4 (2.33)	15.7 (5.52)	107 (2.47)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AD03-C1	302-AD03-C2	302-AD03-C3	302-AD03-C4	302-AD04-C1	302-AD04-C2	302-AD04-C3	302-AD04-C4	302-AD04-C5	302-AD05-C1	302-AD05-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AD03	302-AD03	302-AD03	302-AD03	302-AD04	302-AD04	302-AD04	302-AD04	302-AD04	302-AD05	302-AD05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AD03-C1-COMP	302-AD03-C2-COMP	302-AD03-C3-COMP	302-AD03-C4-COMP	302-AD04-C1-COMP	302-AD04-C2-COMP	302-AD04-C3-COMP	302-AD04-C4-COMP	302-AD04-C5-COMP	302-AD05-C1-COMP	302-AD05-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	8/16/2022	8/16/2022	8/16/2022	8/16/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022	8/17/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.13)	U (0.11)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.13)	0.069 J (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.16)	U (0.15)	U (0.17)	U (0.16)	U (0.18)	U (0.16)	U (0.16)	U (0.17)	0.079 J (0.15)	U (0.17)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.13)	0.091 J (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.16)	U (0.15)	U (0.17)	U (0.16)	U (0.18)	U (0.16)	U (0.16)	U (0.17)	0.098 J (0.15)	U (0.17)
Chrysene	760	230	U (0.11)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.13)	0.059 J (0.11)	U (0.12)
Fluorene	130000	3800	U (0.18)	U (0.2)	U (0.18)	U (0.22)	U (0.2)	U (0.22)	U (0.2)	U (0.2)	U (0.21)	0.032 J (0.19)	U (0.21)
Naphthalene	66	25	U (0.18)	U (0.2)	U (0.18)	U (0.22)	U (0.2)	U (0.22)	U (0.2)	U (0.2)	U (0.21)	0.03 J (0.19)	U (0.21)
Phenanthrene	190000	10000	U (0.11)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.13)	0.067 J (0.11)	U (0.12)
Pyrene	96000	2200	U (0.11)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.13)	0.088 J (0.11)	U (0.12)
<b>Metals</b>													
Lead	1000	450	8.59 (2.24)	9.16 (4.68)	4.17 (2.22)	3.21 (2.6)	7.09 (2.28)	6.59 (2.57)	4.14 (2.38)	29.3 (4.82)	4.32 (2.45)	4.98 (2.19)	7.15 (4.84)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AD05-C3	302-AD05-C4	302-AD06-C1	302-AD06-C2	302-AD06-C3	302-AD06-C4	302-AD07-C1	302-AD07-C2	302-AD07-C3	302-AD07-C4	302-AD07-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AD05	302-AD05	302-AD06	302-AD06	302-AD06	302-AD06	302-AD07	302-AD07	302-AD07	302-AD07	302-AD07
Field Sample ID	Value (0-2 ft bgs)	Value	302-AD05-C3-COMP	302-AD05-C4-COMP	302-AD06-C1-COMP	302-AD06-C2-COMP	302-AD06-C3-COMP	302-AD06-C4-COMP	302-AD07-C1-COMP	302-AD07-C2-COMP	302-AD07-C3-COMP	302-AD07-C4-COMP	302-AD07-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	8/17/2022	8/17/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	0.26 (0.14)	0.05 J (0.12)	6.8 (1.3)	0.13 J (0.14)	U (0.12)	1.2 (0.13)	0.09 J (0.11)	0.05 J (0.12)	0.31 (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.92 (0.14)	0.22 (0.12)	23 (1.3)	0.39 (0.14)	0.024 J (0.12)	4.6 (0.13)	0.27 (0.11)	0.21 (0.12)	0.39 (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	0.96 (0.19)	0.25 (0.15)	20 (1.8)	0.43 (0.19)	U (0.16)	3.6 (0.17)	0.27 (0.14)	0.22 (0.16)	0.39 (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	1.2 (0.14)	0.29 (0.12)	23 (1.3)	0.47 (0.14)	U (0.12)	3.4 (0.13)	0.32 (0.11)	0.27 (0.12)	0.47 (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.57 (0.19)	0.17 (0.15)	9.7 (1.8)	0.32 (0.19)	U (0.16)	1.7 (0.17)	0.16 (0.14)	0.13 J (0.16)	0.23 (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	0.94 (0.14)	0.24 (0.12)	20 (1.3)	0.41 (0.14)	0.02 J (0.12)	5.4 (0.13)	0.27 (0.11)	0.24 (0.12)	0.37 (0.11)
Fluorene	130000	3800	U (0.2)	U (0.2)	0.16 J (0.24)	0.025 J (0.19)	1.9 J (2.2)	0.053 J (0.24)	U (0.2)	0.44 (0.21)	0.046 J (0.18)	U (0.2)	0.081 J (0.19)
Naphthalene	66	25	U (0.2)	U (0.2)	0.15 J (0.24)	0.073 J (0.19)	0.39 J (2.2)	0.037 J (0.24)	U (0.2)	0.22 (0.21)	0.024 J (0.18)	U (0.2)	0.068 J (0.19)
Phenanthrene	190000	10000	U (0.12)	0.046 J (0.12)	1.4 (0.14)	0.26 (0.12)	25 (1.3)	0.54 (0.14)	U (0.12)	5.7 (0.13)	0.41 (0.11)	0.19 (0.12)	0.52 (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	1.5 (0.14)	0.4 (0.12)	42 (1.3)	0.74 (0.14)	0.028 J (0.12)	8.3 (0.64)	0.62 (0.11)	0.4 (0.12)	0.69 (0.11)
<b>Metals</b>													
Lead	1000	450	5.26 (2.32)	6.9 (2.49)	47.5 (2.85)	54.6 (2.22)	36.4 (13.4)	23.1 (13.8)	<b>493 (11.4)</b>	109 (12.5)	6.31 (2.06)	26.4 (2.31)	5.52 (2.29)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AE03-C1	302-AE03-C2	302-AE03-C3	302-AE03-C4	302-AE03-C5	302-AE04-C1	302-AE04-C2	302-AE04-C3	302-AE04-C4	302-AE04-C5	302-AE05-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AE03	302-AE03	302-AE03	302-AE03	302-AE03	302-AE04	302-AE04	302-AE04	302-AE04	302-AE04	302-AE05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AE03-C1-COMP	302-AE03-C2-COMP	302-AE03-C3-COMP	302-AE03-C4-COMP	302-AE03-C5-COMP	302-AE04-C1-COMP	302-AE04-C2-COMP	302-AE04-C3-COMP	302-AE04-C4-COMP	302-AE04-C5-COMP	302-AE05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	10/17/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/19/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	0.2 (0.11)	U (0.12)	0.4 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.097 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.096 J (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.15)	U (0.16)	0.13 J (0.16)	U (0.17)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	0.084 J (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.14 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.1 J (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.15)	U (0.16)	0.065 J (0.16)	U (0.17)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	0.047 J (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.1 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.098 J (0.11)
Fluorene	130000	3800	U (0.2)	U (0.2)	0.85 (0.19)	U (0.2)	1.5 (0.2)	U (0.21)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.19)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.21)	U (0.19)	U (0.19)	U (0.2)	U (0.2)	U (0.19)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.89 (0.11)	U (0.12)	2.7 (0.12)	0.039 J (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.059 J (0.11)
Pyrene	96000	2200	U (0.12)	U (0.12)	0.095 J (0.11)	U (0.12)	0.57 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.21 (0.11)
<b>Metals</b>													
Lead	1000	450	6.78 (2.3)	6.26 (2.32)	7.44 (2.3)	263 (2.41)	50.4 (2.29)	17.8 (12.5)	92.9 (11.2)	6.15 (2.35)	49.8 (2.42)	7.47 (2.34)	44.3 (4.38)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AE05-C2	302-AE05-C3	302-AE05-C4	302-AE05-C5	302-AE06-C1	302-AE06-C2	302-AE06-C3	302-AE06-C4	302-AE07-C1	302-AE07-C2	302-AE07-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AE05	302-AE05	302-AE05	302-AE05	302-AE06	302-AE06	302-AE06	302-AE06	302-AE07	302-AE07	302-AE07
Field Sample ID	Value (0-2 ft bgs)	Value	302-AE05-C2-COMP	302-AE05-C3-COMP	302-AE05-C4-COMP	302-AE05-C5-COMP	302-AE06-C1-COMP	302-AE06-C2-COMP	302-AE06-C3-COMP	302-AE06-C4-COMP	302-AE07-C1-COMP	302-AE07-C2-COMP	302-AE07-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	8/19/2022	8/19/2022	8/19/2022	8/19/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022	8/26/2022
<b>PAHs</b>													
Anthracene	190000	350	0.34 (0.11)	U (0.12)	U (0.11)	U (0.12)	U (0.13)	0.046 J (0.11)	U (0.1)	0.074 J (0.11)	0.067 J (0.12)	0.04 J (0.11)	U (0.11)
Benzo(a)anthracene	130	340	0.64 (0.11)	U (0.12)	0.079 J (0.11)	U (0.12)	0.12 J (0.13)	0.2 (0.11)	0.072 J (0.1)	0.24 (0.11)	0.19 (0.12)	0.071 J (0.11)	0.051 J (0.11)
Benzo(a)pyrene	91	46	0.36 (0.14)	U (0.16)	0.066 J (0.15)	U (0.16)	0.15 J (0.18)	0.25 (0.14)	0.09 J (0.14)	0.3 (0.14)	0.2 (0.16)	0.098 J (0.15)	0.067 J (0.15)
Benzo(b)fluoranthene	76	170	0.58 (0.11)	U (0.12)	0.083 J (0.11)	U (0.12)	0.18 (0.13)	0.29 (0.11)	0.1 (0.1)	0.42 (0.11)	0.23 (0.12)	0.11 (0.11)	0.076 J (0.11)
Benzo(g,h,i)perylene	190000	180	0.097 J (0.14)	U (0.16)	0.034 J (0.15)	U (0.16)	0.11 J (0.18)	0.17 (0.14)	0.084 J (0.14)	0.26 (0.14)	0.12 J (0.16)	0.06 J (0.15)	0.057 J (0.15)
Chrysene	760	230	0.63 (0.11)	U (0.12)	0.088 J (0.11)	U (0.12)	0.13 (0.13)	0.19 (0.11)	0.075 J (0.1)	0.31 (0.11)	0.18 (0.12)	0.075 J (0.11)	0.06 J (0.11)
Fluorene	130000	3800	0.022 J (0.18)	U (0.2)	U (0.19)	U (0.2)	0.074 J (0.22)	U (0.18)	U (0.17)	0.018 J (0.18)	0.034 J (0.2)	0.1 J (0.19)	U (0.18)
Naphthalene	66	25	U (0.18)	U (0.2)	0.034 J (0.19)	U (0.2)	0.19 J (0.22)	0.047 J (0.18)	0.025 J (0.17)	0.1 J (0.18)	0.034 J (0.2)	0.8 (0.19)	U (0.18)
Phenanthrene	190000	10000	0.042 J (0.11)	U (0.12)	0.11 (0.11)	U (0.12)	0.26 (0.13)	0.19 (0.11)	0.069 J (0.1)	0.29 (0.11)	0.32 (0.12)	0.25 (0.11)	0.048 J (0.11)
Pyrene	96000	2200	1.8 (0.11)	0.026 J (0.12)	0.18 (0.11)	U (0.12)	0.21 (0.13)	0.34 (0.11)	0.11 (0.1)	0.41 (0.11)	0.34 (0.12)	0.14 (0.11)	0.071 J (0.11)
<b>Metals</b>													
Lead	1000	450	12.6 (4.17)	3.9 (2.37)	7.54 (2.24)	23.1 (11.6)	412 (2.62)	106 (2.12)	188 (2.07)	197 (2.1)	154 (2.53)	93.4 (2.27)	80 (2.19)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AE07-C4	302-AE07-C5	302-AE08-C1	302-AE08-C2	302-AE08-C3	302-AE08-C4	302-AF03-C1	302-AF03-C2	302-AF03-C3	302-AF03-C4	302-AF03-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AE07	302-AE07	302-AE08	302-AE08	302-AE08	302-AE08	302-AF03	302-AF03	302-AF03	302-AF03	302-AF03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AE07-C4-COMP	302-AE07-C5-COMP	302-AE08-C1-COMP	302-AE08-C2-COMP	302-AE08-C3-COMP	302-AE08-C4-COMP	302-AF03-C1-COMP	302-AF03-C2-COMP	302-AF03-C3-COMP	302-AF03-C4-COMP	302-AF03-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	8/26/2022	8/26/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022	10/17/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.13)	0.045 J (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	0.075 J (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.13)	0.076 J (0.12)	0.069 J (0.12)	U (0.13)	U (0.12)	U (0.11)	0.034 J (0.11)	U (0.12)	U (0.12)	0.068 J (0.12)	U (0.11)
Benzo(a)pyrene	91	46	U (0.17)	0.098 J (0.16)	0.1 J (0.16)	U (0.17)	U (0.16)	U (0.15)	0.047 J (0.14)	U (0.17)	U (0.16)	0.067 J (0.16)	U (0.14)
Benzo(b)fluoranthene	76	170	U (0.13)	0.12 (0.12)	0.11 J (0.12)	U (0.13)	U (0.12)	U (0.11)	0.055 J (0.11)	U (0.12)	U (0.12)	0.084 J (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.17)	0.056 J (0.16)	0.058 J (0.16)	U (0.17)	U (0.16)	U (0.15)	0.036 J (0.14)	U (0.17)	U (0.16)	0.035 J (0.16)	U (0.14)
Chrysene	760	230	U (0.13)	0.096 J (0.12)	0.063 J (0.12)	U (0.13)	U (0.12)	U (0.11)	0.037 J (0.11)	U (0.12)	U (0.12)	0.068 J (0.12)	U (0.11)
Fluorene	130000	3800	0.11 J (0.22)	0.23 (0.2)	U (0.2)	U (0.22)	U (0.2)	U (0.19)	U (0.18)	U (0.21)	0.12 J (0.2)	U (0.2)	U (0.18)
Naphthalene	66	25	0.79 (0.22)	0.95 (0.2)	U (0.2)	U (0.22)	U (0.2)	U (0.19)	U (0.18)	U (0.21)	0.072 J (0.2)	0.16 J (0.2)	U (0.18)
Phenanthrene	190000	10000	0.18 (0.13)	0.46 (0.12)	0.063 J (0.12)	U (0.13)	U (0.12)	U (0.11)	0.043 J (0.11)	U (0.12)	0.27 (0.12)	0.66 (0.12)	U (0.11)
Pyrene	96000	2200	U (0.13)	0.098 J (0.12)	0.09 J (0.12)	U (0.13)	U (0.12)	U (0.11)	0.06 J (0.11)	U (0.12)	U (0.12)	0.13 (0.12)	U (0.11)
<b>Metals</b>													
Lead	1000	450	26.9 (2.54)	7.46 (2.29)	31.4 (2.34)	7.41 (2.57)	5.59 (2.32)	6.1 (2.27)	37.7 (2.05)	6.88 (2.41)	6.45 (2.37)	16.4 (2.3)	6.3 (2.19)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AF04-C1	302-AF04-C2	302-AF04-C3	302-AF04-C4	302-AF04-C5	302-AF05-C1	302-AF05-C2	302-AF05-C3	302-AF05-C4	302-AF05-C5	302-AF07-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AF04	302-AF04	302-AF04	302-AF04	302-AF04	302-AF05	302-AF05	302-AF05	302-AF05	302-AF05	302-AF07
Field Sample ID	Value (0-2 ft bgs)	Value	302-AF04-C1-COMP	302-AF04-C2-COMP	302-AF04-C3-COMP	302-AF04-C4-COMP	302-AF04-C5-COMP	302-AF05-C1-COMP	302-AF05-C2-COMP	302-AF05-C3-COMP	302-AF05-C4-COMP	302-AF05-C5-COMP	302-AF07-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	8/19/2022	8/19/2022	8/19/2022	8/19/2022	8/19/2022	8/29/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.11)	U (0.12)	0.25 (0.12)	U (0.12)	0.42 (0.12)	0.62 (0.12)	U (0.12)	U (0.11)	0.39 (0.11)	0.13 (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	1.9 (0.12)	1.8 (0.12)	U (0.12)	U (0.11)	1.3 (0.11)	0.024 J (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	2.8 (0.16)	2.2 (0.15)	U (0.15)	U (0.15)	1.6 (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	3 (0.12)	2.5 (0.12)	U (0.12)	U (0.11)	1.9 (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	1.6 (0.16)	1.4 (0.15)	U (0.15)	U (0.15)	0.82 (0.15)	U (0.16)
Chrysene	760	230	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	1.8 (0.12)	2 (0.12)	0.02 J (0.12)	U (0.11)	1.4 (0.11)	0.027 J (0.12)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.2)	0.77 (0.2)	0.14 J (0.2)	0.13 J (0.2)	0.36 (0.19)	U (0.19)	U (0.18)	0.44 (0.19)	0.65 (0.2)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.2)	0.053 J (0.2)	U (0.2)	0.091 J (0.2)	0.56 (0.19)	U (0.19)	U (0.18)	0.27 (0.19)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	U (0.11)	0.026 J (0.12)	1.7 (0.12)	U (0.12)	1.4 (0.12)	2.6 (0.12)	0.043 J (0.12)	U (0.11)	1.9 (0.11)	0.96 (0.12)
Pyrene	96000	2200	U (0.11)	U (0.11)	U (0.12)	0.079 J (0.12)	0.05 J (0.12)	3.1 (0.12)	3.1 (0.12)	0.026 J (0.12)	U (0.11)	2.1 (0.11)	0.06 J (0.12)
<b>Metals</b>													
Lead	1000	450	151 (2.22)	116 (2.26)	13.6 (2.42)	9.15 (2.37)	10.6 (2.3)	37.4 (2.35)	175 (11.6)	17.8 (4.56)	9.64 J (21)	22.4 (2.19)	2.96 (2.34)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AF07-C2	302-AF07-C3	302-AF07-C4	302-AF07-C5	302-AF08-C1	302-AF08-C2	302-AF08-C3	302-AF08-C4	302-AF09-C1	302-AF09-C2	302-AF09-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AF07	302-AF07	302-AF07	302-AF07	302-AF08	302-AF08	302-AF08	302-AF08	302-AF09	302-AF09	302-AF09
Field Sample ID	Value (0-2 ft bgs)	Value	302-AF07-C2-COMP	302-AF07-C3-COMP	302-AF07-C4-COMP	302-AF07-C5-COMP	302-AF08-C1-COMP	302-AF08-C2-COMP	302-AF08-C3-COMP	302-AF08-C4-COMP	302-AF09-C1-COMP	302-AF09-C2-COMP	302-AF09-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/29/2022	8/31/2022	8/31/2022	8/31/2022
<b>PAHs</b>													
Anthracene	190000	350	1.4 (0.12)	U (0.12)	0.053 J (0.12)	0.047 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.078 J (0.11)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	2.5 (0.12)	0.072 J (0.12)	0.14 (0.12)	0.26 (0.11)	0.068 J (0.12)	U (0.12)	U (0.12)	U (0.11)	0.33 (0.11)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	2.4 (0.16)	0.09 J (0.16)	0.14 J (0.16)	0.45 (0.15)	0.076 J (0.16)	U (0.16)	U (0.16)	U (0.15)	0.28 (0.15)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	2.6 (0.12)	0.12 (0.12)	0.16 (0.12)	0.43 (0.11)	0.09 J (0.12)	U (0.12)	U (0.12)	U (0.11)	0.32 (0.11)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	1.1 (0.16)	0.057 J (0.16)	0.071 J (0.16)	0.29 (0.15)	0.045 J (0.16)	U (0.16)	U (0.16)	U (0.15)	0.13 J (0.15)	U (0.16)	U (0.16)
Chrysene	760	230	2.2 (0.12)	0.064 J (0.12)	0.13 (0.12)	0.25 (0.11)	0.066 J (0.12)	U (0.12)	U (0.12)	U (0.11)	0.31 (0.11)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.69 (0.2)	U (0.2)	0.031 J (0.2)	0.02 J (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	0.018 J (0.19)	U (0.21)	U (0.2)
Naphthalene	66	25	0.19 J (0.2)	U (0.2)	0.039 J (0.2)	0.031 J (0.19)	0.16 J (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	U (0.21)	U (0.2)
Phenanthrene	190000	10000	5.2 (0.12)	0.055 J (0.12)	0.24 (0.12)	0.18 (0.11)	0.084 J (0.12)	U (0.12)	U (0.12)	U (0.11)	0.3 (0.11)	U (0.12)	U (0.12)
Pyrene	96000	2200	4.8 (0.12)	0.094 J (0.12)	0.26 (0.12)	0.3 (0.11)	0.1 J (0.12)	U (0.12)	U (0.12)	U (0.11)	0.48 (0.11)	U (0.12)	0.021 J (0.12)
<b>Metals</b>													
Lead	1000	450	79.6 (2.36)	26.9 (2.47)	7.24 (2.38)	5.62 (2.19)	60.5 (2.33)	12.9 (2.49)	3.18 (2.42)	9.7 (2.19)	107 (4.49)	18.9 (4.72)	26.5 (4.71)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AG03-C1	302-AG03-C2	302-AG03-C3	302-AG03-C4	302-AG03-C5	302-AG04-C1	302-AG04-C2	302-AG04-C3	302-AG04-C4	302-AG05-C1	302-AG05-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AG03	302-AG03	302-AG03	302-AG03	302-AG03	302-AG04	302-AG04	302-AG04	302-AG04	302-AG05	302-AG05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AG03-C1-COMP	302-AG03-C2-COMP	302-AG03-C3-COMP	302-AG03-C4-COMP	302-AG03-C5-COMP	302-AG04-C1-COMP	302-AG04-C2-COMP	302-AG04-C3-COMP	302-AG04-C4-COMP	302-AG05-C1-COMP	302-AG05-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	10/18/2022	10/18/2022	10/18/2022	10/18/2022	10/18/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022
<b>PAHs</b>													
Anthracene	190000	350	0.82 (0.1)	0.4 (0.11)	0.56 (0.12)	0.78 (0.12)	0.51 (0.13)	U (0.1)	0.12 J (0.13)	U (0.12)	U (0.12)	0.038 J (0.11)	U (0.12)
Benzo(a)anthracene	130	340	U (0.1)	0.13 (0.11)	0.037 J (0.12)	0.043 J (0.12)	U (0.13)	0.03 J (0.1)	0.37 (0.13)	U (0.12)	U (0.12)	0.11 (0.11)	0.027 J (0.12)
Benzo(a)pyrene	91	46	U (0.14)	0.2 (0.14)	U (0.16)	U (0.16)	U (0.18)	U (0.14)	0.48 (0.17)	U (0.16)	U (0.16)	0.1 J (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.1)	0.23 (0.11)	0.037 J (0.12)	U (0.12)	U (0.13)	0.034 J (0.1)	0.5 (0.13)	U (0.12)	U (0.12)	0.078 J (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	0.16 (0.14)	U (0.16)	0.024 J (0.16)	U (0.18)	0.043 J (0.14)	0.44 (0.17)	U (0.16)	0.067 J (0.16)	0.079 J (0.15)	U (0.16)
Chrysene	760	230	0.023 J (0.1)	0.13 (0.11)	0.038 J (0.12)	0.059 J (0.12)	U (0.13)	0.056 J (0.1)	0.43 (0.13)	U (0.12)	U (0.12)	0.15 (0.11)	0.026 J (0.12)
Fluorene	130000	3800	2.6 (0.17)	1.2 (0.18)	1.9 (0.2)	3 (0.2)	1.1 (0.22)	0.036 J (0.17)	0.063 J (0.21)	U (0.2)	U (0.2)	0.099 J (0.19)	U (0.2)
Naphthalene	66	25	U (0.17)	0.29 (0.18)	2.4 (0.2)	4.2 (0.2)	0.096 J (0.22)	U (0.17)	0.21 (0.21)	U (0.2)	U (0.2)	0.51 (0.19)	U (0.2)
Phenanthrene	190000	10000	4.6 (0.1)	2.6 (0.11)	3.7 (0.12)	4.4 (0.12)	2.9 (0.13)	0.11 (0.1)	0.54 (0.13)	U (0.12)	U (0.12)	0.1 J (0.11)	U (0.12)
Pyrene	96000	2200	0.36 (0.1)	0.32 (0.11)	0.22 (0.12)	0.4 (0.12)	0.21 (0.13)	0.044 J (0.1)	0.57 (0.13)	U (0.12)	U (0.12)	0.16 (0.11)	0.033 J (0.12)
<b>Metals</b>													
Lead	1000	450	5.1 (2.03)	24.3 (2.13)	5.99 (2.4)	64.5 (2.43)	21 (2.63)	8.12 (2.04)	2420 (5.04)	12.7 (11.9)	6.89 J (11.6)	6.91 (4.53)	5.16 (4.58)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AG05-C3	302-AG05-C4	302-AG06-C1	302-AG06-C2	302-AG06-C3	302-AG06-C4	302-AG08-C1	302-AG08-C2	302-AG08-C3	302-AG08-C4	302-AG08-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AG05	302-AG05	302-AG06	302-AG06	302-AG06	302-AG06	302-AG08	302-AG08	302-AG08	302-AG08	302-AG08
Field Sample ID	Value (0-2 ft bgs)	Value	302-AG05-C3-COMP	302-AG05-C4-COMP	302-AG06-C1-COMP	302-AG06-C2-COMP	302-AG06-C3-COMP	302-AG06-C4-COMP	302-AG08-C1-COMP	302-AG08-C2-COMP	302-AG08-C3-COMP	302-AG08-C4-COMP	302-AG08-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/22/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022	8/30/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.11)	0.087 J (0.12)	0.072 J (0.14)	0.47 (0.11)	0.07 J (0.12)	U (0.13)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.049 J (0.11)	U (0.12)	U (0.12)	U (0.11)	0.18 (0.12)	0.23 (0.14)	0.81 (0.11)	0.13 (0.12)	0.05 J (0.13)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	0.05 J (0.14)	U (0.16)	U (0.16)	U (0.15)	0.15 (0.15)	0.29 (0.19)	0.7 (0.15)	0.14 J (0.16)	U (0.18)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.071 J (0.11)	U (0.12)	U (0.12)	U (0.11)	0.15 (0.12)	0.28 (0.14)	0.77 (0.11)	0.12 (0.12)	0.054 J (0.13)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.034 J (0.14)	U (0.16)	U (0.16)	U (0.15)	0.11 J (0.15)	0.17 J (0.19)	0.35 (0.15)	0.16 (0.16)	0.035 J (0.18)
Chrysene	760	230	U (0.12)	U (0.12)	0.056 J (0.11)	U (0.12)	U (0.12)	U (0.11)	0.21 (0.12)	0.22 (0.14)	0.76 (0.11)	0.16 (0.12)	0.057 J (0.13)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.2)	U (0.19)	0.17 J (0.19)	0.11 J (0.24)	0.42 (0.19)	0.064 J (0.2)	0.049 J (0.22)
Naphthalene	66	25	0.03 J (0.2)	U (0.2)	U (0.18)	U (0.2)	U (0.2)	0.048 J (0.19)	0.75 (0.19)	0.81 (0.24)	1.3 (0.19)	0.51 (0.2)	0.3 (0.22)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.098 J (0.11)	U (0.12)	U (0.12)	U (0.12)	0.025 J (0.11)	0.36 (0.12)	0.27 (0.14)	1.5 (0.11)	0.093 J (0.13)
Pyrene	96000	2200	U (0.12)	U (0.12)	0.095 J (0.11)	U (0.12)	U (0.12)	0.023 J (0.11)	0.24 (0.12)	0.24 (0.14)	1 (0.11)	0.22 (0.12)	0.069 J (0.13)
<b>Metals</b>													
Lead	1000	450	6.7 (2.44)	6.8 (2.34)	255 (2.1)	15.2 J (23.7)	5.36 (2.41)	3.37 (2.15)	<u>3080 (2.32)</u>	<u>3870 (2.81)</u>	<u>9720 (4.51)</u>	<u>6280 (2.36)</u>	<u>6160 (2.53)</u>

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AG09-C1	302-AG10-C1	302-AH04-C1	302-AH04-C2	302-AH04-C3	302-AH04-C4	302-AH04-C5	302-AH05-C1	302-AH05-C2	302-AH05-C3	302-AH05-C4
Cell	Direct Contact Numeric	Groundwater Numeric	302-AG09	302-AG10	302-AH04	302-AH04	302-AH04	302-AH04	302-AH04	302-AH05	302-AH05	302-AH05	302-AH05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AG09-C1-COMP	302-AG10-C1-COMP	302-AH04-C1-COMP	302-AH04-C2-COMP	302-AH04-C3-COMP	302-AH04-C4-COMP	302-AH04-C5-COMP	302-AH05-C1-COMP	302-AH05-C2-COMP	302-AH05-C3-COMP	302-AH05-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	8/30/2022	8/31/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	0.045 J (0.11)	0.13 (0.12)	0.09 J (0.11)	U (0.13)	0.064 J (0.12)	0.089 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.093 J (0.11)
Benzo(a)anthracene	130	340	U (0.11)	0.13 (0.11)	0.047 J (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.25 (0.11)
Benzo(a)pyrene	91	46	U (0.15)	0.12 J (0.15)	U (0.16)	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	0.38 (0.15)
Benzo(b)fluoranthene	76	170	U (0.11)	0.12 (0.11)	0.05 J (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.41 (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.15)	0.071 J (0.15)	0.026 J (0.16)	U (0.15)	U (0.17)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	0.024 J (0.16)	0.26 (0.15)
Chrysene	760	230	U (0.11)	0.14 (0.11)	0.044 J (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.021 J (0.12)	0.27 (0.11)
Fluorene	130000	3800	U (0.19)	U (0.19)	0.67 (0.2)	0.43 (0.19)	0.04 J (0.22)	0.52 (0.2)	0.98 (0.2)	U (0.2)	U (0.2)	U (0.19)	0.042 J (0.19)
Naphthalene	66	25	U (0.19)	U (0.19)	0.2 (0.2)	0.1 J (0.19)	U (0.22)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	0.074 J (0.19)
Phenanthrene	190000	10000	U (0.11)	0.19 (0.11)	1 (0.12)	0.89 (0.11)	0.062 J (0.13)	0.78 (0.12)	1.3 (0.12)	U (0.12)	U (0.12)	U (0.12)	0.28 (0.11)
Pyrene	96000	2200	U (0.11)	0.27 (0.11)	0.16 (0.12)	0.054 J (0.11)	U (0.13)	0.039 J (0.12)	0.064 J (0.12)	U (0.12)	U (0.12)	0.025 J (0.12)	0.28 (0.11)
<b>Metals</b>													
Lead	1000	450	9.87 (2.24)	41.1 (4.58)	128 (2.3)	5.77 (2.22)	14.8 (2.6)	8.31 (2.36)	28 (2.41)	29.3 (2.22)	32.2 (2.35)	7.65 (2.33)	656 (2.22)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AH06-C1	302-AH06-C2	302-AH06-C3	302-AH06-C4	302-AH06-C5	302-AH07-C1	302-AH07-C2	302-AH07-C3	302-AH07-C4	302-AH08-C1	302-AH08-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AH06	302-AH06	302-AH06	302-AH06	302-AH06	302-AH07	302-AH07	302-AH07	302-AH07	302-AH08	302-AH08
Field Sample ID	Value (0-2 ft bgs)	Value	302-AH06-C1-COMP	302-AH06-C2-COMP	302-AH06-C3-COMP	302-AH06-C4-COMP	302-AH06-C5-COMP	302-AH07-C1-COMP	302-AH07-C2-COMP	302-AH07-C3-COMP	302-AH07-C4-COMP	302-AH08-C1-COMP	302-AH08-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	10/20/2022	10/20/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	0.12 (0.12)	0.23 (0.12)	U (0.11)	U (0.11)	U (0.11)	0.044 J (0.11)	0.053 J (0.1)	0.051 J (0.1)	U (0.11)	0.13 (0.12)
Benzo(a)anthracene	130	340	0.035 J (0.12)	0.22 (0.12)	0.21 (0.12)	U (0.11)	U (0.11)	0.028 J (0.11)	0.18 (0.11)	0.2 (0.1)	0.23 (0.1)	0.028 J (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	0.15 J (0.16)	0.18 (0.16)	U (0.15)	U (0.15)	U (0.14)	0.22 (0.14)	0.2 (0.14)	0.22 (0.14)	0.12 J (0.15)	0.069 J (0.16)
Benzo(b)fluoranthene	76	170	0.065 J (0.12)	0.12 (0.12)	0.23 (0.12)	U (0.11)	U (0.11)	0.036 J (0.11)	0.26 (0.11)	0.24 (0.1)	0.27 (0.1)	0.065 J (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.041 J (0.15)	0.063 J (0.16)	0.12 J (0.16)	U (0.15)	U (0.15)	0.021 J (0.14)	0.16 (0.14)	0.15 (0.14)	0.15 (0.14)	0.28 (0.15)	0.16 (0.16)
Chrysene	760	230	0.041 J (0.12)	0.23 (0.12)	0.22 (0.12)	U (0.11)	U (0.11)	0.026 J (0.11)	0.2 (0.11)	0.2 (0.1)	0.22 (0.1)	0.049 J (0.11)	0.033 J (0.12)
Fluorene	130000	3800	U (0.19)	0.1 J (0.2)	0.23 (0.2)	U (0.19)	0.026 J (0.19)	U (0.18)	0.021 J (0.18)	0.022 J (0.17)	0.021 J (0.17)	0.035 J (0.19)	0.56 (0.2)
Naphthalene	66	25	U (0.19)	U (0.2)	0.097 J (0.2)	U (0.19)	U (0.19)	U (0.18)	0.041 J (0.18)	0.034 J (0.17)	0.054 J (0.17)	0.028 J (0.19)	0.11 J (0.2)
Phenanthrene	190000	10000	0.026 J (0.12)	0.44 (0.12)	1.1 (0.12)	U (0.11)	0.042 J (0.11)	0.025 J (0.11)	0.19 (0.11)	0.22 (0.1)	0.19 (0.1)	0.094 J (0.11)	1 (0.12)
Pyrene	96000	2200	0.063 J (0.12)	0.32 (0.12)	0.58 (0.12)	U (0.11)	U (0.11)	0.042 J (0.11)	0.31 (0.11)	0.33 (0.1)	0.34 (0.1)	0.04 J (0.11)	0.088 J (0.12)
<b>Metals</b>													
Lead	1000	450	7.15 (2.24)	27.2 (2.3)	6.86 (2.35)	2.59 (2.24)	8.24 (2.21)	20.6 (2.17)	61.4 (2.14)	8.22 (2.04)	32.2 (2.02)	376 (2.26)	37.6 (2.43)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AH08-C3	302-AH09-C1	302-AI05-C1	302-AI05-C2	302-AI05-C3	302-AI05-C4	302-AI05-C5	302-AI06-C1	302-AI06-C2	302-AI06-C3	302-AI06-C4
Cell	Direct Contact Numeric	Groundwater Numeric	302-AH08	302-AH09	302-AI05	302-AI05	302-AI05	302-AI05	302-AI05	302-AI06	302-AI06	302-AI06	302-AI06
Field Sample ID	Value (0-2 ft bgs)	Value	302-AH08-C3-COMP	302-AH09-C1-COMP	302-AI05-C1-COMP	302-AI05-C2-COMP	302-AI05-C3-COMP	302-AI05-C4-COMP	302-AI05-C5-COMP	302-AI06-C1-COMP	302-AI06-C2-COMP	302-AI06-C3-COMP	302-AI06-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	10/20/2022	8/31/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.13)	0.038 J (0.11)	0.9 (0.14)	U (0.14)
Benzo(a)anthracene	130	340	0.18 (0.11)	0.084 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.13)	0.13 (0.11)	2.9 (0.14)	U (0.14)
Benzo(a)pyrene	91	46	0.16 (0.15)	0.1 J (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.15)	U (0.17)	0.14 J (0.15)	3.5 (0.18)	U (0.18)
Benzo(b)fluoranthene	76	170	0.2 (0.11)	0.11 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.13)	0.18 (0.11)	3.9 (0.14)	U (0.14)
Benzo(g,h,i)perylene	190000	180	0.098 J (0.15)	0.07 J (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.16)	U (0.15)	U (0.17)	0.079 J (0.15)	1.8 (0.18)	U (0.18)
Chrysene	760	230	0.16 (0.11)	0.092 J (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.13)	0.13 (0.11)	2.9 (0.14)	U (0.14)
Fluorene	130000	3800	U (0.18)	U (0.2)	0.039 J (0.2)	U (0.19)	U (0.19)	U (0.2)	0.082 J (0.19)	U (0.22)	U (0.19)	0.69 (0.23)	U (0.22)
Naphthalene	66	25	U (0.18)	0.04 J (0.2)	U (0.2)	U (0.19)	U (0.19)	U (0.2)	U (0.19)	U (0.22)	0.03 J (0.19)	0.42 (0.23)	U (0.22)
Phenanthrene	190000	10000	0.089 J (0.11)	0.1 J (0.12)	0.056 J (0.12)	U (0.12)	0.027 J (0.11)	U (0.12)	0.11 (0.11)	U (0.13)	0.16 (0.11)	3.2 (0.14)	U (0.14)
Pyrene	96000	2200	0.22 (0.11)	0.13 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.11)	U (0.13)	0.21 (0.11)	4.6 (0.14)	U (0.14)
<b>Metals</b>													
Lead	1000	450	9.4 (2.18)	2200 (2.4)	5.33 (2.35)	7.23 (2.38)	11.9 (2.22)	8.51 (2.36)	9.1 (2.23)	31.4 (2.63)	39.5 (2.17)	117 (2.72)	5.87 (2.69)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AI07-C1	302-AI07-C2	302-AI07-C3	302-AI07-C4	302-AI07-C5	302-AI08-C1	302-AI09-C1	302-AJ05-C1	302-AJ05-C2	302-AJ05-C3	302-AJ05-C4
Cell	Direct Contact Numeric	Groundwater Numeric	302-AI07	302-AI07	302-AI07	302-AI07	302-AI07	302-AI08	302-AI09	302-AJ05	302-AJ05	302-AJ05	302-AJ05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AI07-C1-COMP	302-AI07-C2-COMP	302-AI07-C3-COMP	302-AI07-C4-COMP	302-AI07-C5-COMP	302-AI08-C1-COMP	302-AI09-C1-COMP	302-AJ05-C1-COMP	302-AJ05-C2-COMP	302-AJ05-C3-COMP	302-AJ05-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	8/23/2022	8/23/2022	8/23/2022	8/23/2022	8/23/2022	9/26/2022	9/1/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.82 (0.11)	U (0.12)	U (0.11)	U (0.12)	0.058 J (0.1)	U (0.12)
Benzo(a)anthracene	130	340	0.033 J (0.12)	U (0.12)	0.14 (0.12)	0.044 J (0.12)	0.039 J (0.11)	0.13 (0.11)	U (0.12)	0.027 J (0.11)	U (0.12)	U (0.1)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	0.16 (0.16)	U (0.16)	U (0.15)	0.1 J (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.14)	U (0.16)
Benzo(b)fluoranthene	76	170	0.045 J (0.12)	U (0.12)	0.28 (0.12)	0.053 J (0.12)	0.048 J (0.11)	0.12 (0.11)	U (0.12)	0.044 J (0.11)	U (0.12)	U (0.1)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.028 J (0.16)	U (0.16)	0.16 (0.16)	0.027 J (0.16)	0.029 J (0.15)	0.095 J (0.15)	U (0.15)	0.039 J (0.15)	U (0.16)	U (0.14)	U (0.16)
Chrysene	760	230	0.033 J (0.12)	U (0.12)	0.21 (0.12)	0.04 J (0.12)	0.037 J (0.11)	0.16 (0.11)	U (0.12)	0.029 J (0.11)	U (0.12)	U (0.1)	U (0.12)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	4.1 (0.19)	U (0.19)	U (0.19)	U (0.2)	0.29 (0.17)	0.055 J (0.2)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	16 (0.93)	U (0.19)	0.035 J (0.19)	U (0.2)	0.038 J (0.17)	U (0.2)
Phenanthrene	190000	10000	0.032 J (0.12)	U (0.12)	0.13 (0.12)	0.043 J (0.12)	0.052 J (0.11)	8.8 (0.56)	U (0.12)	U (0.11)	U (0.12)	0.18 (0.1)	0.082 J (0.12)
Pyrene	96000	2200	0.053 J (0.12)	U (0.12)	0.25 (0.12)	0.072 J (0.12)	0.071 J (0.11)	0.76 (0.11)	U (0.12)	0.033 J (0.11)	U (0.12)	0.021 J (0.1)	U (0.12)
<b>Metals</b>													
Lead	1000	450	62.6 (2.46)	72.8 (2.43)	22 (2.39)	28.1 (4.7)	6.24 (4.49)	116 (4.44)	5.12 (2.32)	77.7 (2.31)	14.2 (2.42)	5.93 (2.07)	2.72 (2.37)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AJ05-C5	302-AJ06-C1	302-AJ06-C2	302-AJ06-C3	302-AJ07-C1	302-AJ07-C2	302-AJ07-C3	302-AJ07-C4	302-AJ08-C1	302-AJ08-C2	302-AJ08-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AJ05	302-AJ06	302-AJ06	302-AJ06	302-AJ07	302-AJ07	302-AJ07	302-AJ07	302-AJ08	302-AJ08	302-AJ08
Field Sample ID	Value (0-2 ft bgs)	Value	302-AJ05-C5-COMP	302-AJ06-C1-COMP	302-AJ06-C2-COMP	302-AJ06-C3-COMP	302-AJ07-C1-COMP	302-AJ07-C2-COMP	302-AJ07-C3-COMP	302-AJ07-C4-COMP	302-AJ08-C1-COMP	302-AJ08-C2-COMP	302-AJ08-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	10/5/2022	10/5/2022	10/5/2022	10/5/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.1)	0.12 (0.1)	U (0.12)	U (0.12)	U (0.12)	0.11 J (0.14)	U (0.11)	U (0.11)	U (0.11)	U (0.1)	U (0.11)
Benzo(a)anthracene	130	340	U (0.1)	U (0.1)	U (0.12)	U (0.12)	0.15 (0.12)	0.28 (0.14)	0.032 J (0.11)	0.021 J (0.11)	U (0.11)	0.021 J (0.1)	U (0.11)
Benzo(a)pyrene	91	46	U (0.13)	U (0.13)	U (0.16)	U (0.16)	0.16 (0.16)	0.21 (0.18)	U (0.15)	U (0.15)	U (0.15)	U (0.14)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.1)	U (0.1)	U (0.12)	U (0.12)	0.23 (0.12)	0.22 (0.14)	0.033 J (0.11)	U (0.11)	U (0.11)	U (0.1)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.13)	U (0.13)	U (0.16)	U (0.16)	0.11 J (0.16)	0.082 J (0.18)	U (0.15)	U (0.15)	U (0.15)	U (0.14)	U (0.15)
Chrysene	760	230	U (0.1)	U (0.1)	U (0.12)	U (0.12)	0.21 (0.12)	0.24 (0.14)	0.031 J (0.11)	U (0.11)	U (0.11)	0.031 J (0.1)	U (0.11)
Fluorene	130000	3800	U (0.17)	0.65 (0.17)	U (0.2)	0.027 J (0.2)	0.021 J (0.2)	0.03 J (0.23)	0.018 J (0.19)	U (0.19)	U (0.19)	U (0.18)	U (0.19)
Naphthalene	66	25	U (0.17)	0.1 J (0.17)	U (0.2)	U (0.2)	U (0.2)	U (0.23)	0.033 J (0.19)	0.025 J (0.19)	U (0.19)	U (0.18)	U (0.19)
Phenanthrene	190000	10000	0.026 J (0.1)	0.95 (0.1)	U (0.12)	0.092 J (0.12)	0.12 (0.12)	0.34 (0.14)	0.078 J (0.11)	0.041 J (0.11)	U (0.11)	0.056 J (0.1)	U (0.11)
Pyrene	96000	2200	U (0.1)	0.066 J (0.1)	U (0.12)	U (0.12)	0.22 (0.12)	0.39 (0.14)	0.075 J (0.11)	0.037 J (0.11)	U (0.11)	0.033 J (0.1)	U (0.11)
<b>Metals</b>													
Lead	1000	450	3.41 (2.04)	2.65 (1.96)	6.38 (2.3)	7.08 (2.36)	63.9 (2.31)	17.8 (2.67)	12.6 (2.19)	156 (2.24)	123 (2.23)	13.4 (2.13)	6.02 (2.18)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AK03-C1	302-AK03-C2	302-AK03-C3	302-AK03-C4	302-AK03-C5	302-AK04-C1	302-AK04-C2	302-AK04-C3	302-AK05-C1	302-AK05-C2	302-AK05-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AK03	302-AK03	302-AK03	302-AK03	302-AK03	302-AK04	302-AK04	302-AK04	302-AK05	302-AK05	302-AK05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AK03-C1-COMP	302-AK03-C2-COMP	302-AK03-C3-COMP	302-AK03-C4-COMP	302-AK03-C5-COMP	302-AK04-C1-COMP	302-AK04-C2-COMP	302-AK04-C3-COMP	302-AK05-C1-COMP	302-AK05-C2-COMP	302-AK05-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	10/4/2022	8/25/2022	8/25/2022	8/25/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.11)	U (0.12)	U (0.11)	U (0.12)	0.089 J (0.11)	0.079 J (0.14)	U (0.12)
Benzo(a)anthracene	130	340	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.11)	U (0.12)	0.038 J (0.11)	U (0.12)	0.28 (0.11)	0.2 (0.14)	0.16 (0.12)
Benzo(a)pyrene	91	46	U (0.14)	U (0.14)	U (0.14)	U (0.15)	U (0.14)	U (0.16)	0.048 J (0.15)	U (0.17)	0.29 (0.15)	0.22 (0.18)	0.2 (0.16)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.11)	U (0.12)	0.057 J (0.11)	U (0.12)	0.31 (0.11)	0.24 (0.14)	0.21 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.14)	U (0.14)	U (0.14)	U (0.15)	U (0.14)	U (0.16)	0.033 J (0.15)	U (0.17)	0.14 J (0.15)	0.12 J (0.18)	0.11 J (0.16)
Chrysene	760	230	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.11)	U (0.12)	0.042 J (0.11)	U (0.12)	0.26 (0.11)	0.19 (0.14)	0.15 (0.12)
Fluorene	130000	3800	U (0.18)	U (0.18)	U (0.17)	U (0.18)	U (0.18)	U (0.2)	U (0.19)	U (0.21)	0.039 J (0.19)	0.022 J (0.23)	U (0.2)
Naphthalene	66	25	U (0.18)	U (0.18)	U (0.17)	U (0.18)	U (0.18)	U (0.2)	0.032 J (0.19)	U (0.21)	0.031 J (0.19)	U (0.23)	U (0.2)
Phenanthrene	190000	10000	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.11)	U (0.12)	0.036 J (0.11)	U (0.12)	0.35 (0.11)	0.23 (0.14)	0.12 (0.12)
Pyrene	96000	2200	U (0.11)	U (0.1)	U (0.1)	U (0.11)	U (0.11)	U (0.12)	0.053 J (0.11)	U (0.12)	0.37 (0.11)	0.26 (0.14)	0.16 (0.12)
<b>Metals</b>													
Lead	1000	450	2.32 (2.11)	2.59 (2)	2.19 (2)	7.02 (4.31)	5.63 (2.14)	12.3 (2.42)	823 (2.25)	137 (2.49)	33.2 (2.24)	80.7 (2.68)	74.5 (2.42)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AK05-C4	302-AK05-C5	302-AK07-C1	302-AK07-C2	302-AK07-C3	302-AK08-C1	302-AL03-C1	302-AL03-C2	302-AL03-C3	302-AL05-C1	302-AL05-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AK05	302-AK05	302-AK07	302-AK07	302-AK07	302-AK08	302-AL03	302-AL03	302-AL03	302-AL05	302-AL05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AK05-C4-COMP	302-AK05-C5-COMP	302-AK07-C1-COMP	302-AK07-C2-COMP	302-AK07-C3-COMP	302-AK08-C1-COMP	302-AL03-C1-COMP	302-AL03-C2-COMP	302-AL03-C3-COMP	302-AL05-C1-COMP	302-AL05-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	8/25/2022	8/25/2022	10/14/2022	10/14/2022	10/14/2022	9/1/2022	10/4/2022	10/4/2022	10/4/2022	8/25/2022	8/25/2022
<b>PAHs</b>													
Anthracene	190000	350	0.42 (0.11)	0.12 (0.12)	U (0.13)	0.52 (0.11)	1.5 (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	0.35 (0.11)	0.79 (0.15)
Benzo(a)anthracene	130	340	0.31 (0.11)	0.15 (0.12)	0.075 J (0.13)	1.2 (0.11)	3.5 (0.12)	U (0.12)	0.07 J (0.11)	0.055 J (0.11)	U (0.12)	0.79 (0.11)	2.4 (0.15)
Benzo(a)pyrene	91	46	0.3 (0.15)	0.24 (0.17)	0.097 J (0.17)	1.2 (0.15)	3.5 (0.16)	U (0.15)	0.081 J (0.15)	0.07 J (0.14)	U (0.15)	0.63 (0.15)	2.6 (0.2)
Benzo(b)fluoranthene	76	170	0.32 (0.11)	0.22 (0.12)	0.12 J (0.13)	1.5 (0.11)	4.2 (0.12)	U (0.12)	0.1 J (0.11)	0.083 J (0.11)	U (0.12)	0.7 (0.11)	2.8 (0.15)
Benzo(g,h,i)perylene	190000	180	0.15 (0.15)	0.13 J (0.17)	0.064 J (0.17)	0.67 (0.15)	2.2 (0.16)	U (0.15)	0.065 J (0.15)	0.051 J (0.14)	0.039 J (0.15)	0.26 (0.15)	1.3 (0.2)
Chrysene	760	230	0.28 (0.11)	0.13 (0.12)	0.072 J (0.13)	1.2 (0.11)	3 (0.12)	U (0.12)	0.075 J (0.11)	0.062 J (0.11)	0.067 J (0.12)	0.67 (0.11)	2.2 (0.15)
Fluorene	130000	3800	1.6 (0.19)	0.18 J (0.21)	0.024 J (0.21)	0.23 (0.18)	0.78 (0.19)	U (0.19)	U (0.19)	U (0.18)	0.069 J (0.19)	0.16 J (0.19)	0.35 (0.25)
Naphthalene	66	25	1.2 (0.19)	0.48 (0.21)	0.086 J (0.21)	0.11 J (0.18)	0.89 (0.19)	U (0.19)	0.029 J (0.19)	0.031 J (0.18)	U (0.19)	0.047 J (0.19)	0.19 J (0.25)
Phenanthrene	190000	10000	2.9 (0.11)	0.36 (0.12)	0.063 J (0.13)	2 (0.11)	5.2 (0.12)	U (0.12)	0.054 J (0.11)	0.036 J (0.11)	0.18 (0.12)	1.2 (0.11)	2.7 (0.15)
Pyrene	96000	2200	0.53 (0.11)	0.17 (0.12)	0.077 J (0.13)	2.2 (0.11)	5.3 (0.12)	U (0.12)	0.089 J (0.11)	0.08 J (0.11)	0.026 J (0.12)	1.1 (0.11)	3.4 (0.15)
<b>Metals</b>													
Lead	1000	450	147 (2.3)	330 (2.5)	12.5 (2.47)	337 (2.19)	282 (2.34)	5.29 (4.65)	150 (2.27)	418 (2.05)	3.08 (2.29)	480 (2.18)	380 (2.93)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AL05-C3	302-AL05-C4	302-AL07-C1	302-AL07-C2	302-AL07-C3	302-AL08-C1	302-AM02-C1	302-AM02-C2	302-AM02-C3	302-AM02-C4	302-AM02-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AL05	302-AL05	302-AL07	302-AL07	302-AL07	302-AL08	302-AM02	302-AM02	302-AM02	302-AM02	302-AM02
Field Sample ID	Value (0-2 ft bgs)	Value	302-AL05-C3-COMP	302-AL05-C4-COMP	302-AL07-C1-COMP	302-AL07-C2-COMP	302-AL07-C3-COMP	302-AL08-C1-COMP	302-AM02-C1-COMP	302-AM02-C2-COMP	302-AM02-C3-COMP	302-AM02-C4-COMP	302-AM02-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	8/25/2022	8/25/2022	10/14/2022	10/14/2022	10/14/2022	9/1/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	0.17 (0.11)	0.4 (0.12)	0.065 J (0.11)	0.065 J (0.12)	U (0.13)	0.039 J (0.11)	0.13 (0.12)	U (0.11)	0.71 (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.11)	0.63 (0.11)	0.14 (0.12)	U (0.11)	U (0.12)	U (0.13)	0.092 J (0.11)	0.35 (0.12)	0.057 J (0.11)	1.4 (0.11)	0.031 J (0.11)
Benzo(a)pyrene	91	46	U (0.15)	0.79 (0.14)	0.087 J (0.16)	U (0.15)	U (0.16)	U (0.17)	0.09 J (0.15)	0.36 (0.15)	0.06 J (0.15)	1.2 (0.14)	U (0.14)
Benzo(b)fluoranthene	76	170	U (0.11)	1 (0.11)	0.12 (0.12)	U (0.11)	U (0.12)	U (0.13)	0.11 (0.11)	0.42 (0.12)	0.065 J (0.11)	1.6 (0.11)	0.036 J (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.15)	0.67 (0.14)	0.059 J (0.16)	U (0.15)	U (0.16)	U (0.17)	0.068 J (0.15)	0.22 (0.15)	0.049 J (0.15)	0.75 (0.14)	0.032 J (0.14)
Chrysene	760	230	U (0.11)	0.68 (0.11)	0.17 (0.12)	0.025 J (0.11)	U (0.12)	U (0.13)	0.095 J (0.11)	0.4 (0.12)	0.053 J (0.11)	1.3 (0.11)	0.035 J (0.11)
Fluorene	130000	3800	U (0.19)	0.044 J (0.18)	1.5 (0.2)	0.28 (0.18)	0.26 (0.2)	U (0.21)	U (0.19)	0.098 J (0.19)	U (0.19)	0.43 (0.18)	U (0.18)
Naphthalene	66	25	U (0.19)	0.27 (0.18)	0.32 (0.2)	0.098 J (0.18)	0.097 J (0.2)	U (0.21)	0.029 J (0.19)	0.13 J (0.19)	U (0.19)	0.14 J (0.18)	U (0.18)
Phenanthrene	190000	10000	U (0.11)	0.45 (0.11)	3.6 (0.12)	0.57 (0.11)	0.51 (0.12)	U (0.13)	0.097 J (0.11)	0.98 (0.12)	0.087 J (0.11)	3.2 (0.11)	0.026 J (0.11)
Pyrene	96000	2200	U (0.11)	0.87 (0.11)	0.38 (0.12)	0.042 J (0.11)	0.037 J (0.12)	U (0.13)	0.12 (0.11)	0.78 (0.12)	0.092 J (0.11)	2.7 (0.11)	0.044 J (0.11)
<b>Metals</b>													
Lead	1000	450	19.5 (2.24)	41.2 (2.17)	27.3 (2.35)	7.76 (2.2)	2.02 J (2.33)	38.2 (24.6)	65.2 (2.25)	116 (2.31)	33 (2.25)	64 (2.14)	229 (2.13)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AM03-C1	302-AM03-C2	302-AM03-C3	302-AM03-C4	302-AM04-C1	302-AM04-C2	302-AM04-C3	302-AM04-C4	302-AM04-C5	302-AM05-C1	302-AM05-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AM03	302-AM03	302-AM03	302-AM03	302-AM04	302-AM04	302-AM04	302-AM04	302-AM04	302-AM05	302-AM05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AM03-C1-COMP	302-AM03-C2-COMP	302-AM03-C3-COMP	302-AM03-C4-COMP	302-AM04-C1-COMP	302-AM04-C2-COMP	302-AM04-C3-COMP	302-AM04-C4-COMP	302-AM04-C5-COMP	302-AM05-C1-COMP	302-AM05-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	8/25/2022	8/25/2022	8/25/2022	8/25/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	0.93 (0.11)	0.088 J (0.13)	U (0.12)	0.12 J (0.13)	0.19 (0.12)	0.12 (0.11)	0.25 (0.12)	0.2 (0.12)	U (0.12)	0.06 J (0.12)
Benzo(a)anthracene	130	340	0.052 J (0.11)	1.6 (0.11)	0.064 J (0.13)	U (0.12)	0.16 (0.13)	0.12 (0.12)	0.11 (0.11)	0.038 J (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	0.055 J (0.14)	1.3 (0.15)	U (0.18)	U (0.16)	0.16 J (0.18)	0.087 J (0.16)	0.1 J (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	0.066 J (0.11)	1.6 (0.11)	0.054 J (0.13)	U (0.12)	0.19 (0.13)	0.12 (0.12)	0.1 J (0.11)	0.04 J (0.12)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.035 J (0.14)	0.62 (0.15)	0.026 J (0.18)	U (0.16)	0.059 J (0.18)	0.031 J (0.16)	0.039 J (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	0.05 J (0.11)	1.4 (0.11)	0.061 J (0.13)	U (0.12)	0.14 (0.13)	0.12 (0.12)	0.12 (0.11)	0.061 J (0.12)	0.038 J (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.18)	0.42 (0.18)	0.26 (0.22)	U (0.2)	0.23 (0.22)	2.6 (0.2)	2.5 (0.19)	1.8 (0.19)	1.6 (0.2)	U (0.2)	0.4 (0.2)
Naphthalene	66	25	U (0.18)	0.16 J (0.18)	0.056 J (0.22)	U (0.2)	0.084 J (0.22)	1.1 (0.2)	0.54 (0.19)	0.43 (0.19)	0.24 (0.2)	U (0.2)	2.7 (0.2)
Phenanthrene	190000	10000	0.046 J (0.11)	2.8 (0.11)	0.55 (0.13)	U (0.12)	0.64 (0.13)	6.1 (0.12)	5.7 (0.11)	4 (0.12)	2.9 (0.12)	U (0.12)	0.82 (0.12)
Pyrene	96000	2200	0.073 J (0.11)	2.7 (0.11)	0.13 (0.13)	U (0.12)	0.32 (0.13)	0.46 (0.12)	0.37 (0.11)	0.17 (0.12)	0.1 J (0.12)	0.025 J (0.12)	0.043 J (0.12)
<b>Metals</b>													
Lead	1000	450	77.5 (2.14)	29.2 (2.2)	3.84 (2.63)	32.6 (2.39)	82.2 (2.6)	15.9 (2.31)	5.64 (2.22)	5.8 (2.22)	8.2 (2.34)	492 (2.29)	6.79 (2.33)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AM05-C3	302-AM06-C1	302-AN01-C1	302-AN01-C2	302-AN01-C3	302-AN01-C4	302-AN01-C5	302-AN03-C1	302-AN03-C2	302-AN03-C3	302-AN03-C4
Cell	Direct Contact Numeric	Groundwater Numeric	302-AM05	302-AM06	302-AN01	302-AN01	302-AN01	302-AN01	302-AN01	302-AN03	302-AN03	302-AN03	302-AN03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AM05-C3-COMP	302-AM06-C1-COMP	302-AN01-C1-COMP	302-AN01-C2-COMP	302-AN01-C3-COMP	302-AN01-C4-COMP	302-AN01-C5-COMP	302-AN03-C1-COMP	302-AN03-C2-COMP	302-AN03-C3-COMP	302-AN03-C4-COMP
Sample Date	(mg/kg)	(mg/kg)	10/13/2022	9/2/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022	10/6/2022	10/13/2022	10/13/2022	10/13/2022	10/13/2022
<b>PAHs</b>													
Anthracene	190000	350	0.079 J (0.12)	U (0.12)	U (0.11)	U (0.1)	U (0.11)	U (0.12)	U (0.12)	U (0.11)	0.055 J (0.11)	U (0.11)	0.039 J (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	0.042 J (0.11)	0.02 J (0.1)	0.058 J (0.11)	U (0.12)	U (0.12)	0.069 J (0.11)	0.11 (0.11)	0.076 J (0.11)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	0.049 J (0.15)	U (0.14)	0.062 J (0.15)	U (0.17)	U (0.16)	0.098 J (0.15)	0.14 J (0.15)	0.11 J (0.15)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.056 J (0.11)	U (0.1)	0.076 J (0.11)	U (0.12)	U (0.12)	0.1 J (0.11)	0.17 (0.11)	0.083 J (0.11)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.031 J (0.15)	U (0.14)	0.028 J (0.15)	U (0.17)	U (0.16)	0.076 J (0.15)	0.12 J (0.15)	0.059 J (0.15)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.12)	0.042 J (0.11)	0.026 J (0.1)	0.098 J (0.11)	U (0.12)	U (0.12)	0.082 J (0.11)	0.18 (0.11)	0.082 J (0.11)	U (0.12)
Fluorene	130000	3800	0.37 (0.2)	U (0.2)	U (0.18)	U (0.17)	U (0.19)	U (0.21)	U (0.19)	U (0.18)	0.07 J (0.19)	U (0.18)	0.24 (0.2)
Naphthalene	66	25	1.1 (0.2)	U (0.2)	U (0.18)	U (0.17)	U (0.19)	U (0.21)	U (0.19)	0.14 J (0.18)	0.06 J (0.19)	0.08 J (0.18)	0.041 J (0.2)
Phenanthrene	190000	10000	0.95 (0.12)	U (0.12)	0.03 J (0.11)	U (0.1)	0.056 J (0.11)	U (0.12)	U (0.12)	0.12 (0.11)	0.28 (0.11)	0.14 (0.11)	0.41 (0.12)
Pyrene	96000	2200	0.05 J (0.12)	U (0.12)	0.061 J (0.11)	0.019 J (0.1)	0.072 J (0.11)	U (0.12)	U (0.12)	0.1 J (0.11)	0.23 (0.11)	0.14 (0.11)	0.037 J (0.12)
<b>Metals</b>													
Lead	1000	450	6.07 (2.42)	3.27 (2.35)	13.8 (2.15)	38.8 (2)	26.1 (2.24)	60.9 (2.44)	25.2 (2.27)	197 (2.16)	839 (2.25)	989 (2.15)	79.5 (2.41)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AN04-C1	302-AO02-C1	302-AO02-C2	302-AO04-C1	302-AO04-C2	302-AO04-C3	302-AO04-C4	302-AO05-C1	302-AO05-C2	302-AO05-C3	302-AO06-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AN04	302-AO02	302-AO02	302-AO04	302-AO04	302-AO04	302-AO04	302-AO05	302-AO05	302-AO05	302-AO06
Field Sample ID	Value (0-2 ft bgs)	Value	302-AN04-C1-COMP	302-AO02-C1-COMP	302-AO02-C2-COMP	302-AO04-C1-COMP	302-AO04-C2-COMP	302-AO04-C3-COMP	302-AO04-C4-COMP	302-AO05-C1-COMP	302-AO05-C2-COMP	302-AO05-C3-COMP	302-AO06-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	9/2/2022	10/6/2022	10/6/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	10/12/2022	9/2/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	0.081 J (0.11)	0.15 (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)
Benzo(a)anthracene	130	340	U (0.11)	0.15 (0.11)	0.27 (0.11)	U (0.11)	U (0.12)	U (0.12)	0.025 J (0.12)	0.026 J (0.12)	U (0.12)	U (0.12)	U (0.13)
Benzo(a)pyrene	91	46	U (0.15)	0.2 (0.15)	0.23 (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)
Benzo(b)fluoranthene	76	170	U (0.11)	0.19 (0.11)	0.3 (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)
Benzo(g,h,i)perylene	190000	180	U (0.15)	0.28 (0.15)	0.12 J (0.15)	U (0.15)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	U (0.17)
Chrysene	760	230	U (0.11)	0.18 (0.11)	0.29 (0.11)	U (0.11)	U (0.12)	U (0.12)	0.028 J (0.12)	0.022 J (0.12)	U (0.12)	U (0.12)	U (0.13)
Fluorene	130000	3800	U (0.18)	U (0.18)	0.055 J (0.19)	U (0.19)	U (0.19)	U (0.2)	0.1 J (0.21)	U (0.2)	U (0.19)	U (0.19)	U (0.21)
Naphthalene	66	25	U (0.18)	0.16 J (0.18)	0.046 J (0.19)	U (0.19)	U (0.19)	0.12 J (0.2)	1.8 (0.21)	U (0.2)	U (0.19)	U (0.19)	U (0.21)
Phenanthrene	190000	10000	U (0.11)	0.2 (0.11)	0.53 (0.11)	U (0.11)	U (0.12)	U (0.12)	0.2 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.13)
Pyrene	96000	2200	U (0.11)	0.22 (0.11)	0.49 (0.11)	0.031 J (0.11)	0.025 J (0.12)	0.026 J (0.12)	0.043 J (0.12)	0.048 J (0.12)	0.04 J (0.12)	0.038 J (0.12)	U (0.13)
<b>Metals</b>													
Lead	1000	450	5.15 (2.22)	181 (2.21)	15.9 (2.22)	39.7 (2.14)	38.1 (2.3)	10.4 (2.29)	11.5 (2.47)	96 (2.42)	7.03 (2.33)	9.93 (2.32)	12.5 (2.4)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AP02-C1	302-AP02-C2	302-AP02-C3	302-AP03-C1	302-AP03-C2	302-AP03-C3	302-AP03-C4	302-AP03-C5	302-AP04-C1	302-AP04-C2	302-AP05-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AP02	302-AP02	302-AP02	302-AP03	302-AP03	302-AP03	302-AP03	302-AP03	302-AP04	302-AP04	302-AP05
Field Sample ID	Value (0-2 ft bgs)	Value	302-AP02-C1-COMP	302-AP02-C2-COMP	302-AP02-C3-COMP	302-AP03-C1-COMP	302-AP03-C2-COMP	302-AP03-C3-COMP	302-AP03-C4-COMP	302-AP03-C5-COMP	302-AP04-C1-COMP	302-AP04-C2-COMP	302-AP05-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	10/11/2022	10/11/2022	10/11/2022	10/14/2022	10/14/2022	10/14/2022	10/14/2022	10/14/2022	10/12/2022	10/12/2022	9/12/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.11)	U (0.11)	0.81 (0.11)	0.04 J (0.11)	U (0.11)	0.65 (0.1)	0.093 J (0.11)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.11)	U (0.11)	U (0.11)	2.2 (0.11)	0.14 (0.11)	U (0.11)	1.7 (0.1)	0.3 (0.11)	0.049 J (0.12)	0.027 J (0.12)	U (0.11)
Benzo(a)pyrene	91	46	U (0.15)	U (0.15)	U (0.15)	2.4 (0.15)	0.15 (0.14)	U (0.15)	1.8 (0.14)	0.3 (0.14)	U (0.16)	U (0.17)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.11)	U (0.11)	U (0.11)	3.1 (0.11)	0.17 (0.11)	U (0.11)	2.2 (0.1)	0.38 (0.11)	0.054 J (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.15)	U (0.15)	U (0.15)	1.6 (0.15)	0.094 J (0.14)	0.025 J (0.15)	1.1 (0.14)	0.22 (0.14)	0.038 J (0.16)	U (0.17)	U (0.15)
Chrysene	760	230	U (0.11)	U (0.11)	U (0.11)	2 (0.11)	0.13 (0.11)	0.024 J (0.11)	1.6 (0.1)	0.3 (0.11)	0.047 J (0.12)	0.024 J (0.12)	U (0.11)
Fluorene	130000	3800	U (0.19)	U (0.19)	U (0.18)	0.33 (0.19)	0.022 J (0.18)	U (0.18)	0.35 (0.18)	0.059 J (0.18)	0.031 J (0.2)	0.097 J (0.21)	U (0.18)
Naphthalene	66	25	U (0.19)	U (0.19)	U (0.18)	0.55 (0.19)	0.048 J (0.18)	U (0.18)	0.34 (0.18)	0.1 J (0.18)	0.18 J (0.2)	1.1 (0.21)	U (0.18)
Phenanthrene	190000	10000	U (0.11)	U (0.11)	U (0.11)	2.3 (0.11)	0.13 (0.11)	U (0.11)	2.4 (0.1)	0.34 (0.11)	0.088 J (0.12)	0.18 (0.12)	U (0.11)
Pyrene	96000	2200	0.022 J (0.11)	U (0.11)	U (0.11)	3.4 (0.11)	0.19 (0.11)	0.028 J (0.11)	2.6 (0.1)	0.46 (0.11)	0.081 J (0.12)	0.061 J (0.12)	0.019 J (0.11)
<b>Metals</b>													
Lead	1000	450	36 (2.27)	13.2 (2.19)	17.3 (2.19)	226 (2.22)	289 (2.08)	341 (2.22)	7.87 (2.06)	118 (2.2)	23.5 (2.31)	6.17 (2.35)	7.46 (2.13)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AQ01-C1	302-AQ01-C2	302-AQ01-C3	302-AQ03-C1	302-AQ03-C2	302-AQ04-C1	302-AQ04-C2	302-AR01-C1	302-AR01-C2	302-AR01-C3	302-AR03-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AQ01	302-AQ01	302-AQ01	302-AQ03	302-AQ03	302-AQ04	302-AQ04	302-AR01	302-AR01	302-AR01	302-AR03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AQ01-C1-COMP	302-AQ01-C2-COMP	302-AQ01-C3-COMP	302-AQ03-C1-COMP	302-AQ03-C2-COMP	302-AQ04-C1-COMP	302-AQ04-C2-COMP	302-AR01-C1-COMP	302-AR01-C2-COMP	302-AR01-C3-COMP	302-AR03-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	10/7/2022	10/7/2022	10/7/2022	9/19/2022	9/19/2022	9/12/2022	9/12/2022	10/7/2022	10/7/2022	10/7/2022	9/19/2022
<b>PAHs</b>													
Anthracene	190000	350	0.34 (0.1)	U (0.1)	U (0.12)	0.041 J (0.12)	U (0.12)	U (0.11)	U (0.12)	U (0.12)	0.13 J (0.21)	U (0.14)	U (0.12)
Benzo(a)anthracene	130	340	1.5 (0.1)	U (0.1)	0.11 J (0.12)	0.049 J (0.12)	U (0.12)	U (0.11)	U (0.12)	0.12 (0.12)	0.4 (0.21)	U (0.14)	0.054 J (0.12)
Benzo(a)pyrene	91	46	1.4 (0.14)	U (0.14)	0.13 J (0.16)	U (0.16)	U (0.16)	U (0.15)	U (0.15)	0.13 J (0.16)	0.58 (0.28)	U (0.19)	0.053 J (0.16)
Benzo(b)fluoranthene	76	170	1.6 (0.1)	U (0.1)	0.16 (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.22 (0.12)	0.88 (0.21)	U (0.14)	0.065 J (0.12)
Benzo(g,h,i)perylene	190000	180	0.7 (0.14)	U (0.14)	0.089 J (0.16)	0.038 J (0.16)	U (0.16)	U (0.15)	U (0.15)	0.089 J (0.16)	0.42 (0.28)	U (0.19)	0.033 J (0.16)
Chrysene	760	230	1.5 (0.1)	U (0.1)	0.12 (0.12)	0.044 J (0.12)	U (0.12)	U (0.11)	U (0.12)	0.14 (0.12)	0.68 (0.21)	U (0.14)	0.056 J (0.12)
Fluorene	130000	3800	0.083 J (0.17)	U (0.18)	U (0.2)	0.067 J (0.2)	0.039 J (0.2)	U (0.19)	U (0.19)	U (0.19)	0.075 J (0.35)	U (0.24)	U (0.2)
Naphthalene	66	25	0.024 J (0.17)	U (0.18)	0.024 J (0.2)	0.038 J (0.2)	U (0.2)	U (0.19)	U (0.19)	0.028 J (0.19)	0.12 J (0.35)	U (0.24)	U (0.2)
Phenanthrene	190000	10000	1.6 (0.1)	U (0.1)	0.12 (0.12)	0.24 (0.12)	0.067 J (0.12)	U (0.11)	U (0.12)	0.034 J (0.12)	0.54 (0.21)	U (0.14)	0.14 (0.12)
Pyrene	96000	2200	2.6 (0.1)	U (0.1)	0.17 (0.12)	0.11 J (0.12)	U (0.12)	U (0.11)	U (0.12)	0.14 (0.12)	0.91 (0.21)	U (0.14)	0.12 (0.12)
<b>Metals</b>													
Lead	1000	450	56.1 (1.98)	8.89 (2.08)	136 (22.6)	8.54 (2.44)	6.54 (2.43)	5.3 (2.22)	0.96 J (2.24)	4.78 (2.29)	2270 (4.18)	11 (2.69)	15.2 (2.36)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AR03-C2	302-AR03-C3	302-AR03-C4	302-AR03-C5	302-AR04-C1	302-AR04-C2	302-AS01-C1	302-AS01-C2	302-AS01-C3	302-AS01-C4	302-AS04-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AR03	302-AR03	302-AR03	302-AR03	302-AR04	302-AR04	302-AS01	302-AS01	302-AS01	302-AS01	302-AS04
Field Sample ID	Value (0-2 ft bgs)	Value	302-AR03-C2-COMP	302-AR03-C3-COMP	302-AR03-C4-COMP	302-AR03-C5-COMP	302-AR04-C1-COMP	302-AR04-C2-COMP	302-AS01-C1-COMP	302-AS01-C2-COMP	302-AS01-C3-COMP	302-AS01-C4-COMP	302-AS04-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	9/19/2022	9/19/2022	9/19/2022	9/19/2022	9/13/2022	9/13/2022	10/7/2022	10/7/2022	10/7/2022	10/7/2022	9/21/2022
<b>PAHs</b>													
Anthracene	190000	350	0.13 (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.35)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.37 (0.12)	0.043 J (0.12)	U (0.12)	0.022 J (0.12)	0.26 (0.12)	U (0.12)	U (0.35)	0.022 J (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	0.35 (0.15)	U (0.16)	U (0.17)	U (0.16)	0.24 (0.16)	U (0.16)	U (0.47)	U (0.16)	U (0.15)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	0.41 (0.12)	0.044 J (0.12)	U (0.12)	U (0.12)	0.32 (0.12)	U (0.12)	U (0.35)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.26 (0.15)	U (0.16)	U (0.17)	U (0.16)	0.13 J (0.16)	U (0.16)	U (0.47)	U (0.16)	U (0.15)	U (0.16)	U (0.15)
Chrysene	760	230	0.33 (0.12)	0.036 J (0.12)	U (0.12)	U (0.12)	0.22 (0.12)	U (0.12)	U (0.35)	U (0.12)	U (0.11)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.043 J (0.19)	U (0.2)	U (0.21)	0.021 J (0.2)	U (0.2)	U (0.2)	U (0.59)	U (0.2)	U (0.19)	U (0.2)	U (0.19)
Naphthalene	66	25	0.096 J (0.19)	U (0.2)	U (0.21)	U (0.2)	U (0.2)	U (0.2)	U (0.59)	U (0.2)	U (0.19)	U (0.2)	U (0.19)
Phenanthrene	190000	10000	0.65 (0.12)	0.062 J (0.12)	U (0.12)	0.055 J (0.12)	0.1 J (0.12)	U (0.12)	U (0.35)	0.028 J (0.12)	U (0.11)	U (0.12)	U (0.12)
Pyrene	96000	2200	0.72 (0.12)	0.063 J (0.12)	U (0.12)	0.029 J (0.12)	0.3 (0.12)	U (0.12)	U (0.35)	0.028 J (0.12)	U (0.11)	U (0.12)	U (0.12)
<b>Metals</b>													
Lead	1000	450	712 (2.3)	51.4 (2.38)	43.4 (2.39)	56.8 (2.32)	86.6 (2.35)	5.52 (2.37)	9.22 (2.39)	7.8 (2.27)	6.83 (4.34)	3.98 (2.26)	70.4 (4.52)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AS04-C2	302-AS04-C3	302-AS04-C4	302-AS04-C5	302-AS05-C1	302-AS05-C2	302-AS05-C3	302-AS05-C4	302-AS06-C1	302-AT01-C1	302-AT01-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AS04	302-AS04	302-AS04	302-AS04	302-AS05	302-AS05	302-AS05	302-AS05	302-AS06	302-AT01	302-AT01
Field Sample ID	Value (0-2 ft bgs)	Value	302-AS04-C2-COMP	302-AS04-C3-COMP	302-AS04-C4-COMP	302-AS04-C5-COMP	302-AS05-C1-COMP	302-AS05-C2-COMP	302-AS05-C3-COMP	302-AS05-C4-COMP	302-AS06-C1-COMP	302-AT01-C1-COMP	302-AT01-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/21/2022	9/13/2022	10/11/2022	10/11/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.11)	U (0.11)	0.12 (0.12)	0.13 (0.11)	0.056 J (0.12)	0.04 J (0.12)	U (0.12)	U (0.11)	7.9 (1.1)
Benzo(a)anthracene	130	340	0.022 J (0.12)	U (0.12)	0.048 J (0.11)	0.12 (0.11)	0.4 (0.12)	0.034 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	12 (1.1)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	0.052 J (0.15)	0.13 J (0.15)	0.37 (0.15)	U (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.15)	5.2 (0.14)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	0.066 J (0.11)	0.18 (0.11)	0.42 (0.12)	0.044 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	17 (1.1)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	0.038 J (0.15)	0.098 J (0.15)	0.26 (0.15)	0.032 J (0.15)	U (0.16)	U (0.17)	U (0.16)	U (0.15)	3 (0.14)
Chrysene	760	230	0.023 J (0.12)	U (0.12)	0.057 J (0.11)	0.13 (0.11)	0.4 (0.12)	0.03 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	15 (1.1)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.19)	0.048 J (0.19)	0.084 J (0.19)	0.5 (0.19)	0.12 J (0.2)	0.12 J (0.21)	U (0.2)	U (0.18)	2.7 (0.18)
Naphthalene	66	25	U (0.2)	U (0.2)	U (0.19)	0.062 J (0.19)	0.091 J (0.19)	0.036 J (0.19)	U (0.2)	U (0.21)	U (0.2)	U (0.18)	0.27 (0.18)
Phenanthrene	190000	10000	U (0.12)	U (0.12)	0.079 J (0.11)	0.26 (0.11)	0.46 (0.12)	0.85 (0.11)	U (0.12)	0.042 J (0.12)	U (0.12)	U (0.11)	22 (1.1)
Pyrene	96000	2200	0.032 J (0.12)	U (0.12)	0.088 J (0.11)	0.2 (0.11)	0.7 (0.12)	0.062 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	27 (1.1)
<b>Metals</b>													
Lead	1000	450	11.9 (4.58)	9.73 (4.78)	663 (4.52)	225 (4.4)	151 (4.41)	24.5 (4.53)	5.16 (4.58)	5.69 (4.84)	4.18 (2.38)	6.87 (2.21)	9.62 (2.1)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AT01-C3	302-AT02-C1	302-AT02-C2	302-AT02-C3	302-AT02-C4	302-AT02-C5	302-AT03-C1	302-AT03-C2	302-AT03-C3	302-AT03-C4	302-AT03-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AT01	302-AT02	302-AT02	302-AT02	302-AT02	302-AT02	302-AT03	302-AT03	302-AT03	302-AT03	302-AT03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AT01-C3-COMP	302-AT02-C1-COMP	302-AT02-C2-COMP	302-AT02-C3-COMP	302-AT02-C4-COMP	302-AT02-C5-COMP	302-AT03-C1-COMP	302-AT03-C2-COMP	302-AT03-C3-COMP	302-AT03-C4-COMP	302-AT03-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	10/11/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	10/20/2022	9/22/2022	9/22/2022	9/22/2022	9/22/2022	9/22/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.11)	U (0.1)	U (0.12)	0.12 J (0.14)	0.062 J (0.13)	U (0.15)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.037 J (0.11)	U (0.1)	U (0.12)	0.088 J (0.14)	0.15 (0.13)	0.057 J (0.15)	U (0.12)	0.033 J (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	U (0.15)	U (0.14)	U (0.16)	0.13 J (0.18)	0.23 (0.18)	0.084 J (0.2)	U (0.16)	U (0.16)	U (0.17)	U (0.17)	U (0.16)
Benzo(b)fluoranthene	76	170	0.059 J (0.11)	U (0.1)	U (0.12)	0.15 (0.14)	0.36 (0.13)	0.083 J (0.15)	U (0.12)	U (0.12)	U (0.13)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.038 J (0.15)	U (0.14)	U (0.16)	0.14 J (0.18)	0.18 (0.18)	0.085 J (0.2)	U (0.16)	U (0.16)	U (0.17)	U (0.17)	U (0.16)
Chrysene	760	230	0.041 J (0.11)	U (0.1)	U (0.12)	0.21 (0.14)	0.31 (0.13)	0.18 (0.15)	U (0.12)	0.025 J (0.12)	U (0.13)	U (0.12)	U (0.12)
Fluorene	130000	3800	U (0.19)	U (0.17)	U (0.2)	0.32 (0.23)	0.13 J (0.22)	0.049 J (0.25)	U (0.2)	U (0.2)	0.074 J (0.22)	0.037 J (0.21)	U (0.2)
Naphthalene	66	25	U (0.19)	U (0.17)	U (0.2)	0.13 J (0.23)	0.11 J (0.22)	0.038 J (0.25)	U (0.2)	U (0.2)	U (0.22)	U (0.21)	U (0.2)
Phenanthrene	190000	10000	0.03 J (0.11)	U (0.1)	U (0.12)	0.66 (0.14)	0.45 (0.13)	0.067 J (0.15)	U (0.12)	0.03 J (0.12)	0.14 (0.13)	U (0.12)	U (0.12)
Pyrene	96000	2200	0.029 J (0.11)	U (0.1)	U (0.12)	0.29 (0.14)	0.36 (0.13)	0.13 J (0.15)	U (0.12)	0.044 J (0.12)	U (0.13)	U (0.12)	U (0.12)
<b>Metals</b>													
Lead	1000	450	274 (2.17)	3.06 (2.12)	24.5 (2.3)	751 (2.61)	859 (2.66)	9.52 (2.93)	682 (2.4)	198 (2.28)	11.4 (2.54)	322 (2.38)	8.65 (2.4)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AT04-C1	302-AT04-C2	302-AT05-C1	302-AU01-C1	302-AU01-C2	302-AU01-C3	302-AU02-C1	302-AU02-C2	302-AU02-C3	302-AU02-C4	302-AU02-C5
Cell	Direct Contact Numeric	Groundwater Numeric	302-AT04	302-AT04	302-AT05	302-AU01	302-AU01	302-AU01	302-AU02	302-AU02	302-AU02	302-AU02	302-AU02
Field Sample ID	Value (0-2 ft bgs)	Value	302-AT04-C1-COMP	302-AT04-C2-COMP	302-AT05-C1-COMP	302-AU01-C1-COMP	302-AU01-C2-COMP	302-AU01-C3-COMP	302-AU02-C1-COMP	302-AU02-C2-COMP	302-AU02-C3-COMP	302-AU02-C4-COMP	302-AU02-C5-COMP
Sample Date	(mg/kg)	(mg/kg)	9/22/2022	9/22/2022	9/14/2022	10/11/2022	10/11/2022	10/11/2022	9/23/2022	9/23/2022	9/23/2022	9/23/2022	9/23/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.13)	U (0.11)	U (0.12)	8.8 (1)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.13)	U (0.11)	U (0.12)	0.7 J (1)	U (0.11)	0.14 (0.11)	0.057 J (0.12)	0.038 J (0.12)	0.18 (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (0.15)	0.52 J (1.4)	U (0.15)	0.15 (0.14)	0.064 J (0.16)	U (0.16)	0.15 (0.14)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.13)	U (0.11)	U (0.12)	1 (1)	U (0.11)	0.32 (0.11)	0.07 J (0.12)	0.047 J (0.12)	0.3 (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.17)	U (0.15)	U (0.15)	0.43 J (1.4)	U (0.15)	0.15 (0.14)	0.034 J (0.16)	0.024 J (0.16)	0.15 (0.14)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.13)	U (0.11)	U (0.12)	1.4 (1)	U (0.11)	0.28 (0.11)	0.058 J (0.12)	0.032 J (0.12)	0.24 (0.11)
Fluorene	130000	3800	1.2 (0.2)	0.088 J (0.2)	U (0.21)	U (0.19)	U (0.19)	1.8 (1.7)	U (0.19)	U (0.18)	U (0.2)	U (0.21)	U (0.18)
Naphthalene	66	25	0.23 (0.2)	0.031 J (0.2)	U (0.21)	U (0.19)	U (0.19)	0.63 J (1.7)	U (0.19)	0.031 J (0.18)	0.033 J (0.2)	U (0.21)	0.029 J (0.18)
Phenanthrene	190000	10000	2 (0.12)	0.14 (0.12)	U (0.13)	U (0.11)	U (0.12)	3.6 (1)	U (0.11)	0.11 (0.11)	0.098 J (0.12)	U (0.12)	0.11 (0.11)
Pyrene	96000	2200	0.084 J (0.12)	0.023 J (0.12)	U (0.13)	U (0.11)	U (0.12)	3 (1)	U (0.11)	0.4 (0.11)	0.098 J (0.12)	0.055 J (0.12)	0.44 (0.11)
<b>Metals</b>													
Lead	1000	450	14.4 (2.44)	10.4 (2.38)	6.27 (2.49)	11.7 (2.21)	10.2 (2.19)	1290 (2.06)	44.8 (2.3)	256 (2.07)	81.2 (2.42)	16.8 (2.48)	158 (2.14)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AU03-C1	302-AU03-C2	302-AU03-C3	302-AU03-C4	302-AU04-C1	302-AU05-C1	302-AV02-C1	302-AV02-C2	302-AV02-C3	302-AV02-C4	302-AV04-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AU03	302-AU03	302-AU03	302-AU03	302-AU04	302-AU05	302-AV02	302-AV02	302-AV02	302-AV02	302-AV04
Field Sample ID	Value (0-2 ft bgs)	Value	302-AU03-C1-COMP	302-AU03-C2-COMP	302-AU03-C3-COMP	302-AU03-C4-COMP	302-AU04-C1-COMP	302-AU05-C1-COMP	302-AV02-C1-COMP	302-AV02-C2-COMP	302-AV02-C3-COMP	302-AV02-C4-COMP	302-AV04-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	9/23/2022	9/23/2022	9/23/2022	9/23/2022	9/23/2022	9/14/2022	9/28/2022	9/28/2022	9/28/2022	9/28/2022	9/27/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.18 (0.16)	U (1.2)	0.32 (0.1)	U (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.072 J (0.11)	0.21 (0.16)	U (1.2)	1.6 (0.1)	U (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.18)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	0.087 J (0.14)	0.41 (0.21)	U (1.6)	1.2 (0.14)	U (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.087 J (0.11)	0.32 (0.16)	U (1.2)	1.8 (0.1)	U (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.18)	U (0.16)	U (0.15)	U (0.16)	U (0.16)	0.081 J (0.14)	0.56 (0.21)	U (1.6)	0.77 (0.14)	U (0.16)
Chrysene	760	230	U (0.12)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.092 J (0.11)	0.46 (0.16)	U (1.2)	1.8 (0.1)	U (0.12)
Fluorene	130000	3800	U (0.19)	0.034 J (0.22)	0.085 J (0.2)	U (0.19)	0.061 J (0.2)	U (0.2)	U (0.18)	0.18 J (0.27)	U (2)	0.047 J (0.17)	U (0.2)
Naphthalene	66	25	U (0.19)	0.23 (0.22)	0.31 (0.2)	U (0.19)	U (0.2)	U (0.2)	0.058 J (0.18)	0.72 (0.27)	0.43 J (2)	0.075 J (0.17)	U (0.2)
Phenanthrene	190000	10000	U (0.12)	0.054 J (0.13)	0.17 (0.12)	U (0.12)	0.079 J (0.12)	U (0.12)	0.17 (0.11)	0.59 (0.16)	U (1.2)	1.3 (0.1)	U (0.12)
Pyrene	96000	2200	U (0.12)	U (0.13)	0.022 J (0.12)	U (0.12)	U (0.12)	U (0.12)	0.15 (0.11)	0.38 (0.16)	0.23 J (1.2)	2.9 (0.1)	U (0.12)
<b>Metals</b>													
Lead	1000	450	19.8 (2.29)	31.5 (2.6)	10.7 (2.25)	9.35 (2.23)	11 (2.49)	6.27 (2.42)	52.8 (4.12)	44.5 (15.4)	1400 (2.36)	91.9 (2.08)	8.33 (2.27)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AV04-C2	302-AV04-C3	302-AV04-C4	302-AV05-C1	302-AV05-C2	302-AW02-C1	302-AW02-C2	302-AW02-C3	302-AW02-C4	302-AW04-C1	302-AW04-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AV04	302-AV04	302-AV04	302-AV05	302-AV05	302-AW02	302-AW02	302-AW02	302-AW02	302-AW04	302-AW04
Field Sample ID	Value (0-2 ft bgs)	Value	302-AV04-C2-COMP	302-AV04-C3-COMP	302-AV04-C4-COMP	302-AV05-C1-COMP	302-AV05-C2-COMP	302-AW02-C1-COMP	302-AW02-C2-COMP	302-AW02-C3-COMP	302-AW02-C4-COMP	302-AW04-C1-COMP	302-AW04-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	9/27/2022	9/27/2022	9/27/2022	9/14/2022	9/14/2022	9/28/2022	9/28/2022	9/28/2022	9/28/2022	9/27/2022	9/27/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.12)	U (0.12)	U (0.11)	U (0.11)	U (0.12)	U (0.12)	U (1.2)	U (1.1)	U (0.11)	U (0.11)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.12)	0.13 (0.11)	U (0.11)	0.17 (0.12)	0.047 J (0.12)	0.44 J (1.2)	0.37 J (1.1)	U (0.11)	U (0.11)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.16)	0.13 J (0.15)	U (0.15)	0.18 (0.16)	U (0.16)	0.47 J (1.5)	U (1.4)	U (0.15)	U (0.15)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.12)	0.17 (0.11)	U (0.11)	0.23 (0.12)	0.065 J (0.12)	0.62 J (1.2)	0.47 J (1.1)	U (0.11)	U (0.11)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.16)	0.084 J (0.15)	U (0.15)	0.13 J (0.16)	U (0.16)	0.46 J (1.5)	0.44 J (1.4)	U (0.15)	U (0.15)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.12)	0.14 (0.11)	U (0.11)	0.2 (0.12)	0.075 J (0.12)	0.62 J (1.2)	0.56 J (1.1)	U (0.11)	U (0.11)
Fluorene	130000	3800	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	U (1.9)	U (1.8)	U (0.19)	U (0.19)
Naphthalene	66	25	0.13 J (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	0.06 J (0.19)	0.044 J (0.2)	0.37 J (1.9)	0.27 J (1.8)	0.052 J (0.19)	0.042 J (0.19)
Phenanthrene	190000	10000	0.028 J (0.12)	U (0.12)	U (0.12)	0.086 J (0.11)	U (0.11)	0.13 (0.12)	0.062 J (0.12)	0.52 J (1.2)	0.44 J (1.1)	U (0.11)	U (0.11)
Pyrene	96000	2200	0.021 J (0.12)	U (0.12)	U (0.12)	0.28 (0.11)	U (0.11)	0.32 (0.12)	0.078 J (0.12)	0.58 J (1.2)	0.45 J (1.1)	U (0.11)	0.019 J (0.11)
<b>Metals</b>													
Lead	1000	450	47.4 (2.36)	9.81 (2.31)	7.46 (2.26)	89.9 (2.21)	7.01 (2.16)	48.8 (11.1)	8.21 (4.78)	8.02 (4.63)	62.7 (2.14)	11.2 (2.22)	11.7 (2.2)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AW04-C3	302-AW04-C4	302-AW04-C5	302-AW05-C1	302-AX02-C1	302-AX02-C2	302-AX02-C3	302-AX02-C4	302-AX02-C5	302-AX03-C1	302-AX03-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AW04	302-AW04	302-AW04	302-AW05	302-AX02	302-AX02	302-AX02	302-AX02	302-AX02	302-AX03	302-AX03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AW04-C3-COMP	302-AW04-C4-COMP	302-AW04-C5-COMP	302-AW05-C1-COMP	302-AX02-C1-COMP	302-AX02-C2-COMP	302-AX02-C3-COMP	302-AX02-C4-COMP	302-AX02-C5-COMP	302-AX03-C1-COMP	302-AX03-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	9/27/2022	9/27/2022	9/27/2022	9/15/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022	9/29/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	0.16 (0.12)	U (0.11)	U (0.12)	U (0.12)	0.26 (0.12)	U (1.2)	U (0.13)	U (1.1)	U (0.55)	0.18 J (0.55)
Benzo(a)anthracene	130	340	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.076 J (0.12)	2.3 (0.12)	0.22 J (1.2)	U (0.13)	U (1.1)	0.9 (0.55)	0.5 J (0.55)
Benzo(a)pyrene	91	46	U (0.16)	U (0.16)	U (0.15)	U (0.16)	0.078 J (0.16)	5 (0.16)	U (1.6)	U (0.17)	U (1.5)	0.76 (0.73)	0.44 J (0.73)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.11 J (0.12)	2.5 (0.12)	U (1.2)	U (0.13)	U (1.1)	0.66 (0.55)	0.52 J (0.55)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.16)	U (0.15)	U (0.16)	0.059 J (0.16)	2.9 (0.16)	U (1.6)	U (0.17)	U (1.5)	0.45 J (0.73)	0.27 J (0.73)
Chrysene	760	230	U (0.12)	U (0.12)	U (0.11)	U (0.12)	0.11 J (0.12)	6 (0.12)	0.26 J (1.2)	U (0.13)	U (1.1)	1.3 (0.55)	0.46 J (0.55)
Fluorene	130000	3800	U (0.2)	1 (0.21)	U (0.19)	U (0.2)	U (0.2)	0.15 J (0.2)	U (2)	U (0.22)	U (1.9)	0.1 J (0.91)	0.11 J (0.92)
Naphthalene	66	25	0.042 J (0.2)	U (0.21)	0.026 J (0.19)	U (0.2)	U (0.2)	0.18 J (0.2)	U (2)	U (0.22)	0.29 J (1.9)	U (0.91)	U (0.92)
Phenanthrene	190000	10000	U (0.12)	1.4 (0.12)	U (0.11)	U (0.12)	0.04 J (0.12)	0.86 (0.12)	U (1.2)	U (0.13)	U (1.1)	0.25 J (0.55)	0.7 (0.55)
Pyrene	96000	2200	U (0.12)	0.043 J (0.12)	U (0.11)	U (0.12)	0.13 (0.12)	15 (1.2)	0.37 J (1.2)	U (0.13)	U (1.1)	1.6 (0.55)	0.79 (0.55)
<b>Metals</b>													
Lead	1000	450	12.5 (2.26)	6.79 (2.44)	119 (2.26)	5.22 (4.54)	23 (2.34)	398 (2.32)	379 (4.62)	8.36 (2.54)	466 (2.28)	279 (2.17)	11.7 (4.47)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AX03-C3	302-AX06-C1	302-AY02-C1	302-AY02-C2	302-AY02-C3	302-AY03-C1	302-AY03-C2	302-AY03-C3	302-AY04-C1	302-AY04-C2	302-AY04-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-AX03	302-AX06	302-AY02	302-AY02	302-AY02	302-AY03	302-AY03	302-AY03	302-AY04	302-AY04	302-AY04
Field Sample ID	Value (0-2 ft bgs)	Value	302-AX03-C3-COMP	302-AX06-C1-COMP	302-AY02-C1-COMP	302-AY02-C2-COMP	302-AY02-C3-COMP	302-AY03-C1-COMP	302-AY03-C2-COMP	302-AY03-C3-COMP	302-AY04-C1-COMP	302-AY04-C2-COMP	302-AY04-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	9/29/2022	9/15/2022	10/10/2022	10/10/2022	10/10/2022	9/29/2022	9/29/2022	9/29/2022	9/30/2022	9/30/2022	9/30/2022
<b>PAHs</b>													
Anthracene	190000	350	0.09 J (0.11)	U (0.12)	0.85 (0.56)	0.77 (0.11)	0.43 (0.12)	U (0.11)	U (0.12)	1.1 (1.1)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)anthracene	130	340	0.24 (0.11)	U (0.12)	3.4 (0.56)	1.9 (0.11)	0.69 (0.12)	U (0.11)	U (0.12)	8.9 (1.1)	U (0.12)	U (0.12)	U (0.12)
Benzo(a)pyrene	91	46	0.2 (0.15)	U (0.16)	3.6 (0.75)	3 (0.15)	0.55 (0.16)	U (0.15)	U (0.15)	6.9 (1.5)	U (0.16)	U (0.16)	U (0.16)
Benzo(b)fluoranthene	76	170	0.16 (0.11)	U (0.12)	2.6 (0.56)	2.1 (0.57)	0.53 (0.12)	U (0.11)	U (0.12)	3.2 (1.1)	U (0.12)	U (0.12)	U (0.12)
Benzo(g,h,i)perylene	190000	180	0.19 (0.15)	U (0.16)	2.1 (0.75)	1.2 (0.15)	0.29 (0.16)	U (0.15)	U (0.15)	4.3 (1.5)	U (0.16)	U (0.16)	U (0.16)
Chrysene	760	230	0.42 (0.11)	U (0.12)	7.6 (0.56)	3.2 (0.11)	1.5 (0.12)	U (0.11)	U (0.12)	12 (1.1)	U (0.12)	U (0.12)	U (0.12)
Fluorene	130000	3800	0.072 J (0.18)	U (0.2)	0.81 J (0.94)	0.73 (0.19)	6.8 (0.2)	U (0.19)	U (0.19)	0.78 J (1.9)	U (0.21)	U (0.2)	U (0.2)
Naphthalene	66	25	0.12 J (0.18)	U (0.2)	2 (0.94)	2.3 (0.19)	2.4 (0.2)	U (0.19)	U (0.19)	0.23 J (1.9)	0.42 (0.21)	6.9 (0.2)	0.12 J (0.2)
Phenanthrene	190000	10000	0.37 (0.11)	U (0.12)	2.5 (0.56)	2.5 (0.11)	4.5 (0.12)	U (0.11)	U (0.12)	9.3 (1.1)	U (0.12)	U (0.12)	U (0.12)
Pyrene	96000	2200	0.37 (0.11)	U (0.12)	11 (0.56)	4.2 (0.11)	2.2 (0.12)	0.023 J (0.11)	U (0.12)	12 (1.1)	U (0.12)	U (0.12)	U (0.12)
<b>Metals</b>													
Lead	1000	450	273 (2.15)	4.62 J (4.86)	11 (2.19)	236 (2.26)	252 (2.32)	11.1 (11.1)	6.12 (2.22)	325 (2.25)	9.16 (4.98)	34.7 (24.1)	6.54 (4.65)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AY05-C1	302-AY05-C2	302-AY05-C3	302-AY05-C4	302-AY05-C5	302-AY07-C1	302-AZ02-C1	302-AZ02-C2	302-AZ02-C3	302-AZ03-C1	302-AZ03-C2
Cell	Direct Contact Numeric	Groundwater Numeric	302-AY05	302-AY05	302-AY05	302-AY05	302-AY05	302-AY07	302-AZ02	302-AZ02	302-AZ02	302-AZ03	302-AZ03
Field Sample ID	Value (0-2 ft bgs)	Value	302-AY05-C1-COMP	302-AY05-C2-COMP	302-AY05-C3-COMP	302-AY05-C4-COMP	302-AY05-C5-COMP	302-AY07-C1-COMP	302-AZ02-C1-COMP	302-AZ02-C2-COMP	302-AZ02-C3-COMP	302-AZ03-C1-COMP	302-AZ03-C2-COMP
Sample Date	(mg/kg)	(mg/kg)	9/30/2022	9/30/2022	9/30/2022	9/30/2022	9/30/2022	9/15/2022	10/10/2022	10/10/2022	10/10/2022	10/3/2022	10/3/2022
<b>PAHs</b>													
Anthracene	190000	350	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.12)	0.081 J (0.11)	U (0.11)	U (0.11)	1.1 (0.12)	0.092 J (0.12)
Benzo(a)anthracene	130	340	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.036 J (0.12)	0.36 (0.11)	0.039 J (0.11)	0.032 J (0.11)	0.42 (0.12)	0.18 (0.12)
Benzo(a)pyrene	91	46	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	U (0.16)	0.41 (0.15)	U (0.15)	U (0.15)	0.35 (0.16)	0.17 (0.16)
Benzo(b)fluoranthene	76	170	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.045 J (0.12)	0.42 (0.11)	0.042 J (0.11)	0.033 J (0.11)	0.2 (0.12)	0.21 (0.12)
Benzo(g,h,i)perylene	190000	180	U (0.16)	U (0.15)	U (0.16)	U (0.16)	U (0.16)	0.023 J (0.16)	0.27 (0.15)	0.027 J (0.15)	0.022 J (0.15)	0.15 J (0.16)	0.11 J (0.16)
Chrysene	760	230	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.035 J (0.12)	0.33 (0.11)	0.038 J (0.11)	0.029 J (0.11)	0.78 (0.12)	0.18 (0.12)
Fluorene	130000	3800	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	U (0.19)	U (0.19)	U (0.2)	0.05 J (0.2)
Naphthalene	66	25	U (0.2)	U (0.19)	U (0.2)	U (0.2)	U (0.2)	U (0.2)	U (0.19)	0.04 J (0.19)	U (0.19)	9.1 (0.98)	0.088 J (0.2)
Phenanthrene	190000	10000	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.035 J (0.12)	0.3 (0.11)	0.042 J (0.11)	0.034 J (0.11)	8.2 (0.59)	0.38 (0.12)
Pyrene	96000	2200	U (0.12)	U (0.11)	U (0.12)	U (0.12)	U (0.12)	0.048 J (0.12)	0.5 (0.11)	0.045 J (0.11)	0.044 J (0.11)	0.96 (0.12)	0.32 (0.12)
<b>Metals</b>													
Lead	1000	450	6.19 (5.01)	7.14 (4.31)	8.95 (4.71)	8.2 (4.65)	9.1 (4.65)	7.42 (4.66)	16.1 (2.27)	9.67 (2.17)	144 (2.14)	63.2 (2.34)	176 (2.48)

**Notes:**

- 1 Concentrations are presented in mg/kg.
- 2 No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- 3 Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- 4 Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- 5 Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- 6 A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.



**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-AZ03-C3	302-AZ03-C4	302-AZ03-C5	302-BA03-C1	302-BA03-C2	302-BA03-C3	302-BA04-C1	302-BA04-C2	302-BB04-C1	302-BB04-C2	302-BB07-C1
Cell	Direct Contact Numeric	Groundwater Numeric	302-AZ03	302-AZ03	302-AZ03	302-BA03	302-BA03	302-BA03	302-BA04	302-BA04	302-BB04	302-BB04	302-BB07
Field Sample ID	Value (0-2 ft bgs)	Value	302-AZ03-C3-COMP	302-AZ03-C4-COMP	302-AZ03-C5-COMP	302-BA03-C1-COMP	302-BA03-C2-COMP	302-BA03-C3-COMP	302-BA04-C1-COMP	302-BA04-C2-COMP	302-BB04-C1-COMP	302-BB04-C2-COMP	302-BB07-C1-COMP
Sample Date	(mg/kg)	(mg/kg)	10/3/2022	10/3/2022	10/3/2022	10/10/2022	10/10/2022	10/10/2022	10/3/2022	10/3/2022	10/10/2022	10/10/2022	9/16/2022
<b>PAHs</b>													
Anthracene	190000	350	0.067 J (0.12)	0.23 (0.12)	0.23 (0.15)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	0.053 J (0.12)	U (0.11)
Benzo(a)anthracene	130	340	0.22 (0.12)	0.42 (0.12)	0.22 (0.15)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	0.22 (0.15)	0.35 (0.16)	0.18 J (0.2)	U (0.17)	U (0.16)	U (0.15)	U (0.17)	U (0.16)	U (0.15)	U (0.16)	U (0.15)
Benzo(b)fluoranthene	76	170	0.27 (0.12)	0.14 (0.12)	0.15 (0.15)	U (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.14 J (0.15)	0.12 J (0.16)	0.26 (0.2)	U (0.17)	U (0.16)	U (0.15)	U (0.17)	U (0.16)	U (0.15)	U (0.16)	U (0.15)
Chrysene	760	230	0.23 (0.12)	0.46 (0.12)	0.32 (0.15)	0.022 J (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	0.021 J (0.12)	U (0.11)
Fluorene	130000	3800	0.03 J (0.19)	0.84 (0.2)	0.46 (0.25)	U (0.21)	U (0.2)	U (0.19)	U (0.21)	U (0.2)	U (0.19)	0.14 J (0.2)	U (0.19)
Naphthalene	66	25	0.049 J (0.19)	0.19 J (0.2)	0.16 J (0.25)	U (0.21)	U (0.2)	U (0.19)	0.056 J (0.21)	U (0.2)	U (0.19)	U (0.2)	0.1 J (0.19)
Phenanthrene	190000	10000	0.32 (0.12)	1.5 (0.12)	0.24 (0.15)	U (0.12)	U (0.12)	U (0.11)	0.048 J (0.13)	U (0.12)	U (0.12)	0.37 (0.12)	U (0.11)
Pyrene	96000	2200	0.38 (0.12)	0.51 (0.12)	0.43 (0.15)	0.03 J (0.12)	U (0.12)	U (0.11)	U (0.13)	U (0.12)	U (0.12)	0.059 J (0.12)	U (0.11)
<b>Metals</b>													
Lead	1000	450	9.52 (2.25)	50.1 (2.31)	18.9 (2.84)	23.3 (2.37)	25.3 (2.29)	17.7 (2.27)	6.38 (2.45)	10.4 (2.38)	17 (2.26)	13.4 (2.35)	9.36 (4.42)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.2b**

**Cut Soil Composite Analytical Results - Polycyclic Aromatic Hydrocarbons and Lead (Phase 1B)**

Soil Management Plan Addendum No. 3

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

Location	Non-Residential Soil	Non-Residential Soil to	302-BB07-C2	302-BB07-C3	302-BB07-C4	302-BB07-C5	302-BB08-C1	302-BB08-C2	302-BB08-C3	302-BC04-C1	302-BC06-C1	302-BC06-C2	302-BC06-C3
Cell	Direct Contact Numeric	Groundwater Numeric	302-BB07	302-BB07	302-BB07	302-BB07	302-BB08	302-BB08	302-BB08	302-BC04	302-BC06	302-BC06	302-BC06
Field Sample ID	Value (0-2 ft bgs)	Value	302-BB07-C2-COMP	302-BB07-C3-COMP	302-BB07-C4-COMP	302-BB07-C5-COMP	302-BB08-C1-COMP	302-BB08-C2-COMP	302-BB08-C3-COMP	302-BC04-C1-COMP	302-BC06-C1-COMP	302-BC06-C2-COMP	302-BC06-C3-COMP
Sample Date	(mg/kg)	(mg/kg)	9/16/2022	9/16/2022	9/16/2022	9/16/2022	9/16/2022	9/16/2022	9/16/2022	10/20/2022	9/16/2022	9/16/2022	9/16/2022
<b>PAHs</b>													
Anthracene	190000	350	0.083 J (0.11)	U (0.12)	U (0.12)	U (0.12)	U (0.11)	0.11 J (0.12)	0.052 J (0.12)	0.082 J (0.13)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)anthracene	130	340	0.2 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.21 (0.11)	0.43 (0.12)	0.046 J (0.12)	0.043 J (0.13)	U (0.12)	U (0.12)	U (0.11)
Benzo(a)pyrene	91	46	0.16 (0.15)	U (0.16)	U (0.17)	U (0.16)	0.25 (0.15)	0.75 (0.15)	U (0.15)	0.064 J (0.18)	U (0.16)	U (0.15)	U (0.14)
Benzo(b)fluoranthene	76	170	0.18 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.34 (0.11)	0.56 (0.12)	U (0.12)	0.08 J (0.13)	U (0.12)	U (0.12)	U (0.11)
Benzo(g,h,i)perylene	190000	180	0.07 J (0.15)	U (0.16)	U (0.17)	U (0.16)	0.22 (0.15)	1.1 (0.15)	U (0.15)	0.058 J (0.18)	U (0.16)	U (0.15)	U (0.14)
Chrysene	760	230	0.19 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.43 (0.11)	0.52 (0.12)	0.071 J (0.12)	0.057 J (0.13)	U (0.12)	U (0.12)	U (0.11)
Fluorene	130000	3800	U (0.18)	U (0.2)	U (0.21)	U (0.2)	0.39 (0.19)	0.24 (0.19)	U (0.19)	0.073 J (0.22)	U (0.2)	0.33 (0.19)	0.087 J (0.18)
Naphthalene	66	25	0.11 J (0.18)	0.032 J (0.2)	0.028 J (0.21)	U (0.2)	0.33 (0.19)	2.4 (0.19)	0.079 J (0.19)	0.032 J (0.22)	0.069 J (0.2)	23 (1.9)	0.86 (0.18)
Phenanthrene	190000	10000	0.28 (0.11)	U (0.12)	U (0.12)	U (0.12)	1 (0.11)	0.52 (0.12)	0.2 (0.12)	0.062 J (0.13)	0.037 J (0.12)	0.48 (0.12)	0.22 (0.11)
Pyrene	96000	2200	0.32 (0.11)	U (0.12)	U (0.12)	U (0.12)	0.4 (0.11)	0.54 (0.12)	0.16 (0.12)	0.11 J (0.13)	U (0.12)	U (0.12)	0.029 J (0.11)
<b>Metals</b>													
Lead	1000	450	13.3 (4.38)	6.59 (4.71)	5.33 (4.8)	5.63 (4.65)	153 (4.56)	792 (4.67)	15.9 (4.63)	122 (2.53)	6.3 (4.96)	4.46 J (4.54)	6.22 (4.26)

**Notes:**

- Concentrations are presented in mg/kg.
- No concentrations only exceed the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs).
- Blue shading indicates that the concentration exceeds the Non-Residential Soil to Groundwater Numeric Value.
- Orange shading indicates that the concentration exceeds the Non-Residential Soil Direct Contact Numeric Value (0-2 ft bgs) and the Non-Residential Soil to Groundwater Numeric Value.
- Underlining indicates that the concentration exceeds the Site-specific standard of 2,240 mg/kg for lead.
- A "U" flag indicates the constituent was not detected above the method detection limit. The detection limit is provided in parentheses. A "J" flag indicates the reported concentration is less than the reporting limit and the reported value is estimated.

**Abbreviations:**

PAHs -- Polycyclic Aromatic Hydrocarbons.  
 ft bgs -- Feet Below Ground Surface.  
 mg/kg -- Milligram per Kilogram.

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Benzene	301-AA02	Phase 1B	2	U (0.00051)	0.00025	280	0.50
VOC	Benzene	301-AA05	Phase 1B	11	U (0.1) - 0.052	0.014	280	0.50
VOC	Benzene	301-AB05	Phase 1B	6	U (0.22) - 0.00065	0.019	280	0.50
VOC	Benzene	301-AC03	Phase 1B	2	U (0.005) - 0.024	0.012	280	0.50
VOC	Benzene	301-T01	Phase 1B	5	U (0.59) - 1.32	0.36	280	0.50
VOC	Benzene	301-T02	Phase 1B	7	0.053 - 0.197	0.063	280	0.50
VOC	Benzene	301-U01	Phase 1B	2	0.0177 - 0.16	0.089	280	0.50
VOC	Benzene	301-U03	Phase 1B	1	U (0.005)	0.0025	280	0.50
VOC	Benzene	301-V01	Phase 1B	7	0.0421 - 4.29	0.66	280	0.50
VOC	Benzene	301-V02	Phase 1B	19	U (0.4) - 0.00031	0.023	280	0.50
VOC	Benzene	301-W01	Phase 1B	24	U (0.28) - 0.248	0.021	280	0.50
VOC	Benzene	301-X01	Phase 1B	11	U (0.4) - 0.27	0.034	280	0.50
VOC	Benzene	301-Y01	Phase 1B	10	U (0.051) - 0.395	0.043	280	0.50
VOC	Benzene	301-Y02	Phase 1B	4	U (0.014) - 0.023	0.010	280	0.50
VOC	Benzene	301-Z01	Phase 1B	6	U (0.00057)	0.00025	280	0.50
VOC	Benzene	301-Z02	Phase 1B	2	U (0.005)	0.0013	280	0.50
VOC	Benzene	301-Z03	Phase 1B	5	U (0.21) - 0.0309	0.027	280	0.50
VOC	Benzene	302-AD06	Phase 1B	2	U (0.1)	0.025	280	0.50
VOC	Benzene	302-AD07	Phase 1B	2	U (0.00064)	0.00027	280	0.50
VOC	Benzene	302-AE03	Phase 1B	4	U (0.026) - 0.15	0.053	280	0.50
VOC	Benzene	302-AE04	Phase 1B	8	U (0.037) - 0.024	0.0057	280	0.50
VOC	Benzene	302-AE05	Phase 1B	20	U (0.0014) - 0.023	0.0022	280	0.50
VOC	Benzene	302-AE07	Phase 1B	3	0.00054 - 0.00054	0.016	280	0.50
VOC	Benzene	302-AE08	Phase 1B	3	U (0.00052) - 0.00058	0.00036	280	0.50
VOC	Benzene	302-AF03	Phase 1B	2	0.27 - 0.27	0.44	280	0.50
VOC	Benzene	302-AF04	Phase 1B	22	U (0.061) - 0.081	0.014	280	0.50
VOC	Benzene	302-AF05	Phase 1B	2	U (0.025)	0.0065	280	0.50
VOC	Benzene	302-AF09	Phase 1B	5	U (0.1) - 4.4	0.88	280	0.50
VOC	Benzene	302-AG04	Phase 1B	9	U (0.069)	0.013	280	0.50
VOC	Benzene	302-AG06	Phase 1B	5	U (0.21) - 0.241	0.086	280	0.50
VOC	Benzene	302-AG08	Phase 1B	6	0.031 - 2.4	0.49	280	0.50
VOC	Benzene	302-AH04	Phase 1B	8	U (0.034)	0.016	280	0.50
VOC	Benzene	302-AH05	Phase 1B	11	0.0023 - 0.31	0.059	280	0.50
VOC	Benzene	302-AH06	Phase 1B	4	U (0.0013) - 0.00122	0.00079	280	0.50
VOC	Benzene	302-AH07	Phase 1B	21	U (0.031) - 0.082	0.011	280	0.50
VOC	Benzene	302-AH08	Phase 1B	13	U (0.03) - 0.067	0.020	280	0.50
VOC	Benzene	302-AI05	Phase 1B	12	U (0.056) - 0.011	0.0060	280	0.50
VOC	Benzene	302-AI06	Phase 1B	19	0.0003 - 0.0269	0.0037	280	0.50
VOC	Benzene	302-AI07	Phase 1B	10	0.0013 - 0.0626	0.033	280	0.50
VOC	Benzene	302-AI08	Phase 1B	2	U (0.099)	0.026	280	0.50
VOC	Benzene	302-AI09	Phase 1B	3	U (0.00089) - 0.00024	0.00030	280	0.50
VOC	Benzene	302-AJ05	Phase 1B	2	U (0.00061)	0.00029	280	0.50
VOC	Benzene	302-AJ06	Phase 1B	5	U (0.00088) - 0.0016	0.00056	280	0.50
VOC	Benzene	302-AK05	Phase 1B	5	U (0.029) - 0.00315	0.0090	280	0.50
VOC	Benzene	302-AK07	Phase 1B	13	U (0.202) - 5	0.44	280	0.50
VOC	Benzene	302-AL03	Phase 1B	2	U (0.25) - 1.05	0.53	280	0.50
VOC	Benzene	302-AL05	Phase 1B	13	U (0.25) - 0.065	0.043	280	0.50
VOC	Benzene	302-AL08	Phase 1B	2	U (0.0009)	0.00038	280	0.50
VOC	Benzene	302-AN01	Phase 1B	2	U (0.0012)	0.00055	280	0.50
VOC	Benzene	302-AN03	Phase 1B	1	0.018 - 0.018	0.018	280	0.50
VOC	Benzene	302-AO02	Phase 1B	7	0.004 - 4.6	1.1	280	0.50
VOC	Benzene	302-AO05	Phase 1B	1	0.03 - 0.03	0.030	280	0.50
VOC	Benzene	302-AP02	Phase 1B	2	0.00043 - 0.00043	0.00037	280	0.50
VOC	Benzene	302-AP03	Phase 1B	23	U (0.083) - 0.127	0.011	280	0.50

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Benzene	302-AP04	Phase 1B	3	U (0.005) - 0.042	0.018	280	0.50
VOC	Benzene	302-AP05	Phase 1B	2	U (0.00068)	0.00033	280	0.50
VOC	Benzene	302-AQ01	Phase 1B	2	0.027 - 0.027	0.015	280	0.50
VOC	Benzene	302-AQ04	Phase 1B	2	U (0.00088)	0.00043	280	0.50
VOC	Benzene	302-AR01	Phase 1B	2	U (0.006)	0.0028	280	0.50
VOC	Benzene	302-AR04	Phase 1B	3	U (0.0011)	0.00050	280	0.50
VOC	Benzene	302-AS04	Phase 1B	2	0.00973 - 0.00973	0.0052	280	0.50
VOC	Benzene	302-AT01	Phase 1B	2	0.0055 - 0.0333	0.019	280	0.50
VOC	Benzene	302-AT02	Phase 1B	2	0.00056 - 0.157	0.079	280	0.50
VOC	Benzene	302-AT03	Phase 1B	4	U (0.11)	0.014	280	0.50
VOC	Benzene	302-AU01	Phase 1B	2	U (0.001)	0.00047	280	0.50
VOC	Benzene	302-AU02	Phase 1B	8	0.00021 - 0.017	0.0041	280	0.50
VOC	Benzene	302-AU03	Phase 1B	2	U (0.00049)	0.00023	280	0.50
VOC	Benzene	302-AV02	Phase 1B	4	U (0.027) - 0.016	0.0042	280	0.50
VOC	Benzene	302-AV04	Phase 1B	2	U (0.00126)	0.00062	280	0.50
VOC	Benzene	302-AW02	Phase 1B	2	0.031 - 0.031	0.016	280	0.50
VOC	Benzene	302-AX02	Phase 1B	3	U (0.11)	0.019	280	0.50
VOC	Benzene	302-AY02	Phase 1B	18	0.008 - 28	2.6	280	0.50
VOC	Benzene	302-AY03	Phase 1B	2	U (0.0013)	0.00058	280	0.50
VOC	Benzene	302-AY05	Phase 1B	2	U (0.00124)	0.00060	280	0.50
VOC	Benzene	302-AZ02	Phase 1B	10	0.69 - 66	10	280	0.50
VOC	Benzene	302-AZ03	Phase 1B	1	0.034 - 0.034	0.034	280	0.50
VOC	Benzene	302-BA03	Phase 1B	1	U (0.005)	0.0025	280	0.50
VOC	Benzene	302-BB07	Phase 1B	36	U (8) - 360	22	280	0.50
VOC	Benzene	302-BB08	Phase 1B	1	U (0.005)	0.0025	280	0.50
VOC	Benzene	302-BC06	Phase 1B	1	U (0.006)	0.0030	280	0.50
VOC	Cumene	301-AA02	Phase 1B	2	U (0.002) - 0.0016	0.0013	10000	2500
VOC	Cumene	301-AA05	Phase 1B	11	0.00086 - 0.52	0.11	10000	2500
VOC	Cumene	301-AB05	Phase 1B	6	U (1.1) - 3.93	0.66	10000	2500
VOC	Cumene	301-AC03	Phase 1B	2	U (0.005)	0.0024	10000	2500
VOC	Cumene	301-T01	Phase 1B	5	U (0.59) - 2	0.49	10000	2500
VOC	Cumene	301-T02	Phase 1B	7	0.051 - 3.6	0.61	10000	2500
VOC	Cumene	301-U01	Phase 1B	2	0.00028 - 0.00028	0.073	10000	2500
VOC	Cumene	301-U03	Phase 1B	1	U (0.005)	0.0025	10000	2500
VOC	Cumene	301-V01	Phase 1B	7	U (0.51) - 3.59	0.76	10000	2500
VOC	Cumene	301-V02	Phase 1B	19	0.00069 - 10	0.85	10000	2500
VOC	Cumene	301-W01	Phase 1B	24	U (0.69) - 3	0.16	10000	2500
VOC	Cumene	301-X01	Phase 1B	11	0.0021 - 1.29	0.17	10000	2500
VOC	Cumene	301-Y01	Phase 1B	10	U (0.21) - 1.28	0.14	10000	2500
VOC	Cumene	301-Y02	Phase 1B	4	U (0.029)	0.013	10000	2500
VOC	Cumene	301-Z01	Phase 1B	6	U (0.0023) - 0.0061	0.0025	10000	2500
VOC	Cumene	301-Z02	Phase 1B	2	U (0.005)	0.0017	10000	2500
VOC	Cumene	301-Z03	Phase 1B	5	U (1.1) - 25	5.8	10000	2500
VOC	Cumene	302-AD06	Phase 1B	2	0.0004 - 1.29	0.65	10000	2500
VOC	Cumene	302-AD07	Phase 1B	2	U (0.0013)	0.00055	10000	2500
VOC	Cumene	302-AE03	Phase 1B	4	0.066 - 0.61	0.24	10000	2500
VOC	Cumene	302-AE04	Phase 1B	8	U (0.075) - 0.068	0.011	10000	2500
VOC	Cumene	302-AE05	Phase 1B	20	U (0.0027) - 0.0092	0.0014	10000	2500
VOC	Cumene	302-AE07	Phase 1B	3	0.0135 - 0.431	0.15	10000	2500
VOC	Cumene	302-AE08	Phase 1B	3	U (0.001)	0.00049	10000	2500
VOC	Cumene	302-AF03	Phase 1B	2	1.9 - 5.3	3.6	10000	2500
VOC	Cumene	302-AF04	Phase 1B	22	U (0.24) - 0.81	0.064	10000	2500
VOC	Cumene	302-AF05	Phase 1B	2	U (0.1) - 6.02	3.0	10000	2500
VOC	Cumene	302-AF09	Phase 1B	5	U (0.51) - 3.29	0.66	10000	2500

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Cumene	302-AG04	Phase 1B	9	U (0.28) - 1.76	0.28	10000	2500
VOC	Cumene	302-AG06	Phase 1B	5	U (1) - 2.36	0.63	10000	2500
VOC	Cumene	302-AG08	Phase 1B	6	0.34 - 4.2	0.78	10000	2500
VOC	Cumene	302-AH04	Phase 1B	8	0.086 - 0.96	0.22	10000	2500
VOC	Cumene	302-AH05	Phase 1B	11	0.00014 - 2.4	0.67	10000	2500
VOC	Cumene	302-AH06	Phase 1B	4	U (0.0126)	0.0046	10000	2500
VOC	Cumene	302-AH07	Phase 1B	21	U (0.063) - 0.11	0.016	10000	2500
VOC	Cumene	302-AH08	Phase 1B	13	U (0.061) - 0.073	0.032	10000	2500
VOC	Cumene	302-AI05	Phase 1B	12	U (0.22) - 0.72	0.079	10000	2500
VOC	Cumene	302-AI06	Phase 1B	19	U (0.2) - 8.26	0.48	10000	2500
VOC	Cumene	302-AI07	Phase 1B	10	0.0415 - 5.65	0.66	10000	2500
VOC	Cumene	302-AI08	Phase 1B	2	0.129 - 0.129	0.066	10000	2500
VOC	Cumene	302-AI09	Phase 1B	3	U (0.0044)	0.0018	10000	2500
VOC	Cumene	302-AJ05	Phase 1B	2	U (0.0012)	0.00058	10000	2500
VOC	Cumene	302-AJ06	Phase 1B	5	U (0.0018) - 0.0014	0.00076	10000	2500
VOC	Cumene	302-AK05	Phase 1B	5	0.18 - 0.18	0.049	10000	2500
VOC	Cumene	302-AK07	Phase 1B	13	U (2.02) - 7.88	1.2	10000	2500
VOC	Cumene	302-AL03	Phase 1B	2	U (0.99) - 5.6	2.8	10000	2500
VOC	Cumene	302-AL05	Phase 1B	11	U (0.13)	0.041	10000	2500
VOC	Cumene	302-AL08	Phase 1B	2	U (0.0045)	0.0019	10000	2500
VOC	Cumene	302-AN01	Phase 1B	2	U (0.0061)	0.0028	10000	2500
VOC	Cumene	302-AN03	Phase 1B	1	U (0.004)	0.0020	10000	2500
VOC	Cumene	302-AO05	Phase 1B	1	U (0.005)	0.0025	10000	2500
VOC	Cumene	302-AP02	Phase 1B	2	U (0.0025) - 0.0764	0.039	10000	2500
VOC	Cumene	302-AP03	Phase 1B	23	0.013 - 0.143	0.015	10000	2500
VOC	Cumene	302-AP04	Phase 1B	3	U (0.005) - 0.088	0.031	10000	2500
VOC	Cumene	302-AP05	Phase 1B	2	U (0.0027)	0.0013	10000	2500
VOC	Cumene	302-AQ01	Phase 1B	2	U (0.006)	0.0030	10000	2500
VOC	Cumene	302-AQ04	Phase 1B	2	U (0.0044)	0.0022	10000	2500
VOC	Cumene	302-AR01	Phase 1B	2	U (0.006)	0.0028	10000	2500
VOC	Cumene	302-AR04	Phase 1B	3	U (0.0055)	0.0025	10000	2500
VOC	Cumene	302-AS04	Phase 1B	2	U (0.0127)	0.0062	10000	2500
VOC	Cumene	302-AT02	Phase 1B	2	U (1.1) - 0.211	0.11	10000	2500
VOC	Cumene	302-AT03	Phase 1B	4	U (0.57) - 0.393	0.10	10000	2500
VOC	Cumene	302-AU01	Phase 1B	2	U (0.0052)	0.0024	10000	2500
VOC	Cumene	302-AU02	Phase 1B	8	U (0.055) - 0.04	0.0057	10000	2500
VOC	Cumene	302-AU03	Phase 1B	2	U (0.00097)	0.00046	10000	2500
VOC	Cumene	302-AV02	Phase 1B	4	U (0.054) - 0.42	0.11	10000	2500
VOC	Cumene	302-AV04	Phase 1B	2	U (0.0126)	0.0062	10000	2500
VOC	Cumene	302-AW02	Phase 1B	2	U (0.28)	0.070	10000	2500
VOC	Cumene	302-AX02	Phase 1B	3	U (0.53)	0.090	10000	2500
VOC	Cumene	302-AY02	Phase 1B	11	2.1 - 66	7.6	10000	2500
VOC	Cumene	302-AY03	Phase 1B	2	U (0.0064)	0.0029	10000	2500
VOC	Cumene	302-AY05	Phase 1B	2	U (0.0124)	0.0060	10000	2500
VOC	Cumene	302-AZ02	Phase 1B	3	U (4.6) - 6.5	2.2	10000	2500
VOC	Cumene	302-AZ03	Phase 1B	1	U (0.31)	0.16	10000	2500
VOC	Cumene	302-BB07	Phase 1B	8	U (0.13) - 2.4	0.73	10000	2500
VOC	Cumene	302-BB08	Phase 1B	1	U (0.005)	0.0025	10000	2500
VOC	Cumene	302-BC06	Phase 1B	1	U (0.006)	0.0030	10000	2500
VOC	Ethyl Benzene	301-AA02	Phase 1B	2	U (0.001)	0.00049	880	70
VOC	Ethyl Benzene	301-AA05	Phase 1B	11	0.00032 - 0.062	0.017	880	70
VOC	Ethyl Benzene	301-AB05	Phase 1B	6	U (0.22) - 0.564	0.095	880	70
VOC	Ethyl Benzene	301-AC03	Phase 1B	2	U (0.005)	0.0015	880	70
VOC	Ethyl Benzene	301-T01	Phase 1B	5	U (0.59) - 2.41	0.57	880	70

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Ethyl Benzene	301-T02	Phase 1B	7	0.051 - 0.34	0.13	880	70
VOC	Ethyl Benzene	301-U01	Phase 1B	2	0.00055 - 0.092	0.046	880	70
VOC	Ethyl Benzene	301-U03	Phase 1B	1	U (0.005)	0.0025	880	70
VOC	Ethyl Benzene	301-V01	Phase 1B	7	0.0026 - 1.34	0.27	880	70
VOC	Ethyl Benzene	301-V02	Phase 1B	19	U (0.4) - 0.04	0.032	880	70
VOC	Ethyl Benzene	301-W01	Phase 1B	24	U (0.28) - 1.56	0.079	880	70
VOC	Ethyl Benzene	301-X01	Phase 1B	11	U (0.4)	0.036	880	70
VOC	Ethyl Benzene	301-Y01	Phase 1B	10	U (0.1) - 2.65	0.27	880	70
VOC	Ethyl Benzene	301-Y02	Phase 1B	4	U (0.029)	0.013	880	70
VOC	Ethyl Benzene	301-Z01	Phase 1B	6	U (0.0011) - 0.00097	0.00059	880	70
VOC	Ethyl Benzene	301-Z02	Phase 1B	2	U (0.005)	0.0013	880	70
VOC	Ethyl Benzene	301-Z03	Phase 1B	5	U (0.21) - 1.91	0.40	880	70
VOC	Ethyl Benzene	302-AD06	Phase 1B	2	U (0.1)	0.025	880	70
VOC	Ethyl Benzene	302-AD07	Phase 1B	2	U (0.0013)	0.00055	880	70
VOC	Ethyl Benzene	302-AE03	Phase 1B	4	0.22 - 1.3	0.50	880	70
VOC	Ethyl Benzene	302-AE04	Phase 1B	8	0.00054 - 0.098	0.017	880	70
VOC	Ethyl Benzene	302-AE05	Phase 1B	20	U (0.0027) - 0.016	0.0018	880	70
VOC	Ethyl Benzene	302-AE07	Phase 1B	3	U (0.095) - 0.00081	0.016	880	70
VOC	Ethyl Benzene	302-AE08	Phase 1B	3	U (0.001) - 0.00014	0.00038	880	70
VOC	Ethyl Benzene	302-AF03	Phase 1B	2	4.5 - 4.5	2.6	880	70
VOC	Ethyl Benzene	302-AF04	Phase 1B	22	U (0.12) - 1.9	0.12	880	70
VOC	Ethyl Benzene	302-AF05	Phase 1B	2	U (1) - 21.5	11	880	70
VOC	Ethyl Benzene	302-AF09	Phase 1B	5	U (0.1) - 1.25	0.25	880	70
VOC	Ethyl Benzene	302-AG04	Phase 1B	9	U (0.14) - 0.813	0.16	880	70
VOC	Ethyl Benzene	302-AG06	Phase 1B	5	U (0.21) - 1.43	0.31	880	70
VOC	Ethyl Benzene	302-AG08	Phase 1B	6	0.22 - 8.3	1.5	880	70
VOC	Ethyl Benzene	302-AH04	Phase 1B	8	U (0.067) - 0.62	0.17	880	70
VOC	Ethyl Benzene	302-AH05	Phase 1B	11	0.00035 - 3.6	0.49	880	70
VOC	Ethyl Benzene	302-AH06	Phase 1B	4	U (0.0013)	0.00062	880	70
VOC	Ethyl Benzene	302-AH07	Phase 1B	21	U (0.063)	0.012	880	70
VOC	Ethyl Benzene	302-AH08	Phase 1B	13	U (0.061)	0.028	880	70
VOC	Ethyl Benzene	302-AI05	Phase 1B	12	U (0.11) - 0.57	0.057	880	70
VOC	Ethyl Benzene	302-AI06	Phase 1B	19	U (0.1) - 0.214	0.014	880	70
VOC	Ethyl Benzene	302-AI07	Phase 1B	10	U (0.51) - 0.00835	0.041	880	70
VOC	Ethyl Benzene	302-AI08	Phase 1B	2	0.186 - 0.186	0.094	880	70
VOC	Ethyl Benzene	302-AI09	Phase 1B	3	U (0.00089)	0.00037	880	70
VOC	Ethyl Benzene	302-AJ05	Phase 1B	2	U (0.0012)	0.00058	880	70
VOC	Ethyl Benzene	302-AJ06	Phase 1B	5	U (0.0018) - 0.001	0.00067	880	70
VOC	Ethyl Benzene	302-AK05	Phase 1B	5	U (0.058)	0.017	880	70
VOC	Ethyl Benzene	302-AK07	Phase 1B	13	U (0.202) - 1.8	0.22	880	70
VOC	Ethyl Benzene	302-AL03	Phase 1B	2	U (0.5) - 0.612	0.31	880	70
VOC	Ethyl Benzene	302-AL05	Phase 1B	11	U (0.13) - 0.068	0.042	880	70
VOC	Ethyl Benzene	302-AL08	Phase 1B	2	U (0.0009)	0.00038	880	70
VOC	Ethyl Benzene	302-AN01	Phase 1B	2	U (0.0012)	0.00055	880	70
VOC	Ethyl Benzene	302-AN03	Phase 1B	1	U (0.004)	0.0020	880	70
VOC	Ethyl Benzene	302-AO02	Phase 1B	7	0.011 - 19	3.8	880	70
VOC	Ethyl Benzene	302-AO05	Phase 1B	1	0.0009 - 0.0009	0.00090	880	70
VOC	Ethyl Benzene	302-AP02	Phase 1B	2	U (0.0013)	0.00063	880	70
VOC	Ethyl Benzene	302-AP03	Phase 1B	23	0.0028 - 0.581	0.035	880	70
VOC	Ethyl Benzene	302-AP04	Phase 1B	3	U (0.12) - 0.207	0.070	880	70
VOC	Ethyl Benzene	302-AP05	Phase 1B	2	U (0.0014)	0.00068	880	70
VOC	Ethyl Benzene	302-AQ01	Phase 1B	2	U (0.006)	0.0030	880	70
VOC	Ethyl Benzene	302-AQ04	Phase 1B	2	U (0.00088)	0.00043	880	70
VOC	Ethyl Benzene	302-AR01	Phase 1B	2	U (0.006)	0.0028	880	70

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Ethyl Benzene	302-AR04	Phase 1B	3	U (0.0011)	0.00050	880	70
VOC	Ethyl Benzene	302-AS04	Phase 1B	2	U (0.00127)	0.00062	880	70
VOC	Ethyl Benzene	302-AT01	Phase 1B	2	0.0256 - 0.0263	0.026	880	70
VOC	Ethyl Benzene	302-AT02	Phase 1B	2	U (0.23) - 0.14	0.070	880	70
VOC	Ethyl Benzene	302-AT03	Phase 1B	4	U (0.11)	0.014	880	70
VOC	Ethyl Benzene	302-AU01	Phase 1B	2	U (0.001)	0.00047	880	70
VOC	Ethyl Benzene	302-AU02	Phase 1B	8	U (0.055)	0.0041	880	70
VOC	Ethyl Benzene	302-AU03	Phase 1B	2	U (0.00097)	0.00046	880	70
VOC	Ethyl Benzene	302-AV02	Phase 1B	4	U (0.054) - 1.7	0.43	880	70
VOC	Ethyl Benzene	302-AV04	Phase 1B	2	U (0.00126)	0.00062	880	70
VOC	Ethyl Benzene	302-AW02	Phase 1B	2	U (0.28)	0.070	880	70
VOC	Ethyl Benzene	302-AX02	Phase 1B	3	U (0.11)	0.019	880	70
VOC	Ethyl Benzene	302-AY02	Phase 1B	19	0.014 - 75	11	880	70
VOC	Ethyl Benzene	302-AY03	Phase 1B	2	U (0.0013)	0.00058	880	70
VOC	Ethyl Benzene	302-AY05	Phase 1B	2	U (0.00124)	0.00060	880	70
VOC	Ethyl Benzene	302-AZ02	Phase 1B	11	1.4 - 30	4.9	880	70
VOC	Ethyl Benzene	302-AZ03	Phase 1B	1	U (0.31)	0.16	880	70
VOC	Ethyl Benzene	302-BA03	Phase 1B	1	U (0.009)	0.0045	880	70
VOC	Ethyl Benzene	302-BB07	Phase 1B	8	U (0.13) - 9.4	2.0	880	70
VOC	Ethyl Benzene	302-BB08	Phase 1B	1	U (0.005)	0.0025	880	70
VOC	Ethyl Benzene	302-BC06	Phase 1B	1	U (0.006)	0.0030	880	70
VOC	Methyl tert-butyl ether	301-AA02	Phase 1B	2	U (0.001)	0.00049	8500	2.0
VOC	Methyl tert-butyl ether	301-AA05	Phase 1B	11	U (0.1)	0.013	8500	2.0
VOC	Methyl tert-butyl ether	301-AB05	Phase 1B	6	U (0.22)	0.019	8500	2.0
VOC	Methyl tert-butyl ether	301-AC03	Phase 1B	2	U (0.005)	0.0015	8500	2.0
VOC	Methyl tert-butyl ether	301-T01	Phase 1B	5	U (0.59)	0.10	8500	2.0
VOC	Methyl tert-butyl ether	301-T02	Phase 1B	2	U (0.6)	0.17	8500	2.0
VOC	Methyl tert-butyl ether	301-U01	Phase 1B	2	U (0.29)	0.073	8500	2.0
VOC	Methyl tert-butyl ether	301-U03	Phase 1B	1	U (0.005)	0.0025	8500	2.0
VOC	Methyl tert-butyl ether	301-V01	Phase 1B	7	U (0.1)	0.026	8500	2.0
VOC	Methyl tert-butyl ether	301-V02	Phase 1B	19	U (0.54)	0.057	8500	2.0
VOC	Methyl tert-butyl ether	301-W01	Phase 1B	24	U (0.29)	0.020	8500	2.0
VOC	Methyl tert-butyl ether	301-X01	Phase 1B	9	U (0.5)	0.056	8500	2.0
VOC	Methyl tert-butyl ether	301-Y01	Phase 1B	5	U (0.1)	0.010	8500	2.0
VOC	Methyl tert-butyl ether	301-Z01	Phase 1B	6	U (0.0011)	0.00050	8500	2.0
VOC	Methyl tert-butyl ether	301-Z02	Phase 1B	2	U (0.005)	0.0013	8500	2.0
VOC	Methyl tert-butyl ether	301-Z03	Phase 1B	5	U (0.21)	0.031	8500	2.0
VOC	Methyl tert-butyl ether	302-AD06	Phase 1B	2	U (0.1)	0.025	8500	2.0
VOC	Methyl tert-butyl ether	302-AD07	Phase 1B	2	U (0.0025)	0.0011	8500	2.0
VOC	Methyl tert-butyl ether	302-AE04	Phase 1B	8	U (0.15)	0.019	8500	2.0
VOC	Methyl tert-butyl ether	302-AE05	Phase 1B	20	U (0.0055)	0.0012	8500	2.0
VOC	Methyl tert-butyl ether	302-AE07	Phase 1B	3	U (0.095)	0.016	8500	2.0
VOC	Methyl tert-butyl ether	302-AE08	Phase 1B	3	U (0.0021)	0.0010	8500	2.0
VOC	Methyl tert-butyl ether	302-AF04	Phase 1B	11	U (0.12)	0.012	8500	2.0
VOC	Methyl tert-butyl ether	302-AF05	Phase 1B	2	U (0.051)	0.013	8500	2.0
VOC	Methyl tert-butyl ether	302-AF09	Phase 1B	5	U (0.1)	0.010	8500	2.0
VOC	Methyl tert-butyl ether	302-AG04	Phase 1B	3	U (0.14)	0.024	8500	2.0
VOC	Methyl tert-butyl ether	302-AG06	Phase 1B	5	U (0.21)	0.031	8500	2.0
VOC	Methyl tert-butyl ether	302-AH04	Phase 1B	8	U (0.034)	0.016	8500	2.0
VOC	Methyl tert-butyl ether	302-AH05	Phase 1B	11	U (0.12)	0.026	8500	2.0
VOC	Methyl tert-butyl ether	302-AH06	Phase 1B	4	U (0.0013) - 0.0177	0.0051	8500	2.0
VOC	Methyl tert-butyl ether	302-AH07	Phase 1B	12	U (0.005) - 0.014	0.0020	8500	2.0
VOC	Methyl tert-butyl ether	302-AI05	Phase 1B	12	U (0.12) - 0.00057	0.016	8500	2.0
VOC	Methyl tert-butyl ether	302-AI06	Phase 1B	19	0.00024 - 0.0067	0.0037	8500	2.0

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Methyl tert-butyl ether	302-AI07	Phase 1B	8	0.0017 - 0.205	0.071	8500	2.0
VOC	Methyl tert-butyl ether	302-AI08	Phase 1B	2	U (0.099)	0.026	8500	2.0
VOC	Methyl tert-butyl ether	302-AI09	Phase 1B	3	U (0.00089)	0.00037	8500	2.0
VOC	Methyl tert-butyl ether	302-AJ05	Phase 1B	2	U (0.0024)	0.0012	8500	2.0
VOC	Methyl tert-butyl ether	302-AJ06	Phase 1B	5	U (0.0035) - 0.00043	0.0011	8500	2.0
VOC	Methyl tert-butyl ether	302-AK05	Phase 1B	2	U (0.00118)	0.00058	8500	2.0
VOC	Methyl tert-butyl ether	302-AK07	Phase 1B	2	U (0.202)	0.051	8500	2.0
VOC	Methyl tert-butyl ether	302-AL03	Phase 1B	2	U (0.5)	0.13	8500	2.0
VOC	Methyl tert-butyl ether	302-AL08	Phase 1B	2	U (0.0009)	0.00038	8500	2.0
VOC	Methyl tert-butyl ether	302-AN01	Phase 1B	2	U (0.0012)	0.00055	8500	2.0
VOC	Methyl tert-butyl ether	302-AN03	Phase 1B	1	U (0.004)	0.0020	8500	2.0
VOC	Methyl tert-butyl ether	302-AO05	Phase 1B	1	U (0.005)	0.0025	8500	2.0
VOC	Methyl tert-butyl ether	302-AP02	Phase 1B	2	U (0.0013)	0.00063	8500	2.0
VOC	Methyl tert-butyl ether	302-AP03	Phase 1B	17	U (0.083)	0.0033	8500	2.0
VOC	Methyl tert-butyl ether	302-AP04	Phase 1B	3	U (0.005)	0.0012	8500	2.0
VOC	Methyl tert-butyl ether	302-AP05	Phase 1B	2	U (0.0014)	0.00068	8500	2.0
VOC	Methyl tert-butyl ether	302-AQ01	Phase 1B	2	U (0.006)	0.0030	8500	2.0
VOC	Methyl tert-butyl ether	302-AQ04	Phase 1B	2	U (0.00088)	0.00043	8500	2.0
VOC	Methyl tert-butyl ether	302-AR01	Phase 1B	2	U (0.006)	0.0028	8500	2.0
VOC	Methyl tert-butyl ether	302-AR04	Phase 1B	3	U (0.0011)	0.00050	8500	2.0
VOC	Methyl tert-butyl ether	302-AS04	Phase 1B	2	U (0.00127)	0.00062	8500	2.0
VOC	Methyl tert-butyl ether	302-AT02	Phase 1B	2	U (0.23)	0.058	8500	2.0
VOC	Methyl tert-butyl ether	302-AT03	Phase 1B	4	U (0.11)	0.014	8500	2.0
VOC	Methyl tert-butyl ether	302-AU01	Phase 1B	2	U (0.001)	0.00047	8500	2.0
VOC	Methyl tert-butyl ether	302-AU02	Phase 1B	8	U (0.11)	0.0080	8500	2.0
VOC	Methyl tert-butyl ether	302-AU03	Phase 1B	2	U (0.0019)	0.00090	8500	2.0
VOC	Methyl tert-butyl ether	302-AV02	Phase 1B	4	U (0.11)	0.014	8500	2.0
VOC	Methyl tert-butyl ether	302-AV04	Phase 1B	2	U (0.00126)	0.00062	8500	2.0
VOC	Methyl tert-butyl ether	302-AW02	Phase 1B	2	U (0.28)	0.071	8500	2.0
VOC	Methyl tert-butyl ether	302-AX02	Phase 1B	3	U (0.11)	0.019	8500	2.0
VOC	Methyl tert-butyl ether	302-AY02	Phase 1B	10	U (2.3)	0.32	8500	2.0
VOC	Methyl tert-butyl ether	302-AY03	Phase 1B	2	U (0.0013)	0.00058	8500	2.0
VOC	Methyl tert-butyl ether	302-AY05	Phase 1B	2	U (0.00124)	0.00060	8500	2.0
VOC	Methyl tert-butyl ether	302-AZ02	Phase 1B	3	U (4.6)	0.77	8500	2.0
VOC	Methyl tert-butyl ether	302-AZ03	Phase 1B	1	U (0.31)	0.16	8500	2.0
VOC	Methyl tert-butyl ether	302-BB07	Phase 1B	8	U (0.15) - 0.00083	0.021	8500	2.0
VOC	Methyl tert-butyl ether	302-BB08	Phase 1B	1	U (0.005)	0.0025	8500	2.0
VOC	Methyl tert-butyl ether	302-BC06	Phase 1B	1	U (0.006)	0.0030	8500	2.0
VOC	Toluene	301-AA02	Phase 1B	2	U (0.001)	0.00049	10000	100
VOC	Toluene	301-AA05	Phase 1B	11	U (0.1) - 0.077	0.016	10000	100
VOC	Toluene	301-AB05	Phase 1B	6	U (0.22) - 0.00088	0.019	10000	100
VOC	Toluene	301-AC03	Phase 1B	2	U (0.005)	0.0015	10000	100
VOC	Toluene	301-T01	Phase 1B	5	U (0.59) - 0.133	0.12	10000	100
VOC	Toluene	301-T02	Phase 1B	7	0.096 - 0.33	0.14	10000	100
VOC	Toluene	301-U01	Phase 1B	2	U (0.29) - 0.14	0.070	10000	100
VOC	Toluene	301-U03	Phase 1B	1	U (0.005)	0.0025	10000	100
VOC	Toluene	301-V01	Phase 1B	7	0.0479 - 1.02	0.21	10000	100
VOC	Toluene	301-V02	Phase 1B	19	U (0.4)	0.034	10000	100
VOC	Toluene	301-W01	Phase 1B	24	U (0.28) - 0.931	0.053	10000	100
VOC	Toluene	301-X01	Phase 1B	11	U (0.4) - 0.54	0.067	10000	100
VOC	Toluene	301-Y01	Phase 1B	10	U (0.1) - 0.0714	0.014	10000	100
VOC	Toluene	301-Y02	Phase 1B	4	U (0.029) - 0.039	0.019	10000	100
VOC	Toluene	301-Z01	Phase 1B	6	U (0.0011)	0.00050	10000	100
VOC	Toluene	301-Z02	Phase 1B	2	U (0.005)	0.0013	10000	100



**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Toluene	301-Z03	Phase 1B	5	U (0.21)	0.031	10000	100
VOC	Toluene	302-AD06	Phase 1B	2	U (0.1)	0.025	10000	100
VOC	Toluene	302-AD07	Phase 1B	2	U (0.0013)	0.00055	10000	100
VOC	Toluene	302-AE03	Phase 1B	4	U (0.053) - 0.56	0.23	10000	100
VOC	Toluene	302-AE04	Phase 1B	8	U (0.075) - 0.06	0.014	10000	100
VOC	Toluene	302-AE05	Phase 1B	20	U (0.0027) - 0.0026	0.00072	10000	100
VOC	Toluene	302-AE07	Phase 1B	3	U (0.095) - 0.00067	0.016	10000	100
VOC	Toluene	302-AE08	Phase 1B	3	U (0.001)	0.00049	10000	100
VOC	Toluene	302-AF03	Phase 1B	2	1.5 - 1.5	1.1	10000	100
VOC	Toluene	302-AF04	Phase 1B	22	U (0.12) - 0.39	0.035	10000	100
VOC	Toluene	302-AF05	Phase 1B	2	U (0.051)	0.013	10000	100
VOC	Toluene	302-AF09	Phase 1B	5	U (0.1) - 0.165	0.033	10000	100
VOC	Toluene	302-AG04	Phase 1B	9	U (0.14)	0.027	10000	100
VOC	Toluene	302-AG06	Phase 1B	5	U (0.21)	0.032	10000	100
VOC	Toluene	302-AG08	Phase 1B	6	U (0.19) - 0.52	0.13	10000	100
VOC	Toluene	302-AH04	Phase 1B	8	U (0.067)	0.031	10000	100
VOC	Toluene	302-AH05	Phase 1B	11	U (0.11)	0.016	10000	100
VOC	Toluene	302-AH06	Phase 1B	4	U (0.00629)	0.0018	10000	100
VOC	Toluene	302-AH07	Phase 1B	21	U (0.063)	0.012	10000	100
VOC	Toluene	302-AH08	Phase 1B	13	U (0.061)	0.028	10000	100
VOC	Toluene	302-AI05	Phase 1B	12	U (0.11)	0.012	10000	100
VOC	Toluene	302-AI06	Phase 1B	19	U (0.1) - 0.0025	0.0033	10000	100
VOC	Toluene	302-AI07	Phase 1B	10	U (0.611) - 0.00035	0.075	10000	100
VOC	Toluene	302-AI08	Phase 1B	2	U (0.099)	0.026	10000	100
VOC	Toluene	302-AI09	Phase 1B	3	U (0.00089)	0.00037	10000	100
VOC	Toluene	302-AJ05	Phase 1B	2	U (0.0012)	0.00058	10000	100
VOC	Toluene	302-AJ06	Phase 1B	5	U (0.0018)	0.00065	10000	100
VOC	Toluene	302-AK05	Phase 1B	5	U (0.058)	0.018	10000	100
VOC	Toluene	302-AK07	Phase 1B	13	U (1.01) - 0.28	0.094	10000	100
VOC	Toluene	302-AL03	Phase 1B	2	U (0.5)	0.13	10000	100
VOC	Toluene	302-AL05	Phase 1B	11	U (0.13)	0.041	10000	100
VOC	Toluene	302-AL08	Phase 1B	2	U (0.0009)	0.00038	10000	100
VOC	Toluene	302-AN01	Phase 1B	2	U (0.0012)	0.00055	10000	100
VOC	Toluene	302-AN03	Phase 1B	1	0.009 - 0.009	0.0090	10000	100
VOC	Toluene	302-AO02	Phase 1B	7	U (2.1) - 0.001	0.27	10000	100
VOC	Toluene	302-AO05	Phase 1B	1	0.011 - 0.011	0.011	10000	100
VOC	Toluene	302-AP02	Phase 1B	2	U (0.0013) - 0.0027	0.0017	10000	100
VOC	Toluene	302-AP03	Phase 1B	23	0.0472 - 0.702	0.040	10000	100
VOC	Toluene	302-AP04	Phase 1B	3	U (0.005) - 0.0234	0.014	10000	100
VOC	Toluene	302-AP05	Phase 1B	2	U (0.0014)	0.00068	10000	100
VOC	Toluene	302-AQ01	Phase 1B	2	U (0.006)	0.0030	10000	100
VOC	Toluene	302-AQ04	Phase 1B	2	U (0.00088)	0.00043	10000	100
VOC	Toluene	302-AR01	Phase 1B	2	U (0.006)	0.0028	10000	100
VOC	Toluene	302-AR04	Phase 1B	3	U (0.0011)	0.00050	10000	100
VOC	Toluene	302-AS04	Phase 1B	2	U (0.00635)	0.0031	10000	100
VOC	Toluene	302-AT02	Phase 1B	2	U (0.23) - 0.612	0.31	10000	100
VOC	Toluene	302-AT03	Phase 1B	4	U (0.11)	0.014	10000	100
VOC	Toluene	302-AU01	Phase 1B	2	U (0.001)	0.00047	10000	100
VOC	Toluene	302-AU02	Phase 1B	8	U (0.055)	0.0041	10000	100
VOC	Toluene	302-AU03	Phase 1B	2	U (0.00097)	0.00046	10000	100
VOC	Toluene	302-AV02	Phase 1B	4	U (0.054) - 0.12	0.030	10000	100
VOC	Toluene	302-AV04	Phase 1B	2	U (0.00628)	0.0031	10000	100
VOC	Toluene	302-AW02	Phase 1B	2	U (0.28)	0.070	10000	100
VOC	Toluene	302-AX02	Phase 1B	3	U (0.11)	0.019	10000	100

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Toluene	302-AY02	Phase 1B	19	0.0011 - 130	13	10000	100
VOC	Toluene	302-AY03	Phase 1B	2	U (0.0013)	0.00058	10000	100
VOC	Toluene	302-AY05	Phase 1B	2	U (0.00618)	0.0030	10000	100
VOC	Toluene	302-AZ02	Phase 1B	11	U (13) - 4.5	1.9	10000	100
VOC	Toluene	302-AZ03	Phase 1B	1	U (0.31)	0.16	10000	100
VOC	Toluene	302-BA03	Phase 1B	1	U (0.007)	0.0035	10000	100
VOC	Toluene	302-BB07	Phase 1B	8	U (0.218) - 0.7	0.17	10000	100
VOC	Toluene	302-BB08	Phase 1B	1	U (0.005)	0.0025	10000	100
VOC	Toluene	302-BC06	Phase 1B	1	U (0.006)	0.0030	10000	100
VOC	1,2,4-Trimethylbenzene	301-AA02	Phase 1B	2	U (0.002) - 0.0025	0.0018	4700	300
VOC	1,2,4-Trimethylbenzene	301-AA05	Phase 1B	11	0.0011 - 4	0.48	4700	300
VOC	1,2,4-Trimethylbenzene	301-AB05	Phase 1B	6	U (1.1) - 0.00096	0.093	4700	300
VOC	1,2,4-Trimethylbenzene	301-AC03	Phase 1B	2	U (0.005)	0.0024	4700	300
VOC	1,2,4-Trimethylbenzene	301-T01	Phase 1B	5	U (0.59) - 1.79	0.45	4700	300
VOC	1,2,4-Trimethylbenzene	301-T02	Phase 1B	2	0.198 - 0.67	0.43	4700	300
VOC	1,2,4-Trimethylbenzene	301-U01	Phase 1B	2	U (0.29) - 0.19	0.096	4700	300
VOC	1,2,4-Trimethylbenzene	301-U03	Phase 1B	1	U (0.005)	0.0025	4700	300
VOC	1,2,4-Trimethylbenzene	301-V01	Phase 1B	7	0.0015 - 0.7	0.17	4700	300
VOC	1,2,4-Trimethylbenzene	301-V02	Phase 1B	19	U (0.54) - 0.0015	0.057	4700	300
VOC	1,2,4-Trimethylbenzene	301-W01	Phase 1B	24	U (0.69) - 7.3	0.36	4700	300
VOC	1,2,4-Trimethylbenzene	301-X01	Phase 1B	9	U (0.5) - 3.3	0.41	4700	300
VOC	1,2,4-Trimethylbenzene	301-Y01	Phase 1B	5	U (0.21) - 9.94	2.0	4700	300
VOC	1,2,4-Trimethylbenzene	301-Z01	Phase 1B	6	U (0.0023) - 0.0017	0.0012	4700	300
VOC	1,2,4-Trimethylbenzene	301-Z02	Phase 1B	2	U (0.005)	0.0017	4700	300
VOC	1,2,4-Trimethylbenzene	301-Z03	Phase 1B	5	U (1.1) - 0.0895	0.13	4700	300
VOC	1,2,4-Trimethylbenzene	302-AD06	Phase 1B	2	U (0.5)	0.13	4700	300
VOC	1,2,4-Trimethylbenzene	302-AD07	Phase 1B	2	U (0.0025)	0.0011	4700	300
VOC	1,2,4-Trimethylbenzene	302-AE04	Phase 1B	8	U (0.15) - 0.12	0.022	4700	300
VOC	1,2,4-Trimethylbenzene	302-AE05	Phase 1B	20	U (0.0055) - 0.072	0.0058	4700	300
VOC	1,2,4-Trimethylbenzene	302-AE07	Phase 1B	3	U (0.47) - 0.00059	0.079	4700	300
VOC	1,2,4-Trimethylbenzene	302-AE08	Phase 1B	3	U (0.0021) - 0.00096	0.0010	4700	300
VOC	1,2,4-Trimethylbenzene	302-AF03	Phase 1B	2	0.85 - 19	9.925	4700	300
VOC	1,2,4-Trimethylbenzene	302-AF04	Phase 1B	11	0.0057 - 0.68	0.083	4700	300
VOC	1,2,4-Trimethylbenzene	302-AF05	Phase 1B	2	U (2) - 49.3	25	4700	300
VOC	1,2,4-Trimethylbenzene	302-AF09	Phase 1B	5	U (0.51) - 0.445	0.090	4700	300
VOC	1,2,4-Trimethylbenzene	302-AG04	Phase 1B	3	U (0.28) - 4.49	1.5	4700	300
VOC	1,2,4-Trimethylbenzene	302-AG06	Phase 1B	5	U (1) - 4.3	0.91	4700	300
VOC	1,2,4-Trimethylbenzene	302-AH05	Phase 1B	11	0.00047 - 20.5	2.7	4700	300
VOC	1,2,4-Trimethylbenzene	302-AH06	Phase 1B	4	U (0.0064)	0.0019	4700	300
VOC	1,2,4-Trimethylbenzene	302-AH07	Phase 1B	11	U (0.0046)	0.0012	4700	300
VOC	1,2,4-Trimethylbenzene	302-AI05	Phase 1B	11	U (0.22) - 9.4	0.87	4700	300
VOC	1,2,4-Trimethylbenzene	302-AI06	Phase 1B	19	0.00032 - 0.044	0.0095	4700	300
VOC	1,2,4-Trimethylbenzene	302-AI07	Phase 1B	8	U (1) - 0.327	0.11	4700	300
VOC	1,2,4-Trimethylbenzene	302-AI08	Phase 1B	1	0.362 - 0.362	0.36	4700	300
VOC	1,2,4-Trimethylbenzene	302-AI09	Phase 1B	3	U (0.0044)	0.0018	4700	300
VOC	1,2,4-Trimethylbenzene	302-AJ05	Phase 1B	2	U (0.0024)	0.0012	4700	300
VOC	1,2,4-Trimethylbenzene	302-AJ06	Phase 1B	5	U (0.0035) - 0.0079	0.0025	4700	300
VOC	1,2,4-Trimethylbenzene	302-AK05	Phase 1B	2	U (0.00118)	0.00058	4700	300
VOC	1,2,4-Trimethylbenzene	302-AK07	Phase 1B	2	U (0.202)	0.051	4700	300
VOC	1,2,4-Trimethylbenzene	302-AL03	Phase 1B	2	U (0.99) - 63.6	32	4700	300
VOC	1,2,4-Trimethylbenzene	302-AL08	Phase 1B	2	U (0.0045)	0.0019	4700	300
VOC	1,2,4-Trimethylbenzene	302-AN01	Phase 1B	2	U (0.0061)	0.0028	4700	300
VOC	1,2,4-Trimethylbenzene	302-AN03	Phase 1B	1	U (0.004)	0.0020	4700	300
VOC	1,2,4-Trimethylbenzene	302-AO05	Phase 1B	1	U (0.005)	0.0025	4700	300

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	1,2,4-Trimethylbenzene	302-AP02	Phase 1B	2	U (0.0025) - 0.0082	0.0047	4700	300
VOC	1,2,4-Trimethylbenzene	302-AP03	Phase 1B	16	0.02 - 1.15	0.083	4700	300
VOC	1,2,4-Trimethylbenzene	302-AP04	Phase 1B	3	U (0.24) - 1.17	0.39	4700	300
VOC	1,2,4-Trimethylbenzene	302-AP05	Phase 1B	2	U (0.0027)	0.0013	4700	300
VOC	1,2,4-Trimethylbenzene	302-AQ01	Phase 1B	2	U (0.006)	0.0030	4700	300
VOC	1,2,4-Trimethylbenzene	302-AQ04	Phase 1B	2	U (0.0044)	0.0022	4700	300
VOC	1,2,4-Trimethylbenzene	302-AR01	Phase 1B	2	U (0.006)	0.0028	4700	300
VOC	1,2,4-Trimethylbenzene	302-AR04	Phase 1B	3	U (0.0055)	0.0025	4700	300
VOC	1,2,4-Trimethylbenzene	302-AS04	Phase 1B	2	U (0.00127)	0.00062	4700	300
VOC	1,2,4-Trimethylbenzene	302-AT02	Phase 1B	2	U (1.1) - 2.8	1.4	4700	300
VOC	1,2,4-Trimethylbenzene	302-AT03	Phase 1B	4	U (0.57)	0.073	4700	300
VOC	1,2,4-Trimethylbenzene	302-AU01	Phase 1B	2	U (0.0052)	0.0024	4700	300
VOC	1,2,4-Trimethylbenzene	302-AU02	Phase 1B	8	U (0.11)	0.0080	4700	300
VOC	1,2,4-Trimethylbenzene	302-AU03	Phase 1B	2	U (0.0019)	0.00090	4700	300
VOC	1,2,4-Trimethylbenzene	302-AV02	Phase 1B	4	U (0.54) - 25	6.3	4700	300
VOC	1,2,4-Trimethylbenzene	302-AV04	Phase 1B	2	U (0.00126)	0.00062	4700	300
VOC	1,2,4-Trimethylbenzene	302-AW02	Phase 1B	2	U (0.28)	0.071	4700	300
VOC	1,2,4-Trimethylbenzene	302-AX02	Phase 1B	3	U (0.53) - 0.0004	0.089	4700	300
VOC	1,2,4-Trimethylbenzene	302-AY02	Phase 1B	10	0.14 - 280	28	4700	300
VOC	1,2,4-Trimethylbenzene	302-AY03	Phase 1B	2	0.00068 - 0.00068	0.0016	4700	300
VOC	1,2,4-Trimethylbenzene	302-AY05	Phase 1B	2	U (0.00124)	0.00060	4700	300
VOC	1,2,4-Trimethylbenzene	302-AZ02	Phase 1B	3	U (4.6) - 16	5.3	4700	300
VOC	1,2,4-Trimethylbenzene	302-AZ03	Phase 1B	1	0.079 - 0.079	0.079	4700	300
VOC	1,2,4-Trimethylbenzene	302-BB07	Phase 1B	8	U (1.5) - 34	6.1	4700	300
VOC	1,3,5-Trimethylbenzene	301-AA02	Phase 1B	2	U (0.002) - 0.00065	0.00083	4700	93
VOC	1,3,5-Trimethylbenzene	301-AA05	Phase 1B	11	0.00068 - 0.84	0.12	4700	93
VOC	1,3,5-Trimethylbenzene	301-AB05	Phase 1B	6	U (1.1)	0.093	4700	93
VOC	1,3,5-Trimethylbenzene	301-AC03	Phase 1B	2	U (0.005)	0.0024	4700	93
VOC	1,3,5-Trimethylbenzene	301-T01	Phase 1B	5	U (0.59) - 0.371	0.17	4700	93
VOC	1,3,5-Trimethylbenzene	301-T02	Phase 1B	2	0.0244 - 0.0244	0.16	4700	93
VOC	1,3,5-Trimethylbenzene	301-U01	Phase 1B	2	U (0.29) - 0.063	0.033	4700	93
VOC	1,3,5-Trimethylbenzene	301-U03	Phase 1B	1	U (0.005)	0.0025	4700	93
VOC	1,3,5-Trimethylbenzene	301-V01	Phase 1B	7	0.00057 - 0.0946	0.080	4700	93
VOC	1,3,5-Trimethylbenzene	301-V02	Phase 1B	19	U (0.54) - 0.023	0.052	4700	93
VOC	1,3,5-Trimethylbenzene	301-W01	Phase 1B	24	U (0.69)	0.043	4700	93
VOC	1,3,5-Trimethylbenzene	301-X01	Phase 1B	9	U (0.5) - 0.35	0.074	4700	93
VOC	1,3,5-Trimethylbenzene	301-Y01	Phase 1B	5	U (0.21) - 2.39	0.48	4700	93
VOC	1,3,5-Trimethylbenzene	301-Z01	Phase 1B	6	U (0.0023) - 0.00055	0.001	4700	93
VOC	1,3,5-Trimethylbenzene	301-Z02	Phase 1B	2	U (0.005)	0.0017	4700	93
VOC	1,3,5-Trimethylbenzene	301-Z03	Phase 1B	5	U (1.1) - 0.0272	0.12	4700	93
VOC	1,3,5-Trimethylbenzene	302-AD06	Phase 1B	2	U (0.5)	0.13	4700	93
VOC	1,3,5-Trimethylbenzene	302-AD07	Phase 1B	2	U (0.0025)	0.0011	4700	93
VOC	1,3,5-Trimethylbenzene	302-AE04	Phase 1B	8	U (0.15) - 0.029	0.0066	4700	93
VOC	1,3,5-Trimethylbenzene	302-AE05	Phase 1B	20	U (0.0055) - 0.04	0.0036	4700	93
VOC	1,3,5-Trimethylbenzene	302-AE07	Phase 1B	3	U (0.47) - 0.00027	0.079	4700	93
VOC	1,3,5-Trimethylbenzene	302-AE08	Phase 1B	3	U (0.0021) - 0.00038	0.00081	4700	93
VOC	1,3,5-Trimethylbenzene	302-AF03	Phase 1B	2	0.29 - 6.1	3.2	4700	93
VOC	1,3,5-Trimethylbenzene	302-AF04	Phase 1B	11	0.002 - 0.26	0.028	4700	93
VOC	1,3,5-Trimethylbenzene	302-AF05	Phase 1B	2	U (2) - 15.4	7.7	4700	93
VOC	1,3,5-Trimethylbenzene	302-AF09	Phase 1B	5	U (0.51) - 0.8	0.16	4700	93
VOC	1,3,5-Trimethylbenzene	302-AG04	Phase 1B	3	U (0.28) - 0.935	0.31	4700	93
VOC	1,3,5-Trimethylbenzene	302-AG06	Phase 1B	5	U (1) - 1.88	0.43	4700	93
VOC	1,3,5-Trimethylbenzene	302-AH05	Phase 1B	11	U (0.22) - 7.72	0.96	4700	93
VOC	1,3,5-Trimethylbenzene	302-AH06	Phase 1B	4	U (0.0064)	0.0019	4700	93

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	1,3,5-Trimethylbenzene	302-AH07	Phase 1B	11	U (0.0046)	0.0012	4700	93
VOC	1,3,5-Trimethylbenzene	302-AI05	Phase 1B	11	U (0.22) - 2.8	0.27	4700	93
VOC	1,3,5-Trimethylbenzene	302-AI06	Phase 1B	19	U (0.2) - 0.25	0.015	4700	93
VOC	1,3,5-Trimethylbenzene	302-AI07	Phase 1B	8	U (1) - 0.0551	0.078	4700	93
VOC	1,3,5-Trimethylbenzene	302-AI08	Phase 1B	1	0.147 - 0.147	0.15	4700	93
VOC	1,3,5-Trimethylbenzene	302-AI09	Phase 1B	3	U (0.0044)	0.0018	4700	93
VOC	1,3,5-Trimethylbenzene	302-AJ05	Phase 1B	2	U (0.0024)	0.0012	4700	93
VOC	1,3,5-Trimethylbenzene	302-AJ06	Phase 1B	5	U (0.0035) - 0.0068	0.0023	4700	93
VOC	1,3,5-Trimethylbenzene	302-AK05	Phase 1B	2	U (0.00118)	0.00058	4700	93
VOC	1,3,5-Trimethylbenzene	302-AK07	Phase 1B	2	U (0.202)	0.051	4700	93
VOC	1,3,5-Trimethylbenzene	302-AL03	Phase 1B	2	U (0.99) - 10.5	5.3	4700	93
VOC	1,3,5-Trimethylbenzene	302-AL08	Phase 1B	2	U (0.0045)	0.0019	4700	93
VOC	1,3,5-Trimethylbenzene	302-AN01	Phase 1B	2	U (0.0061)	0.0028	4700	93
VOC	1,3,5-Trimethylbenzene	302-AN03	Phase 1B	1	U (0.004)	0.0020	4700	93
VOC	1,3,5-Trimethylbenzene	302-AO05	Phase 1B	1	U (0.005)	0.0025	4700	93
VOC	1,3,5-Trimethylbenzene	302-AP02	Phase 1B	2	U (0.0025)	0.0013	4700	93
VOC	1,3,5-Trimethylbenzene	302-AP03	Phase 1B	16	0.054 - 0.189	0.022	4700	93
VOC	1,3,5-Trimethylbenzene	302-AP04	Phase 1B	3	U (0.24) - 0.434	0.15	4700	93
VOC	1,3,5-Trimethylbenzene	302-AP05	Phase 1B	2	U (0.0027)	0.0013	4700	93
VOC	1,3,5-Trimethylbenzene	302-AQ01	Phase 1B	2	U (0.006)	0.0030	4700	93
VOC	1,3,5-Trimethylbenzene	302-AQ04	Phase 1B	2	U (0.0044)	0.0022	4700	93
VOC	1,3,5-Trimethylbenzene	302-AR01	Phase 1B	2	U (0.006)	0.0028	4700	93
VOC	1,3,5-Trimethylbenzene	302-AR04	Phase 1B	3	U (0.0055)	0.0025	4700	93
VOC	1,3,5-Trimethylbenzene	302-AS04	Phase 1B	2	U (0.00127)	0.00062	4700	93
VOC	1,3,5-Trimethylbenzene	302-AT02	Phase 1B	2	U (1.1) - 0.497	0.25	4700	93
VOC	1,3,5-Trimethylbenzene	302-AT03	Phase 1B	4	U (0.57)	0.073	4700	93
VOC	1,3,5-Trimethylbenzene	302-AU01	Phase 1B	2	U (0.0052)	0.0024	4700	93
VOC	1,3,5-Trimethylbenzene	302-AU02	Phase 1B	8	U (0.11)	0.0080	4700	93
VOC	1,3,5-Trimethylbenzene	302-AU03	Phase 1B	2	U (0.0019)	0.00090	4700	93
VOC	1,3,5-Trimethylbenzene	302-AV02	Phase 1B	4	U (0.11) - 8.5	2.1	4700	93
VOC	1,3,5-Trimethylbenzene	302-AV04	Phase 1B	2	U (0.00126)	0.00062	4700	93
VOC	1,3,5-Trimethylbenzene	302-AW02	Phase 1B	2	U (0.28)	0.071	4700	93
VOC	1,3,5-Trimethylbenzene	302-AX02	Phase 1B	3	U (0.53)	0.090	4700	93
VOC	1,3,5-Trimethylbenzene	302-AY02	Phase 1B	10	0.369 - 130	13	4700	93
VOC	1,3,5-Trimethylbenzene	302-AY03	Phase 1B	2	U (0.0064)	0.0029	4700	93
VOC	1,3,5-Trimethylbenzene	302-AY05	Phase 1B	2	U (0.00124)	0.00060	4700	93
VOC	1,3,5-Trimethylbenzene	302-AZ02	Phase 1B	3	U (4.6) - 8	2.7	4700	93
VOC	1,3,5-Trimethylbenzene	302-AZ03	Phase 1B	1	U (0.31)	0.16	4700	93
VOC	1,3,5-Trimethylbenzene	302-BB07	Phase 1B	8	U (0.26) - 12	1.8	4700	93
VOC	Xylenes (total)	301-AA02	Phase 1B	2	U (0.001) - 0.0024	0.0015	7900	1000
VOC	Xylenes (total)	301-AA05	Phase 1B	11	0.00067 - 0.29	0.051	7900	1000
VOC	Xylenes (total)	301-AB05	Phase 1B	6	U (0.22) - 0.00146	0.019	7900	1000
VOC	Xylenes (total)	301-AC03	Phase 1B	2	U (0.005)	0.0015	7900	1000
VOC	Xylenes (total)	301-T01	Phase 1B	5	U (0.59) - 0.661	0.21	7900	1000
VOC	Xylenes (total)	301-T02	Phase 1B	2	0.301 - 0.52	0.41	7900	1000
VOC	Xylenes (total)	301-U01	Phase 1B	2	0.00031 - 0.36	0.18	7900	1000
VOC	Xylenes (total)	301-U03	Phase 1B	1	U (0.005)	0.0025	7900	1000
VOC	Xylenes (total)	301-V01	Phase 1B	7	0.0214 - 3.3	0.66	7900	1000
VOC	Xylenes (total)	301-V02	Phase 1B	19	U (1.2) - 0.48	0.11	7900	1000
VOC	Xylenes (total)	301-W01	Phase 1B	24	U (0.85) - 2.78	0.15	7900	1000
VOC	Xylenes (total)	301-X01	Phase 1B	9	0.0013 - 0.5	0.13	7900	1000
VOC	Xylenes (total)	301-Y01	Phase 1B	5	U (0.1) - 21.3	4.3	7900	1000
VOC	Xylenes (total)	301-Z01	Phase 1B	6	U (0.0011) - 0.0016	0.00077	7900	1000
VOC	Xylenes (total)	301-Z02	Phase 1B	2	U (0.005)	0.0013	7900	1000

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Xylenes (total)	301-Z03	Phase 1B	5	U (0.21) - 0.0686	0.035	7900	1000
VOC	Xylenes (total)	302-AD06	Phase 1B	2	0.00072 - 0.00072	0.025	7900	1000
VOC	Xylenes (total)	302-AD07	Phase 1B	2	U (0.0025)	0.0011	7900	1000
VOC	Xylenes (total)	302-AE04	Phase 1B	8	0.0019 - 0.275	0.057	7900	1000
VOC	Xylenes (total)	302-AE05	Phase 1B	20	U (0.0055) - 0.0589	0.0067	7900	1000
VOC	Xylenes (total)	302-AE07	Phase 1B	3	U (0.095) - 0.005	0.018	7900	1000
VOC	Xylenes (total)	302-AE08	Phase 1B	3	U (0.0021) - 0.001075	0.0010	7900	1000
VOC	Xylenes (total)	302-AF03	Phase 1B	2	0.25 - 22	11	7900	1000
VOC	Xylenes (total)	302-AF04	Phase 1B	11	U (0.12) - 0.1165	0.017	7900	1000
VOC	Xylenes (total)	302-AF05	Phase 1B	2	U (1) - 56	28	7900	1000
VOC	Xylenes (total)	302-AF09	Phase 1B	5	U (0.1) - 0.617	0.12	7900	1000
VOC	Xylenes (total)	302-AG04	Phase 1B	3	U (0.14) - 0.894	0.30	7900	1000
VOC	Xylenes (total)	302-AG06	Phase 1B	5	U (0.21) - 2.25	0.50	7900	1000
VOC	Xylenes (total)	302-AH04	Phase 1B	8	U (0.067) - 3	0.55	7900	1000
VOC	Xylenes (total)	302-AH05	Phase 1B	2	0.00074 - 11.6	5.8	7900	1000
VOC	Xylenes (total)	302-AH06	Phase 1B	4	U (0.00377)	0.0012	7900	1000
VOC	Xylenes (total)	302-AH07	Phase 1B	12	U (0.005) - 0.007	0.0017	7900	1000
VOC	Xylenes (total)	302-AI05	Phase 1B	3	U (0.11)	0.029	7900	1000
VOC	Xylenes (total)	302-AI06	Phase 1B	9	U (0.1) - 0.0306	0.0059	7900	1000
VOC	Xylenes (total)	302-AI07	Phase 1B	8	U (0.51) - 0.0007	0.066	7900	1000
VOC	Xylenes (total)	302-AI08	Phase 1B	2	0.339 - 0.339	0.17	7900	1000
VOC	Xylenes (total)	302-AI09	Phase 1B	3	U (0.00089)	0.00037	7900	1000
VOC	Xylenes (total)	302-AK05	Phase 1B	2	U (0.00355)	0.0017	7900	1000
VOC	Xylenes (total)	302-AK07	Phase 1B	2	U (0.605)	0.15	7900	1000
VOC	Xylenes (total)	302-AL03	Phase 1B	2	U (0.5) - 0.712	0.36	7900	1000
VOC	Xylenes (total)	302-AL05	Phase 1B	5	U (0.13) - 0.09	0.066	7900	1000
VOC	Xylenes (total)	302-AL08	Phase 1B	2	U (0.0009)	0.00038	7900	1000
VOC	Xylenes (total)	302-AN01	Phase 1B	2	U (0.0012)	0.00055	7900	1000
VOC	Xylenes (total)	302-AN03	Phase 1B	1	0.003 - 0.003	0.0030	7900	1000
VOC	Xylenes (total)	302-AO02	Phase 1B	7	0.026 - 50	8.9	7900	1000
VOC	Xylenes (total)	302-AO05	Phase 1B	1	0.005 - 0.005	0.0050	7900	1000
VOC	Xylenes (total)	302-AP02	Phase 1B	2	U (0.0013)	0.00063	7900	1000
VOC	Xylenes (total)	302-AP03	Phase 1B	23	0.0009 - 2.42	0.12	7900	1000
VOC	Xylenes (total)	302-AP04	Phase 1B	3	U (0.12) - 0.418	0.14	7900	1000
VOC	Xylenes (total)	302-AP05	Phase 1B	2	U (0.0014)	0.00068	7900	1000
VOC	Xylenes (total)	302-AQ01	Phase 1B	2	U (0.006)	0.0030	7900	1000
VOC	Xylenes (total)	302-AQ04	Phase 1B	2	U (0.00088)	0.00043	7900	1000
VOC	Xylenes (total)	302-AR01	Phase 1B	2	U (0.006)	0.0028	7900	1000
VOC	Xylenes (total)	302-AR04	Phase 1B	3	U (0.0011)	0.00050	7900	1000
VOC	Xylenes (total)	302-AS04	Phase 1B	2	U (0.00381)	0.0019	7900	1000
VOC	Xylenes (total)	302-AT01	Phase 1B	2	0.0314 - 0.0808	0.056	7900	1000
VOC	Xylenes (total)	302-AT02	Phase 1B	2	U (0.23) - 1.32	0.66	7900	1000
VOC	Xylenes (total)	302-AT03	Phase 1B	4	U (0.11)	0.014	7900	1000
VOC	Xylenes (total)	302-AU01	Phase 1B	2	U (0.001)	0.00047	7900	1000
VOC	Xylenes (total)	302-AU02	Phase 1B	8	0.01 - 0.01	0.0089	7900	1000
VOC	Xylenes (total)	302-AU03	Phase 1B	2	U (0.0019)	0.00090	7900	1000
VOC	Xylenes (total)	302-AV02	Phase 1B	4	U (0.11) - 8.7	2.2	7900	1000
VOC	Xylenes (total)	302-AV04	Phase 1B	2	U (0.00377)	0.0018	7900	1000
VOC	Xylenes (total)	302-AW02	Phase 1B	2	U (0.28)	0.071	7900	1000
VOC	Xylenes (total)	302-AX02	Phase 1B	3	U (0.11)	0.019	7900	1000
VOC	Xylenes (total)	302-AY02	Phase 1B	19	0.0012 - 500	58	7900	1000
VOC	Xylenes (total)	302-AY03	Phase 1B	2	U (0.0013)	0.00058	7900	1000
VOC	Xylenes (total)	302-AY05	Phase 1B	2	U (0.00371)	0.0018	7900	1000
VOC	Xylenes (total)	302-AZ02	Phase 1B	11	4 - 110	16	7900	1000

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
VOC	Xylenes (total)	302-AZ03	Phase 1B	1	0.12 - 0.12	0.12	7900	1000
VOC	Xylenes (total)	302-BA03	Phase 1B	1	U (0.006)	0.0030	7900	1000
VOC	Xylenes (total)	302-BB07	Phase 1B	2	U (0.131) - 0.29	0.15	7900	1000
VOC	Xylenes (total)	302-BB08	Phase 1B	1	U (0.005)	0.0025	7900	1000
VOC	Xylenes (total)	302-BC06	Phase 1B	1	U (0.006)	0.0030	7900	1000
SVOC	Anthracene	301-AA02	Phase 1B	2	U (0.039)	0.019	190000	350
SVOC	Anthracene	301-AA05	Phase 1B	11	U (2.1)	0.42	190000	350
SVOC	Anthracene	301-AB05	Phase 1B	6	U (0.4) - 0.047	0.067	190000	350
SVOC	Anthracene	301-AC03	Phase 1B	2	0.142 - 0.39	0.27	190000	350
SVOC	Anthracene	301-T01	Phase 1B	5	U (5.3) - 4.1	1.9	190000	350
SVOC	Anthracene	301-T02	Phase 1B	2	U (1.9) - 0.54	0.31	190000	350
SVOC	Anthracene	301-U01	Phase 1B	2	U (0.19) - 0.71	0.36	190000	350
SVOC	Anthracene	301-U03	Phase 1B	1	U (0.17)	0.085	190000	350
SVOC	Anthracene	301-V01	Phase 1B	7	U (0.041) - 0.293	0.078	190000	350
SVOC	Anthracene	301-V02	Phase 1B	19	0.055 - 1.1	0.16	190000	350
SVOC	Anthracene	301-W01	Phase 1B	24	U (0.13) - 0.72	0.069	190000	350
SVOC	Anthracene	301-X01	Phase 1B	11	U (0.18) - 0.497	0.19	190000	350
SVOC	Anthracene	301-Y01	Phase 1B	10	0.129 - 0.763	0.13	190000	350
SVOC	Anthracene	301-Y02	Phase 1B	4	U (0.17) - 0.45	0.13	190000	350
SVOC	Anthracene	301-Z01	Phase 1B	6	U (0.039)	0.018	190000	350
SVOC	Anthracene	301-Z02	Phase 1B	2	U (0.18)	0.054	190000	350
SVOC	Anthracene	301-Z03	Phase 1B	5	U (0.41) - 1.33	0.39	190000	350
SVOC	Anthracene	302-AD06	Phase 1B	2	0.0158 - 0.0158	0.018	190000	350
SVOC	Anthracene	302-AD07	Phase 1B	2	U (0.11)	0.053	190000	350
SVOC	Anthracene	302-AE03	Phase 1B	4	0.073 - 3.3	0.92	190000	350
SVOC	Anthracene	302-AE04	Phase 1B	8	U (0.56) - 0.76	0.14	190000	350
SVOC	Anthracene	302-AE05	Phase 1B	20	0.062 - 0.092	0.057	190000	350
SVOC	Anthracene	302-AE07	Phase 1B	3	U (0.11) - 0.209	0.10	190000	350
SVOC	Anthracene	302-AE08	Phase 1B	3	U (0.12)	0.040	190000	350
SVOC	Anthracene	302-AF04	Phase 1B	22	U (0.11) - 0.52	0.057	190000	350
SVOC	Anthracene	302-AF05	Phase 1B	2	0.0744 - 0.0768	0.076	190000	350
SVOC	Anthracene	302-AF09	Phase 1B	5	U (0.04) - 0.0934	0.034	190000	350
SVOC	Anthracene	302-AG04	Phase 1B	9	U (0.11) - 1.4	0.27	190000	350
SVOC	Anthracene	302-AG06	Phase 1B	5	U (0.041)	0.019	190000	350
SVOC	Anthracene	302-AG08	Phase 1B	6	0.078 - 4	0.88	190000	350
SVOC	Anthracene	302-AH05	Phase 1B	11	0.0383 - 0.69	0.21	190000	350
SVOC	Anthracene	302-AH06	Phase 1B	4	0.0303 - 0.0303	0.022	190000	350
SVOC	Anthracene	302-AH07	Phase 1B	21	U (0.37) - 0.6	0.078	190000	350
SVOC	Anthracene	302-AH08	Phase 1B	13	U (0.041) - 0.48	0.11	190000	350
SVOC	Anthracene	302-AI05	Phase 1B	11	U (0.12) - 0.21	0.065	190000	350
SVOC	Anthracene	302-AI06	Phase 1B	19	0.0626 - 1.2	0.16	190000	350
SVOC	Anthracene	302-AI07	Phase 1B	10	U (0.375) - 0.156	0.090	190000	350
SVOC	Anthracene	302-AI08	Phase 1B	2	U (0.38)	0.11	190000	350
SVOC	Anthracene	302-AI09	Phase 1B	3	U (0.041) - 0.0977	0.045	190000	350
SVOC	Anthracene	302-AJ05	Phase 1B	2	U (0.12)	0.060	190000	350
SVOC	Anthracene	302-AJ06	Phase 1B	5	0.1 - 0.1	0.068	190000	350
SVOC	Anthracene	302-AK05	Phase 1B	5	U (0.2) - 0.11	0.060	190000	350
SVOC	Anthracene	302-AK07	Phase 1B	13	U (0.0426) - 2	0.38	190000	350
SVOC	Anthracene	302-AL03	Phase 1B	2	0.0191 - 0.873	0.45	190000	350
SVOC	Anthracene	302-AL05	Phase 1B	13	U (0.42) - 1.2	0.34	190000	350
SVOC	Anthracene	302-AL08	Phase 1B	2	U (0.041)	0.019	190000	350
SVOC	Anthracene	302-AN01	Phase 1B	2	0.0176 - 0.0176	0.017	190000	350
SVOC	Anthracene	302-AP02	Phase 1B	2	0.156 - 0.156	0.089	190000	350
SVOC	Anthracene	302-AP03	Phase 1B	23	U (0.4) - 0.061	0.056	190000	350

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Anthracene	302-AP04	Phase 1B	2	0.0207 - 0.0207	0.020	190000	350
SVOC	Anthracene	302-AP05	Phase 1B	2	U (0.035)	0.017	190000	350
SVOC	Anthracene	302-AQ01	Phase 1B	2	0.081 - 0.85	0.47	190000	350
SVOC	Anthracene	302-AQ04	Phase 1B	2	U (0.11)	0.055	190000	350
SVOC	Anthracene	302-AR01	Phase 1B	2	0.12 - 2.7	1.4	190000	350
SVOC	Anthracene	302-AR04	Phase 1B	3	U (0.12)	0.050	190000	350
SVOC	Anthracene	302-AS04	Phase 1B	2	U (0.0419)	0.021	190000	350
SVOC	Anthracene	302-AT01	Phase 1B	2	U (0.23)	0.12	190000	350
SVOC	Anthracene	302-AT02	Phase 1B	2	0.121 - 0.121	0.25	190000	350
SVOC	Anthracene	302-AT03	Phase 1B	4	U (0.039) - 0.0676	0.031	190000	350
SVOC	Anthracene	302-AU01	Phase 1B	4	U (0.075) - 0.71	0.23	190000	350
SVOC	Anthracene	302-AU02	Phase 1B	8	U (4)	0.30	190000	350
SVOC	Anthracene	302-AU03	Phase 1B	2	U (0.12)	0.060	190000	350
SVOC	Anthracene	302-AV02	Phase 1B	4	U (0.59) - 1.1	0.32	190000	350
SVOC	Anthracene	302-AV04	Phase 1B	2	U (0.0415)	0.020	190000	350
SVOC	Anthracene	302-AW02	Phase 1B	2	2.1 - 2.1	1.1	190000	350
SVOC	Anthracene	302-AX02	Phase 1B	3	U (0.038)	0.018	190000	350
SVOC	Anthracene	302-AY02	Phase 1B	13	0.63 - 13.2	2.8	190000	350
SVOC	Anthracene	302-AY03	Phase 1B	2	0.0421 - 0.0486	0.045	190000	350
SVOC	Anthracene	302-AY05	Phase 1B	2	U (0.19)	0.058	190000	350
SVOC	Anthracene	302-AZ02	Phase 1B	8	U (25) - 2.6	2.6	190000	350
SVOC	Anthracene	302-AZ03	Phase 1B	1	U (2)	1.0	190000	350
SVOC	Anthracene	302-BA03	Phase 1B	3	U (0.075)	0.037	190000	350
SVOC	Anthracene	302-BB07	Phase 1B	2	U (0.00774) - 0.131	0.067	190000	350
SVOC	Anthracene	302-BB08	Phase 1B	1	U (0.19)	0.095	190000	350
SVOC	Anthracene	302-BC06	Phase 1B	1	U (0.23)	0.12	190000	350
SVOC	Benzo(a)anthracene	301-AA02	Phase 1B	2	0.0398 - 0.0398	0.029	130	340
SVOC	Benzo(a)anthracene	301-AA05	Phase 1B	11	U (0.21)	0.042	130	340
SVOC	Benzo(a)anthracene	301-AB05	Phase 1B	6	U (0.19) - 0.202	0.071	130	340
SVOC	Benzo(a)anthracene	301-AC03	Phase 1B	2	0.609 - 0.86	0.73	130	340
SVOC	Benzo(a)anthracene	301-T01	Phase 1B	5	U (5.3) - 9.6	2.7	130	340
SVOC	Benzo(a)anthracene	301-T02	Phase 1B	2	0.125 - 2.1	1.1	130	340
SVOC	Benzo(a)anthracene	301-U01	Phase 1B	2	U (0.19) - 1.6	0.81	130	340
SVOC	Benzo(a)anthracene	301-U03	Phase 1B	1	U (0.17)	0.085	130	340
SVOC	Benzo(a)anthracene	301-V01	Phase 1B	7	U (0.041) - 0.083	0.038	130	340
SVOC	Benzo(a)anthracene	301-V02	Phase 1B	19	U (1.6) - 17	1.0	130	340
SVOC	Benzo(a)anthracene	301-W01	Phase 1B	24	0.0018 - 0.46	0.055	130	340
SVOC	Benzo(a)anthracene	301-X01	Phase 1B	11	U (0.18) - 0.733	0.19	130	340
SVOC	Benzo(a)anthracene	301-Y01	Phase 1B	10	0.0145 - 0.349	0.084	130	340
SVOC	Benzo(a)anthracene	301-Y02	Phase 1B	4	U (0.17) - 0.37	0.11	130	340
SVOC	Benzo(a)anthracene	301-Z01	Phase 1B	6	U (0.039) - 0.0246	0.019	130	340
SVOC	Benzo(a)anthracene	301-Z02	Phase 1B	2	U (0.18) - 0.32	0.17	130	340
SVOC	Benzo(a)anthracene	301-Z03	Phase 1B	5	0.0444 - 0.241	0.11	130	340
SVOC	Benzo(a)anthracene	302-AD06	Phase 1B	2	0.0682 - 0.0682	0.044	130	340
SVOC	Benzo(a)anthracene	302-AD07	Phase 1B	2	0.12 - 0.12	0.085	130	340
SVOC	Benzo(a)anthracene	302-AE03	Phase 1B	4	U (0.18) - 0.57	0.16	130	340
SVOC	Benzo(a)anthracene	302-AE04	Phase 1B	8	0.0159 - 0.16	0.061	130	340
SVOC	Benzo(a)anthracene	302-AE05	Phase 1B	20	0.03 - 0.44	0.085	130	340
SVOC	Benzo(a)anthracene	302-AE07	Phase 1B	3	U (0.11) - 0.468	0.19	130	340
SVOC	Benzo(a)anthracene	302-AE08	Phase 1B	3	0.0014 - 0.0014	0.039	130	340
SVOC	Benzo(a)anthracene	302-AF04	Phase 1B	22	0.0191 - 0.029	0.033	130	340
SVOC	Benzo(a)anthracene	302-AF05	Phase 1B	2	0.02 - 0.242	0.13	130	340
SVOC	Benzo(a)anthracene	302-AF09	Phase 1B	5	U (0.04) - 0.0356	0.022	130	340
SVOC	Benzo(a)anthracene	302-AG04	Phase 1B	9	0.0368 - 0.0368	0.026	130	340

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Benzo(a)anthracene	302-AG06	Phase 1B	5	U (0.041)	0.019	130	340
SVOC	Benzo(a)anthracene	302-AG08	Phase 1B	6	0.11 - 2.3	0.64	130	340
SVOC	Benzo(a)anthracene	302-AH05	Phase 1B	11	0.023 - 0.71	0.22	130	340
SVOC	Benzo(a)anthracene	302-AH06	Phase 1B	4	0.0807 - 0.0807	0.035	130	340
SVOC	Benzo(a)anthracene	302-AH07	Phase 1B	21	U (0.37) - 0.86	0.11	130	340
SVOC	Benzo(a)anthracene	302-AH08	Phase 1B	13	U (0.041) - 0.78	0.21	130	340
SVOC	Benzo(a)anthracene	302-AI05	Phase 1B	11	0.0411 - 0.63	0.12	130	340
SVOC	Benzo(a)anthracene	302-AI06	Phase 1B	19	0.02 - 2.2	0.27	130	340
SVOC	Benzo(a)anthracene	302-AI07	Phase 1B	10	U (0.375) - 0.34	0.13	130	340
SVOC	Benzo(a)anthracene	302-AI08	Phase 1B	2	U (0.38)	0.11	130	340
SVOC	Benzo(a)anthracene	302-AI09	Phase 1B	3	U (0.041) - 0.223	0.087	130	340
SVOC	Benzo(a)anthracene	302-AJ05	Phase 1B	2	U (0.12) - 0.045	0.053	130	340
SVOC	Benzo(a)anthracene	302-AJ06	Phase 1B	5	0.082 - 0.28	0.11	130	340
SVOC	Benzo(a)anthracene	302-AK05	Phase 1B	5	0.11 - 0.59	0.17	130	340
SVOC	Benzo(a)anthracene	302-AK07	Phase 1B	13	U (0.0426) - 3.5	0.67	130	340
SVOC	Benzo(a)anthracene	302-AL03	Phase 1B	2	0.0804 - 0.0804	0.063	130	340
SVOC	Benzo(a)anthracene	302-AL05	Phase 1B	13	U (0.42) - 2.8	0.85	130	340
SVOC	Benzo(a)anthracene	302-AL08	Phase 1B	2	U (0.041)	0.019	130	340
SVOC	Benzo(a)anthracene	302-AN01	Phase 1B	2	0.0848 - 0.0848	0.051	130	340
SVOC	Benzo(a)anthracene	302-AP02	Phase 1B	2	0.396 - 0.396	0.21	130	340
SVOC	Benzo(a)anthracene	302-AP03	Phase 1B	23	U (0.4) - 0.17	0.063	130	340
SVOC	Benzo(a)anthracene	302-AP04	Phase 1B	2	0.0748 - 0.0748	0.047	130	340
SVOC	Benzo(a)anthracene	302-AP05	Phase 1B	2	U (0.035)	0.017	130	340
SVOC	Benzo(a)anthracene	302-AQ01	Phase 1B	2	0.27 - 1.9	1.1	130	340
SVOC	Benzo(a)anthracene	302-AQ04	Phase 1B	2	U (0.11)	0.055	130	340
SVOC	Benzo(a)anthracene	302-AR01	Phase 1B	2	0.24 - 9.6	4.9	130	340
SVOC	Benzo(a)anthracene	302-AR04	Phase 1B	3	U (0.12)	0.050	130	340
SVOC	Benzo(a)anthracene	302-AS04	Phase 1B	2	U (0.0419)	0.021	130	340
SVOC	Benzo(a)anthracene	302-AT02	Phase 1B	2	0.131 - 0.131	0.26	130	340
SVOC	Benzo(a)anthracene	302-AT03	Phase 1B	4	0.0313 - 0.0313	0.022	130	340
SVOC	Benzo(a)anthracene	302-AU01	Phase 1B	4	U (0.31) - 1.1	0.41	130	340
SVOC	Benzo(a)anthracene	302-AU02	Phase 1B	8	U (4)	0.30	130	340
SVOC	Benzo(a)anthracene	302-AU03	Phase 1B	2	U (0.12)	0.060	130	340
SVOC	Benzo(a)anthracene	302-AV02	Phase 1B	4	U (0.59)	0.12	130	340
SVOC	Benzo(a)anthracene	302-AV04	Phase 1B	2	U (0.0415)	0.020	130	340
SVOC	Benzo(a)anthracene	302-AW02	Phase 1B	2	2.6 - 2.6	1.3	130	340
SVOC	Benzo(a)anthracene	302-AX02	Phase 1B	3	U (0.038)	0.018	130	340
SVOC	Benzo(a)anthracene	302-AY02	Phase 1B	13	0.0454 - 11.4	4.3	130	340
SVOC	Benzo(a)anthracene	302-AY03	Phase 1B	2	0.0913 - 0.137	0.11	130	340
SVOC	Benzo(a)anthracene	302-AY05	Phase 1B	2	U (0.19)	0.058	130	340
SVOC	Benzo(a)anthracene	302-AZ02	Phase 1B	8	U (100) - 3.4	9.4	130	340
SVOC	Benzo(a)anthracene	302-AZ03	Phase 1B	1	0.62 - 0.62	0.62	130	340
SVOC	Benzo(a)anthracene	302-BA03	Phase 1B	3	U (0.31)	0.15	130	340
SVOC	Benzo(a)anthracene	302-BB07	Phase 1B	2	U (0.00774)	0.0037	130	340
SVOC	Benzo(a)anthracene	302-BB08	Phase 1B	1	0.49 - 0.49	0.49	130	340
SVOC	Benzo(a)anthracene	302-BC06	Phase 1B	1	U (0.23)	0.12	130	340
SVOC	Benzo(a)pyrene	301-AA02	Phase 1B	2	0.0379 - 0.0379	0.028	91	46
SVOC	Benzo(a)pyrene	301-AA05	Phase 1B	11	U (0.21) - 0.14	0.050	91	46
SVOC	Benzo(a)pyrene	301-AB05	Phase 1B	6	U (0.19) - 0.102	0.057	91	46
SVOC	Benzo(a)pyrene	301-AC03	Phase 1B	2	0.47 - 0.639	0.55	91	46
SVOC	Benzo(a)pyrene	301-T01	Phase 1B	5	U (5.3) - 6.3	2.3	91	46
SVOC	Benzo(a)pyrene	301-T02	Phase 1B	2	U (1.9) - 1.8	0.94	91	46
SVOC	Benzo(a)pyrene	301-U01	Phase 1B	2	U (0.19) - 1.3	0.66	91	46
SVOC	Benzo(a)pyrene	301-U03	Phase 1B	1	U (0.17)	0.085	91	46



**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Benzo(a)pyrene	301-V01	Phase 1B	7	U (0.041) - 0.056	0.027	91	46
SVOC	Benzo(a)pyrene	301-V02	Phase 1B	19	0.00085 - 12	0.81	91	46
SVOC	Benzo(a)pyrene	301-W01	Phase 1B	24	0.0023 - 0.64	0.074	91	46
SVOC	Benzo(a)pyrene	301-X01	Phase 1B	11	U (0.18) - 0.77	0.21	91	46
SVOC	Benzo(a)pyrene	301-Y01	Phase 1B	10	0.0359 - 0.281	0.078	91	46
SVOC	Benzo(a)pyrene	301-Y02	Phase 1B	4	U (0.17) - 0.52	0.15	91	46
SVOC	Benzo(a)pyrene	301-Z01	Phase 1B	6	U (0.039)	0.018	91	46
SVOC	Benzo(a)pyrene	301-Z02	Phase 1B	2	U (0.18) - 0.29	0.15	91	46
SVOC	Benzo(a)pyrene	301-Z03	Phase 1B	5	0.013 - 0.28	0.090	91	46
SVOC	Benzo(a)pyrene	302-AD06	Phase 1B	2	0.0664 - 0.0664	0.043	91	46
SVOC	Benzo(a)pyrene	302-AD07	Phase 1B	2	0.14 - 0.14	0.11	91	46
SVOC	Benzo(a)pyrene	302-AE03	Phase 1B	4	U (0.18)	0.036	91	46
SVOC	Benzo(a)pyrene	302-AE04	Phase 1B	8	0.0161 - 0.0161	0.098	91	46
SVOC	Benzo(a)pyrene	302-AE05	Phase 1B	20	0.15 - 0.4	0.10	91	46
SVOC	Benzo(a)pyrene	302-AE07	Phase 1B	3	U (0.11) - 0.402	0.17	91	46
SVOC	Benzo(a)pyrene	302-AE08	Phase 1B	3	U (0.15)	0.051	91	46
SVOC	Benzo(a)pyrene	302-AF04	Phase 1B	22	U (0.15)	0.042	91	46
SVOC	Benzo(a)pyrene	302-AF05	Phase 1B	2	0.274 - 0.274	0.15	91	46
SVOC	Benzo(a)pyrene	302-AF09	Phase 1B	5	U (0.04)	0.019	91	46
SVOC	Benzo(a)pyrene	302-AG04	Phase 1B	9	0.039 - 0.039	0.028	91	46
SVOC	Benzo(a)pyrene	302-AG06	Phase 1B	5	U (0.041)	0.019	91	46
SVOC	Benzo(a)pyrene	302-AG08	Phase 1B	6	0.089 - 1.8	0.47	91	46
SVOC	Benzo(a)pyrene	302-AH05	Phase 1B	11	0.0438 - 0.66	0.24	91	46
SVOC	Benzo(a)pyrene	302-AH06	Phase 1B	4	0.0772 - 0.0772	0.034	91	46
SVOC	Benzo(a)pyrene	302-AH07	Phase 1B	21	U (0.37) - 0.51	0.10	91	46
SVOC	Benzo(a)pyrene	302-AH08	Phase 1B	13	U (0.041) - 0.69	0.20	91	46
SVOC	Benzo(a)pyrene	302-AI05	Phase 1B	11	0.0437 - 0.88	0.16	91	46
SVOC	Benzo(a)pyrene	302-AI06	Phase 1B	19	0.0242 - 3.2	0.38	91	46
SVOC	Benzo(a)pyrene	302-AI07	Phase 1B	10	U (0.375) - 0.4	0.14	91	46
SVOC	Benzo(a)pyrene	302-AI08	Phase 1B	2	U (0.38)	0.11	91	46
SVOC	Benzo(a)pyrene	302-AI09	Phase 1B	3	U (0.041) - 0.194	0.077	91	46
SVOC	Benzo(a)pyrene	302-AJ05	Phase 1B	2	U (0.16) - 0.05	0.065	91	46
SVOC	Benzo(a)pyrene	302-AJ06	Phase 1B	5	0.089 - 0.3	0.13	91	46
SVOC	Benzo(a)pyrene	302-AK05	Phase 1B	5	0.052 - 0.65	0.18	91	46
SVOC	Benzo(a)pyrene	302-AK07	Phase 1B	13	U (0.0426) - 2.6	0.49	91	46
SVOC	Benzo(a)pyrene	302-AL03	Phase 1B	2	0.0939 - 0.0939	0.070	91	46
SVOC	Benzo(a)pyrene	302-AL05	Phase 1B	13	U (0.42) - 5	0.92	91	46
SVOC	Benzo(a)pyrene	302-AL08	Phase 1B	2	U (0.041)	0.019	91	46
SVOC	Benzo(a)pyrene	302-AN01	Phase 1B	2	0.0912 - 0.0912	0.054	91	46
SVOC	Benzo(a)pyrene	302-AP02	Phase 1B	2	0.45 - 0.45	0.24	91	46
SVOC	Benzo(a)pyrene	302-AP03	Phase 1B	23	U (0.4) - 0.18	0.072	91	46
SVOC	Benzo(a)pyrene	302-AP04	Phase 1B	2	0.0952 - 0.0952	0.057	91	46
SVOC	Benzo(a)pyrene	302-AP05	Phase 1B	2	U (0.035)	0.017	91	46
SVOC	Benzo(a)pyrene	302-AQ01	Phase 1B	2	0.36 - 1.6	0.98	91	46
SVOC	Benzo(a)pyrene	302-AQ04	Phase 1B	2	U (0.11)	0.055	91	46
SVOC	Benzo(a)pyrene	302-AR01	Phase 1B	2	0.22 - 8.4	4.3	91	46
SVOC	Benzo(a)pyrene	302-AR04	Phase 1B	3	0.0442 - 0.0442	0.047	91	46
SVOC	Benzo(a)pyrene	302-AS04	Phase 1B	2	U (0.0419)	0.021	91	46
SVOC	Benzo(a)pyrene	302-AT01	Phase 1B	2	U (0.3)	0.15	91	46
SVOC	Benzo(a)pyrene	302-AT02	Phase 1B	2	0.174 - 0.174	0.28	91	46
SVOC	Benzo(a)pyrene	302-AT03	Phase 1B	4	0.0353 - 0.0353	0.023	91	46
SVOC	Benzo(a)pyrene	302-AU01	Phase 1B	4	0.15 - 1.4	0.49	91	46
SVOC	Benzo(a)pyrene	302-AU02	Phase 1B	8	U (4)	0.32	91	46
SVOC	Benzo(a)pyrene	302-AU03	Phase 1B	2	U (0.16)	0.080	91	46

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Benzo(a)pyrene	302-AV02	Phase 1B	4	U (0.78)	0.16	91	46
SVOC	Benzo(a)pyrene	302-AV04	Phase 1B	2	U (0.0415)	0.020	91	46
SVOC	Benzo(a)pyrene	302-AW02	Phase 1B	2	1.4 - 1.4	0.74	91	46
SVOC	Benzo(a)pyrene	302-AX02	Phase 1B	3	U (0.038)	0.018	91	46
SVOC	Benzo(a)pyrene	302-AY02	Phase 1B	13	0.043 - 8.22	2.4	91	46
SVOC	Benzo(a)pyrene	302-AY03	Phase 1B	2	0.0839 - 0.11	0.1	91	46
SVOC	Benzo(a)pyrene	302-AY05	Phase 1B	2	U (0.19)	0.058	91	46
SVOC	Benzo(a)pyrene	302-AZ02	Phase 1B	8	U (32) - 3.8	3.5	91	46
SVOC	Benzo(a)pyrene	302-AZ03	Phase 1B	1	U (2)	1.0	91	46
SVOC	Benzo(a)pyrene	302-BA03	Phase 1B	3	U (0.099)	0.049	91	46
SVOC	Benzo(a)pyrene	302-BB07	Phase 1B	2	U (0.00774)	0.0037	91	46
SVOC	Benzo(a)pyrene	302-BB08	Phase 1B	1	0.55 - 0.55	0.55	91	46
SVOC	Benzo(a)pyrene	302-BC06	Phase 1B	1	U (0.23)	0.12	91	46
SVOC	Benzo(b)fluoranthene	301-AA02	Phase 1B	2	0.0442 - 0.0442	0.031	76	170
SVOC	Benzo(b)fluoranthene	301-AA05	Phase 1B	11	U (0.21) - 0.44	0.11	76	170
SVOC	Benzo(b)fluoranthene	301-AB05	Phase 1B	6	U (0.19) - 0.0918	0.056	76	170
SVOC	Benzo(b)fluoranthene	301-AC03	Phase 1B	2	0.58 - 0.718	0.65	76	170
SVOC	Benzo(b)fluoranthene	301-T01	Phase 1B	5	U (5.3) - 8.1	2.4	76	170
SVOC	Benzo(b)fluoranthene	301-T02	Phase 1B	2	U (1.9) - 1.3	0.69	76	170
SVOC	Benzo(b)fluoranthene	301-U01	Phase 1B	2	U (0.19) - 1.7	0.86	76	170
SVOC	Benzo(b)fluoranthene	301-U03	Phase 1B	1	U (0.17)	0.085	76	170
SVOC	Benzo(b)fluoranthene	301-V01	Phase 1B	7	U (0.041) - 0.0686	0.027	76	170
SVOC	Benzo(b)fluoranthene	301-V02	Phase 1B	19	0.0014 - 4.7	0.43	76	170
SVOC	Benzo(b)fluoranthene	301-W01	Phase 1B	24	0.002 - 0.49	0.064	76	170
SVOC	Benzo(b)fluoranthene	301-X01	Phase 1B	11	U (0.55) - 0.897	0.23	76	170
SVOC	Benzo(b)fluoranthene	301-Y01	Phase 1B	10	0.0177 - 0.33	0.084	76	170
SVOC	Benzo(b)fluoranthene	301-Y02	Phase 1B	4	U (0.17) - 0.46	0.14	76	170
SVOC	Benzo(b)fluoranthene	301-Z01	Phase 1B	6	U (0.039) - 0.0192	0.019	76	170
SVOC	Benzo(b)fluoranthene	301-Z02	Phase 1B	2	U (0.18) - 0.34	0.18	76	170
SVOC	Benzo(b)fluoranthene	301-Z03	Phase 1B	5	0.017 - 0.2	0.077	76	170
SVOC	Benzo(b)fluoranthene	302-AD06	Phase 1B	2	0.0823 - 0.0823	0.051	76	170
SVOC	Benzo(b)fluoranthene	302-AD07	Phase 1B	2	0.18 - 0.18	0.12	76	170
SVOC	Benzo(b)fluoranthene	302-AE03	Phase 1B	4	U (0.18) - 0.036	0.040	76	170
SVOC	Benzo(b)fluoranthene	302-AE04	Phase 1B	8	0.0208 - 0.18	0.064	76	170
SVOC	Benzo(b)fluoranthene	302-AE05	Phase 1B	20	0.037 - 0.52	0.094	76	170
SVOC	Benzo(b)fluoranthene	302-AE07	Phase 1B	3	U (0.11) - 0.409	0.17	76	170
SVOC	Benzo(b)fluoranthene	302-AE08	Phase 1B	3	0.00078 - 0.00078	0.039	76	170
SVOC	Benzo(b)fluoranthene	302-AF04	Phase 1B	22	U (0.11) - 0.045	0.034	76	170
SVOC	Benzo(b)fluoranthene	302-AF05	Phase 1B	2	0.306 - 0.306	0.16	76	170
SVOC	Benzo(b)fluoranthene	302-AF09	Phase 1B	5	U (0.04)	0.019	76	170
SVOC	Benzo(b)fluoranthene	302-AG04	Phase 1B	9	0.048 - 0.048	0.027	76	170
SVOC	Benzo(b)fluoranthene	302-AG06	Phase 1B	5	U (0.041)	0.019	76	170
SVOC	Benzo(b)fluoranthene	302-AG08	Phase 1B	6	0.066 - 2.1	0.52	76	170
SVOC	Benzo(b)fluoranthene	302-AH05	Phase 1B	11	0.043 - 0.79	0.26	76	170
SVOC	Benzo(b)fluoranthene	302-AH06	Phase 1B	4	0.0964 - 0.0964	0.039	76	170
SVOC	Benzo(b)fluoranthene	302-AH07	Phase 1B	21	U (0.37) - 0.64	0.11	76	170
SVOC	Benzo(b)fluoranthene	302-AH08	Phase 1B	13	U (0.041) - 0.87	0.22	76	170
SVOC	Benzo(b)fluoranthene	302-AI05	Phase 1B	11	0.0462 - 0.87	0.16	76	170
SVOC	Benzo(b)fluoranthene	302-AI06	Phase 1B	19	0.035 - 2.9	0.36	76	170
SVOC	Benzo(b)fluoranthene	302-AI07	Phase 1B	10	U (0.375) - 0.62	0.17	76	170
SVOC	Benzo(b)fluoranthene	302-AI08	Phase 1B	2	U (0.38)	0.11	76	170
SVOC	Benzo(b)fluoranthene	302-AI09	Phase 1B	3	U (0.041) - 0.225	0.088	76	170
SVOC	Benzo(b)fluoranthene	302-AJ05	Phase 1B	2	U (0.12) - 0.056	0.058	76	170
SVOC	Benzo(b)fluoranthene	302-AJ06	Phase 1B	5	0.1 - 0.34	0.12	76	170

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Benzo(b)fluoranthene	302-AK05	Phase 1B	5	0.0446 - 1.2	0.31	76	170
SVOC	Benzo(b)fluoranthene	302-AK07	Phase 1B	13	U (0.0426) - 3.2	0.63	76	170
SVOC	Benzo(b)fluoranthene	302-AL03	Phase 1B	2	0.118 - 0.118	0.082	76	170
SVOC	Benzo(b)fluoranthene	302-AL05	Phase 1B	13	U (0.42) - 3.9	1	76	170
SVOC	Benzo(b)fluoranthene	302-AL08	Phase 1B	2	U (0.041)	0.019	76	170
SVOC	Benzo(b)fluoranthene	302-AN01	Phase 1B	2	0.0992 - 0.0992	0.058	76	170
SVOC	Benzo(b)fluoranthene	302-AP02	Phase 1B	2	0.598 - 0.598	0.31	76	170
SVOC	Benzo(b)fluoranthene	302-AP03	Phase 1B	23	U (0.4) - 0.189	0.068	76	170
SVOC	Benzo(b)fluoranthene	302-AP04	Phase 1B	2	0.106 - 0.106	0.063	76	170
SVOC	Benzo(b)fluoranthene	302-AP05	Phase 1B	2	U (0.035)	0.017	76	170
SVOC	Benzo(b)fluoranthene	302-AQ01	Phase 1B	2	0.47 - 1.9	1.2	76	170
SVOC	Benzo(b)fluoranthene	302-AQ04	Phase 1B	2	0.13 - 0.13	0.093	76	170
SVOC	Benzo(b)fluoranthene	302-AR01	Phase 1B	2	0.32 - 11	5.7	76	170
SVOC	Benzo(b)fluoranthene	302-AR04	Phase 1B	3	0.15 - 0.15	0.082	76	170
SVOC	Benzo(b)fluoranthene	302-AS04	Phase 1B	2	U (0.0419)	0.021	76	170
SVOC	Benzo(b)fluoranthene	302-AT02	Phase 1B	2	0.218 - 13.8	7.0	76	170
SVOC	Benzo(b)fluoranthene	302-AT03	Phase 1B	4	0.0326 - 0.0326	0.023	76	170
SVOC	Benzo(b)fluoranthene	302-AU01	Phase 1B	4	0.16 - 1.2	0.44	76	170
SVOC	Benzo(b)fluoranthene	302-AU02	Phase 1B	8	U (4)	0.30	76	170
SVOC	Benzo(b)fluoranthene	302-AU03	Phase 1B	2	U (0.12)	0.060	76	170
SVOC	Benzo(b)fluoranthene	302-AV02	Phase 1B	4	U (0.59)	0.12	76	170
SVOC	Benzo(b)fluoranthene	302-AV04	Phase 1B	2	U (0.0415)	0.020	76	170
SVOC	Benzo(b)fluoranthene	302-AW02	Phase 1B	2	2 - 2	1.0	76	170
SVOC	Benzo(b)fluoranthene	302-AX02	Phase 1B	3	U (0.038)	0.018	76	170
SVOC	Benzo(b)fluoranthene	302-AY02	Phase 1B	12	0.0646 - 8.6	3.7	76	170
SVOC	Benzo(b)fluoranthene	302-AY03	Phase 1B	2	0.102 - 0.126	0.11	76	170
SVOC	Benzo(b)fluoranthene	302-AY05	Phase 1B	2	U (0.19)	0.058	76	170
SVOC	Benzo(b)fluoranthene	302-AZ02	Phase 1B	8	U (62) - 5.5	6.3	76	170
SVOC	Benzo(b)fluoranthene	302-AZ03	Phase 1B	1	0.48 - 0.48	0.48	76	170
SVOC	Benzo(b)fluoranthene	302-BA03	Phase 1B	3	U (0.19)	0.095	76	170
SVOC	Benzo(b)fluoranthene	302-BB07	Phase 1B	2	U (0.00774)	0.0037	76	170
SVOC	Benzo(b)fluoranthene	302-BB08	Phase 1B	1	0.7 - 0.7	0.70	76	170
SVOC	Benzo(b)fluoranthene	302-BC06	Phase 1B	1	U (0.23)	0.12	76	170
SVOC	Benzo(g,h,i)perylene	301-AA02	Phase 1B	2	0.0337 - 0.0337	0.026	190000	180
SVOC	Benzo(g,h,i)perylene	301-AA05	Phase 1B	11	U (2.1) - 0.14	0.15	190000	180
SVOC	Benzo(g,h,i)perylene	301-AB05	Phase 1B	6	U (0.4) - 0.088	0.054	190000	180
SVOC	Benzo(g,h,i)perylene	301-AC03	Phase 1B	2	0.28 - 0.404	0.34	190000	180
SVOC	Benzo(g,h,i)perylene	301-T01	Phase 1B	5	U (5.3) - 2.6	1.6	190000	180
SVOC	Benzo(g,h,i)perylene	301-T02	Phase 1B	2	0.177 - 1.4	0.79	190000	180
SVOC	Benzo(g,h,i)perylene	301-U01	Phase 1B	2	U (0.19) - 0.82	0.42	190000	180
SVOC	Benzo(g,h,i)perylene	301-U03	Phase 1B	1	U (0.17)	0.085	190000	180
SVOC	Benzo(g,h,i)perylene	301-V01	Phase 1B	7	U (0.041) - 0.0483	0.023	190000	180
SVOC	Benzo(g,h,i)perylene	301-V02	Phase 1B	19	0.0053 - 5	0.37	190000	180
SVOC	Benzo(g,h,i)perylene	301-W01	Phase 1B	24	0.0022 - 0.84	0.089	190000	180
SVOC	Benzo(g,h,i)perylene	301-X01	Phase 1B	11	U (0.18) - 0.91	0.18	190000	180
SVOC	Benzo(g,h,i)perylene	301-Y01	Phase 1B	10	0.0238 - 0.297	0.081	190000	180
SVOC	Benzo(g,h,i)perylene	301-Y02	Phase 1B	4	U (0.17) - 0.4	0.11	190000	180
SVOC	Benzo(g,h,i)perylene	301-Z01	Phase 1B	6	U (0.039)	0.018	190000	180
SVOC	Benzo(g,h,i)perylene	301-Z02	Phase 1B	2	U (0.18)	0.054	190000	180
SVOC	Benzo(g,h,i)perylene	301-Z03	Phase 1B	5	0.0472 - 0.39	0.15	190000	180
SVOC	Benzo(g,h,i)perylene	302-AD06	Phase 1B	2	0.0628 - 0.0628	0.041	190000	180
SVOC	Benzo(g,h,i)perylene	302-AD07	Phase 1B	2	0.098 - 0.098	0.084	190000	180
SVOC	Benzo(g,h,i)perylene	302-AE03	Phase 1B	4	U (0.18) - 0.19	0.061	190000	180
SVOC	Benzo(g,h,i)perylene	302-AE04	Phase 1B	8	0.0192 - 0.12	0.067	190000	180

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Benzo(g,h,i)perylene	302-AE05	Phase 1B	20	0.025 - 0.18	0.081	190000	180
SVOC	Benzo(g,h,i)perylene	302-AE07	Phase 1B	3	U (0.11) - 0.346	0.15	190000	180
SVOC	Benzo(g,h,i)perylene	302-AE08	Phase 1B	3	U (0.15)	0.051	190000	180
SVOC	Benzo(g,h,i)perylene	302-AF04	Phase 1B	22	U (0.15) - 0.024	0.040	190000	180
SVOC	Benzo(g,h,i)perylene	302-AF05	Phase 1B	2	0.227 - 0.227	0.12	190000	180
SVOC	Benzo(g,h,i)perylene	302-AF09	Phase 1B	5	U (0.04)	0.019	190000	180
SVOC	Benzo(g,h,i)perylene	302-AG04	Phase 1B	9	0.0334 - 0.0334	0.028	190000	180
SVOC	Benzo(g,h,i)perylene	302-AG06	Phase 1B	5	U (0.041)	0.019	190000	180
SVOC	Benzo(g,h,i)perylene	302-AG08	Phase 1B	6	U (0.042) - 1	0.28	190000	180
SVOC	Benzo(g,h,i)perylene	302-AH05	Phase 1B	11	0.0256 - 0.32	0.14	190000	180
SVOC	Benzo(g,h,i)perylene	302-AH06	Phase 1B	4	0.0785 - 0.0785	0.034	190000	180
SVOC	Benzo(g,h,i)perylene	302-AH07	Phase 1B	21	U (0.37) - 0.28	0.078	190000	180
SVOC	Benzo(g,h,i)perylene	302-AH08	Phase 1B	13	U (0.041) - 0.44	0.12	190000	180
SVOC	Benzo(g,h,i)perylene	302-AI05	Phase 1B	11	0.065 - 0.36	0.1	190000	180
SVOC	Benzo(g,h,i)perylene	302-AI06	Phase 1B	19	0.025 - 2.4	0.27	190000	180
SVOC	Benzo(g,h,i)perylene	302-AI07	Phase 1B	10	U (0.375) - 0.57	0.15	190000	180
SVOC	Benzo(g,h,i)perylene	302-AI08	Phase 1B	2	U (0.38)	0.11	190000	180
SVOC	Benzo(g,h,i)perylene	302-AI09	Phase 1B	3	U (0.041) - 0.12	0.053	190000	180
SVOC	Benzo(g,h,i)perylene	302-AJ05	Phase 1B	2	U (0.16) - 0.027	0.054	190000	180
SVOC	Benzo(g,h,i)perylene	302-AJ06	Phase 1B	5	0.048 - 0.16	0.090	190000	180
SVOC	Benzo(g,h,i)perylene	302-AK05	Phase 1B	5	0.051 - 0.72	0.18	190000	180
SVOC	Benzo(g,h,i)perylene	302-AK07	Phase 1B	13	U (0.0426) - 1.4	0.29	190000	180
SVOC	Benzo(g,h,i)perylene	302-AL03	Phase 1B	2	0.0622 - 0.0622	0.054	190000	180
SVOC	Benzo(g,h,i)perylene	302-AL05	Phase 1B	13	U (0.42) - 1.8	0.50	190000	180
SVOC	Benzo(g,h,i)perylene	302-AL08	Phase 1B	2	U (0.041)	0.019	190000	180
SVOC	Benzo(g,h,i)perylene	302-AN01	Phase 1B	2	0.0787 - 0.0787	0.048	190000	180
SVOC	Benzo(g,h,i)perylene	302-AP02	Phase 1B	2	0.404 - 0.404	0.21	190000	180
SVOC	Benzo(g,h,i)perylene	302-AP03	Phase 1B	23	U (0.4) - 0.091	0.067	190000	180
SVOC	Benzo(g,h,i)perylene	302-AP04	Phase 1B	2	0.0794 - 0.0794	0.049	190000	180
SVOC	Benzo(g,h,i)perylene	302-AP05	Phase 1B	2	U (0.035)	0.017	190000	180
SVOC	Benzo(g,h,i)perylene	302-AQ01	Phase 1B	2	0.41 - 1.1	0.76	190000	180
SVOC	Benzo(g,h,i)perylene	302-AQ04	Phase 1B	2	U (0.11)	0.055	190000	180
SVOC	Benzo(g,h,i)perylene	302-AR01	Phase 1B	2	0.21 - 4.9	2.6	190000	180
SVOC	Benzo(g,h,i)perylene	302-AR04	Phase 1B	3	U (0.12)	0.050	190000	180
SVOC	Benzo(g,h,i)perylene	302-AS04	Phase 1B	2	U (0.0419)	0.021	190000	180
SVOC	Benzo(g,h,i)perylene	302-AT02	Phase 1B	2	0.382 - 4.65	2.5	190000	180
SVOC	Benzo(g,h,i)perylene	302-AT03	Phase 1B	4	0.0655 - 0.0655	0.031	190000	180
SVOC	Benzo(g,h,i)perylene	302-AU01	Phase 1B	4	U (0.16) - 2	0.60	190000	180
SVOC	Benzo(g,h,i)perylene	302-AU02	Phase 1B	8	U (4)	0.32	190000	180
SVOC	Benzo(g,h,i)perylene	302-AU03	Phase 1B	2	U (0.16)	0.080	190000	180
SVOC	Benzo(g,h,i)perylene	302-AV02	Phase 1B	4	U (0.78)	0.16	190000	180
SVOC	Benzo(g,h,i)perylene	302-AV04	Phase 1B	2	U (0.0415)	0.020	190000	180
SVOC	Benzo(g,h,i)perylene	302-AW02	Phase 1B	2	1.1 - 1.1	0.59	190000	180
SVOC	Benzo(g,h,i)perylene	302-AX02	Phase 1B	3	U (0.038)	0.018	190000	180
SVOC	Benzo(g,h,i)perylene	302-AY02	Phase 1B	12	0.0338 - 5.03	2.6	190000	180
SVOC	Benzo(g,h,i)perylene	302-AY03	Phase 1B	2	0.0586 - 0.073	0.066	190000	180
SVOC	Benzo(g,h,i)perylene	302-AY05	Phase 1B	2	U (0.19)	0.058	190000	180
SVOC	Benzo(g,h,i)perylene	302-AZ02	Phase 1B	8	U (53) - 3.4	5.3	190000	180
SVOC	Benzo(g,h,i)perylene	302-AZ03	Phase 1B	1	U (2)	1.0	190000	180
SVOC	Benzo(g,h,i)perylene	302-BA03	Phase 1B	3	U (0.16)	0.080	190000	180
SVOC	Benzo(g,h,i)perylene	302-BB07	Phase 1B	2	U (0.00774)	0.0037	190000	180
SVOC	Benzo(g,h,i)perylene	302-BB08	Phase 1B	1	0.43 - 0.43	0.43	190000	180
SVOC	Benzo(g,h,i)perylene	302-BC06	Phase 1B	1	U (0.23)	0.12	190000	180
SVOC	Chrysene	301-AA02	Phase 1B	2	0.0413 - 0.0413	0.030	760	230

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Chrysene	301-AA05	Phase 1B	11	U (2.1) - 1.9	0.50	760	230
SVOC	Chrysene	301-AB05	Phase 1B	6	U (0.4) - 0.464	0.15	760	230
SVOC	Chrysene	301-AC03	Phase 1B	2	0.674 - 0.86	0.77	760	230
SVOC	Chrysene	301-T01	Phase 1B	5	U (5.3) - 8.5	2.7	760	230
SVOC	Chrysene	301-T02	Phase 1B	2	0.269 - 6.9	3.6	760	230
SVOC	Chrysene	301-U01	Phase 1B	2	U (0.19) - 1.4	0.71	760	230
SVOC	Chrysene	301-U03	Phase 1B	1	U (0.17)	0.085	760	230
SVOC	Chrysene	301-V01	Phase 1B	7	U (0.041) - 0.518	0.13	760	230
SVOC	Chrysene	301-V02	Phase 1B	19	0.00092 - 20	1.5	760	230
SVOC	Chrysene	301-W01	Phase 1B	24	0.0032 - 0.78	0.10	760	230
SVOC	Chrysene	301-X01	Phase 1B	11	U (0.18) - 2	0.41	760	230
SVOC	Chrysene	301-Y01	Phase 1B	10	0.0132 - 0.41	0.11	760	230
SVOC	Chrysene	301-Y02	Phase 1B	4	U (0.17) - 2.1	0.58	760	230
SVOC	Chrysene	301-Z01	Phase 1B	6	U (0.039) - 0.0188	0.018	760	230
SVOC	Chrysene	301-Z02	Phase 1B	2	U (0.18) - 0.3	0.16	760	230
SVOC	Chrysene	301-Z03	Phase 1B	5	0.014 - 0.603	0.22	760	230
SVOC	Chrysene	302-AD06	Phase 1B	2	0.0858 - 0.0858	0.053	760	230
SVOC	Chrysene	302-AD07	Phase 1B	2	0.13 - 0.13	0.090	760	230
SVOC	Chrysene	302-AE03	Phase 1B	4	U (0.18) - 2.3	0.61	760	230
SVOC	Chrysene	302-AE04	Phase 1B	8	0.0155 - 0.4	0.091	760	230
SVOC	Chrysene	302-AE05	Phase 1B	20	0.041 - 0.43	0.089	760	230
SVOC	Chrysene	302-AE07	Phase 1B	3	U (0.11) - 0.729	0.28	760	230
SVOC	Chrysene	302-AE08	Phase 1B	3	0.00066 - 0.00066	0.039	760	230
SVOC	Chrysene	302-AF04	Phase 1B	22	0.0225 - 0.028	0.033	760	230
SVOC	Chrysene	302-AF05	Phase 1B	2	0.0197 - 0.301	0.16	760	230
SVOC	Chrysene	302-AF09	Phase 1B	5	U (0.04) - 0.0477	0.025	760	230
SVOC	Chrysene	302-AG04	Phase 1B	9	0.0363 - 0.078	0.035	760	230
SVOC	Chrysene	302-AG06	Phase 1B	5	U (0.041)	0.019	760	230
SVOC	Chrysene	302-AG08	Phase 1B	6	0.15 - 1.9	0.63	760	230
SVOC	Chrysene	302-AH05	Phase 1B	11	0.036 - 0.76	0.23	760	230
SVOC	Chrysene	302-AH06	Phase 1B	4	0.088 - 0.088	0.036	760	230
SVOC	Chrysene	302-AH07	Phase 1B	21	U (0.37) - 0.77	0.11	760	230
SVOC	Chrysene	302-AH08	Phase 1B	13	U (0.041) - 0.74	0.20	760	230
SVOC	Chrysene	302-AI05	Phase 1B	11	0.0354 - 0.57	0.11	760	230
SVOC	Chrysene	302-AI06	Phase 1B	19	0.0279 - 2.2	0.32	760	230
SVOC	Chrysene	302-AI07	Phase 1B	10	U (0.375) - 0.47	0.15	760	230
SVOC	Chrysene	302-AI08	Phase 1B	2	U (0.38)	0.11	760	230
SVOC	Chrysene	302-AI09	Phase 1B	3	U (0.041) - 0.229	0.089	760	230
SVOC	Chrysene	302-AJ05	Phase 1B	2	U (0.12) - 0.045	0.053	760	230
SVOC	Chrysene	302-AJ06	Phase 1B	5	0.086 - 0.29	0.11	760	230
SVOC	Chrysene	302-AK05	Phase 1B	5	0.064 - 3.1	0.69	760	230
SVOC	Chrysene	302-AK07	Phase 1B	13	U (0.0426) - 4	0.77	760	230
SVOC	Chrysene	302-AL03	Phase 1B	2	0.0503 - 0.0799	0.065	760	230
SVOC	Chrysene	302-AL05	Phase 1B	13	U (0.42) - 2.8	0.86	760	230
SVOC	Chrysene	302-AL08	Phase 1B	2	U (0.041)	0.019	760	230
SVOC	Chrysene	302-AN01	Phase 1B	2	0.107 - 0.107	0.062	760	230
SVOC	Chrysene	302-AP02	Phase 1B	2	0.394 - 0.394	0.21	760	230
SVOC	Chrysene	302-AP03	Phase 1B	23	U (0.4) - 0.13	0.065	760	230
SVOC	Chrysene	302-AP04	Phase 1B	2	0.0966 - 0.0966	0.058	760	230
SVOC	Chrysene	302-AP05	Phase 1B	2	U (0.035)	0.017	760	230
SVOC	Chrysene	302-AQ01	Phase 1B	2	0.45 - 2.2	1.3	760	230
SVOC	Chrysene	302-AQ04	Phase 1B	2	U (0.11)	0.055	760	230
SVOC	Chrysene	302-AR01	Phase 1B	2	0.25 - 8.7	4.5	760	230
SVOC	Chrysene	302-AR04	Phase 1B	3	U (0.12)	0.050	760	230

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Chrysene	302-AS04	Phase 1B	2	U (0.0419)	0.021	760	230
SVOC	Chrysene	302-AT01	Phase 1B	2	U (0.3) - 0.766	0.46	760	230
SVOC	Chrysene	302-AT02	Phase 1B	2	0.194 - 54.8	27	760	230
SVOC	Chrysene	302-AT03	Phase 1B	4	0.039 - 0.039	0.024	760	230
SVOC	Chrysene	302-AU01	Phase 1B	4	0.19 - 1.4	0.50	760	230
SVOC	Chrysene	302-AU02	Phase 1B	8	U (4)	0.30	760	230
SVOC	Chrysene	302-AU03	Phase 1B	2	U (0.12)	0.060	760	230
SVOC	Chrysene	302-AV02	Phase 1B	4	U (0.59) - 0.2	0.094	760	230
SVOC	Chrysene	302-AV04	Phase 1B	2	U (0.0415)	0.020	760	230
SVOC	Chrysene	302-AW02	Phase 1B	2	2.4 - 2.4	1.2	760	230
SVOC	Chrysene	302-AX02	Phase 1B	3	U (0.038)	0.018	760	230
SVOC	Chrysene	302-AY02	Phase 1B	13	0.0657 - 27.4	5.0	760	230
SVOC	Chrysene	302-AY03	Phase 1B	2	0.105 - 0.136	0.12	760	230
SVOC	Chrysene	302-AY05	Phase 1B	2	U (0.19)	0.058	760	230
SVOC	Chrysene	302-AZ02	Phase 1B	8	U (32) - 4.4	3.7	760	230
SVOC	Chrysene	302-AZ03	Phase 1B	1	0.81 - 0.81	0.81	760	230
SVOC	Chrysene	302-BA03	Phase 1B	3	U (0.099)	0.049	760	230
SVOC	Chrysene	302-BB07	Phase 1B	2	U (0.00774)	0.0037	760	230
SVOC	Chrysene	302-BB08	Phase 1B	1	0.49 - 0.49	0.49	760	230
SVOC	Chrysene	302-BC06	Phase 1B	1	U (0.23)	0.12	760	230
SVOC	Fluorene	301-AA02	Phase 1B	2	U (0.039)	0.019	130000	3800
SVOC	Fluorene	301-AA05	Phase 1B	11	0.03 - 1.5	0.62	130000	3800
SVOC	Fluorene	301-AB05	Phase 1B	6	U (0.4) - 2.08	0.44	130000	3800
SVOC	Fluorene	301-AC03	Phase 1B	2	0.0548 - 0.0548	0.075	130000	3800
SVOC	Fluorene	301-T01	Phase 1B	5	U (5.3) - 0.221	1.2	130000	3800
SVOC	Fluorene	301-T02	Phase 1B	7	0.18 - 13	2.8	130000	3800
SVOC	Fluorene	301-U01	Phase 1B	2	U (0.19) - 0.39	0.20	130000	3800
SVOC	Fluorene	301-U03	Phase 1B	1	U (0.17)	0.085	130000	3800
SVOC	Fluorene	301-V01	Phase 1B	7	U (0.041) - 0.828	0.24	130000	3800
SVOC	Fluorene	301-V02	Phase 1B	19	0.0011 - 3.5	0.48	130000	3800
SVOC	Fluorene	301-W01	Phase 1B	24	U (0.21) - 2.1	0.17	130000	3800
SVOC	Fluorene	301-X01	Phase 1B	11	U (0.2) - 1.3	0.41	130000	3800
SVOC	Fluorene	301-Y01	Phase 1B	10	0.0483 - 1.39	0.18	130000	3800
SVOC	Fluorene	301-Y02	Phase 1B	4	U (0.17) - 2.4	0.63	130000	3800
SVOC	Fluorene	301-Z01	Phase 1B	6	U (0.039) - 0.021	0.019	130000	3800
SVOC	Fluorene	301-Z02	Phase 1B	2	U (0.18)	0.054	130000	3800
SVOC	Fluorene	301-Z03	Phase 1B	5	U (0.41) - 6.31	1.8	130000	3800
SVOC	Fluorene	302-AD06	Phase 1B	2	U (0.04)	0.018	130000	3800
SVOC	Fluorene	302-AD07	Phase 1B	2	U (0.18)	0.088	130000	3800
SVOC	Fluorene	302-AE03	Phase 1B	4	0.035 - 7.7	2.1	130000	3800
SVOC	Fluorene	302-AE04	Phase 1B	8	U (0.93) - 0.061	0.12	130000	3800
SVOC	Fluorene	302-AE05	Phase 1B	20	0.023 - 0.072	0.082	130000	3800
SVOC	Fluorene	302-AE07	Phase 1B	3	U (0.11) - 0.394	0.17	130000	3800
SVOC	Fluorene	302-AE08	Phase 1B	3	U (0.19)	0.063	130000	3800
SVOC	Fluorene	302-AF04	Phase 1B	22	0.0359 - 2.9	0.35	130000	3800
SVOC	Fluorene	302-AF05	Phase 1B	2	0.0275 - 0.25	0.14	130000	3800
SVOC	Fluorene	302-AF09	Phase 1B	5	U (0.04) - 0.402	0	130000	3800
SVOC	Fluorene	302-AG04	Phase 1B	9	U (0.18) - 2.7	0.58	130000	3800
SVOC	Fluorene	302-AG06	Phase 1B	5	U (0.041) - 0.0934	0.034	130000	3800
SVOC	Fluorene	302-AG08	Phase 1B	6	0.067 - 2.2	0.63	130000	3800
SVOC	Fluorene	302-AH05	Phase 1B	11	0.05 - 3.37	0.77	130000	3800
SVOC	Fluorene	302-AH06	Phase 1B	4	U (0.0415)	0.019	130000	3800
SVOC	Fluorene	302-AH07	Phase 1B	21	U (0.37) - 0.39	0.094	130000	3800
SVOC	Fluorene	302-AH08	Phase 1B	13	U (0.041) - 1.2	0.13	130000	3800

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Fluorene	302-AI05	Phase 1B	11	U (0.2) - 0.55	0.11	130000	3800
SVOC	Fluorene	302-AI06	Phase 1B	19	0.03 - 1.18	0.18	130000	3800
SVOC	Fluorene	302-AI07	Phase 1B	10	U (0.375) - 0.536	0.13	130000	3800
SVOC	Fluorene	302-AI08	Phase 1B	2	U (0.38)	0.11	130000	3800
SVOC	Fluorene	302-AI09	Phase 1B	3	U (0.041) - 0.043	0.027	130000	3800
SVOC	Fluorene	302-AJ05	Phase 1B	2	U (0.2)	0.10	130000	3800
SVOC	Fluorene	302-AJ06	Phase 1B	5	0.045 - 0.045	0.088	130000	3800
SVOC	Fluorene	302-AK05	Phase 1B	5	0.19 - 0.59	0.17	130000	3800
SVOC	Fluorene	302-AK07	Phase 1B	13	U (0.0426) - 4.2	0.64	130000	3800
SVOC	Fluorene	302-AL03	Phase 1B	2	U (0.092) - 3.37	1.7	130000	3800
SVOC	Fluorene	302-AL05	Phase 1B	13	U (0.42) - 0.6	0.26	130000	3800
SVOC	Fluorene	302-AL08	Phase 1B	2	U (0.041)	0.019	130000	3800
SVOC	Fluorene	302-AN01	Phase 1B	2	U (0.035)	0.017	130000	3800
SVOC	Fluorene	302-AP02	Phase 1B	2	0.0347 - 0.29	0.16	130000	3800
SVOC	Fluorene	302-AP03	Phase 1B	23	0.181 - 0.181	0.079	130000	3800
SVOC	Fluorene	302-AP04	Phase 1B	2	U (0.039) - 0.231	0.13	130000	3800
SVOC	Fluorene	302-AP05	Phase 1B	2	U (0.035)	0.017	130000	3800
SVOC	Fluorene	302-AQ01	Phase 1B	2	U (0.02) - 0.18	0.095	130000	3800
SVOC	Fluorene	302-AQ04	Phase 1B	2	U (0.11)	0.055	130000	3800
SVOC	Fluorene	302-AR01	Phase 1B	2	0.045 - 0.045	0.50	130000	3800
SVOC	Fluorene	302-AR04	Phase 1B	3	U (0.12)	0.050	130000	3800
SVOC	Fluorene	302-AS04	Phase 1B	2	U (0.0419) - 0.103	0.062	130000	3800
SVOC	Fluorene	302-AT01	Phase 1B	2	U (0.23)	0.12	130000	3800
SVOC	Fluorene	302-AT02	Phase 1B	2	0.0294 - 0.0294	0.21	130000	3800
SVOC	Fluorene	302-AT03	Phase 1B	4	U (0.039) - 0.831	0.22	130000	3800
SVOC	Fluorene	302-AU01	Phase 1B	4	U (0.075) - 0.45	0.14	130000	3800
SVOC	Fluorene	302-AU02	Phase 1B	8	U (4) - 0.052	0.33	130000	3800
SVOC	Fluorene	302-AU03	Phase 1B	2	U (0.19)	0.095	130000	3800
SVOC	Fluorene	302-AV02	Phase 1B	4	U (0.98) - 4.9	1.3	130000	3800
SVOC	Fluorene	302-AV04	Phase 1B	2	U (0.0415)	0.020	130000	3800
SVOC	Fluorene	302-AW02	Phase 1B	2	U (1.9)	0.53	130000	3800
SVOC	Fluorene	302-AX02	Phase 1B	3	U (0.038)	0.018	130000	3800
SVOC	Fluorene	302-AY02	Phase 1B	12	0.45 - 360	53	130000	3800
SVOC	Fluorene	302-AY03	Phase 1B	2	U (0.041) - 0.031	0.025	130000	3800
SVOC	Fluorene	302-AY05	Phase 1B	2	U (0.19)	0.058	130000	3800
SVOC	Fluorene	302-AZ02	Phase 1B	8	0.0573 - 30	8.1	130000	3800
SVOC	Fluorene	302-AZ03	Phase 1B	1	U (2)	1.0	130000	3800
SVOC	Fluorene	302-BA03	Phase 1B	3	U (0.075)	0.037	130000	3800
SVOC	Fluorene	302-BB07	Phase 1B	2	U (0.00774) - 0.205	0.10	130000	3800
SVOC	Fluorene	302-BB08	Phase 1B	1	U (0.19)	0.095	130000	3800
SVOC	Fluorene	302-BC06	Phase 1B	1	U (0.23)	0.12	130000	3800
SVOC	Naphthalene	301-AA02	Phase 1B	2	U (0.0051) - 0.0026	0.0026	66	25
SVOC	Naphthalene	301-AA05	Phase 1B	11	U (2.1) - 3.4	0.49	66	25
SVOC	Naphthalene	301-AB05	Phase 1B	6	U (0.4) - 0.48	0.13	66	25
SVOC	Naphthalene	301-AC03	Phase 1B	2	U (0.19)	0.056	66	25
SVOC	Naphthalene	301-T01	Phase 1B	5	U (5.3) - 2.3	1.1	66	25
SVOC	Naphthalene	301-T02	Phase 1B	7	U (1.9) - 4.7	1.5	66	25
SVOC	Naphthalene	301-U01	Phase 1B	2	U (0.19) - 0.33	0.17	66	25
SVOC	Naphthalene	301-U03	Phase 1B	1	U (0.17)	0.085	66	25
SVOC	Naphthalene	301-V01	Phase 1B	7	U (0.46)	0.044	66	25
SVOC	Naphthalene	301-V02	Phase 1B	19	0.0063 - 1.1	0.19	66	25
SVOC	Naphthalene	301-W01	Phase 1B	24	U (0.51) - 0.72	0.094	66	25
SVOC	Naphthalene	301-X01	Phase 1B	11	U (0.42) - 0.62	0.15	66	25
SVOC	Naphthalene	301-Y01	Phase 1B	10	U (0.51) - 9.1	0.92	66	25

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Naphthalene	301-Y02	Phase 1B	4	U (0.029) - 0.77	0.20	66	25
SVOC	Naphthalene	301-Z01	Phase 1B	6	U (0.0057)	0.0025	66	25
SVOC	Naphthalene	301-Z02	Phase 1B	2	U (0.18)	0.054	66	25
SVOC	Naphthalene	301-Z03	Phase 1B	5	U (0.41) - 0.12	0.089	66	25
SVOC	Naphthalene	302-AD06	Phase 1B	2	U (0.04)	0.018	66	25
SVOC	Naphthalene	302-AD07	Phase 1B	2	U (0.18)	0.088	66	25
SVOC	Naphthalene	302-AE03	Phase 1B	4	U (0.053) - 4.6	2.2	66	25
SVOC	Naphthalene	302-AE04	Phase 1B	8	U (0.93) - 0.16	0.075	66	25
SVOC	Naphthalene	302-AE05	Phase 1B	20	0.045 - 0.09	0.086	66	25
SVOC	Naphthalene	302-AE07	Phase 1B	3	U (0.11)	0.041	66	25
SVOC	Naphthalene	302-AE08	Phase 1B	3	U (0.19)	0.063	66	25
SVOC	Naphthalene	302-AF03	Phase 1B	2	0.34 - 3.7	2.0	66	25
SVOC	Naphthalene	302-AF04	Phase 1B	22	U (0.19) - 7	0.42	66	25
SVOC	Naphthalene	302-AF05	Phase 1B	2	0.0209 - 5.8	2.9	66	25
SVOC	Naphthalene	302-AF09	Phase 1B	5	U (0.04) - 2.04	0.42	66	25
SVOC	Naphthalene	302-AG04	Phase 1B	9	U (0.18) - 1.5	0.36	66	25
SVOC	Naphthalene	302-AG06	Phase 1B	5	U (0.041)	0.019	66	25
SVOC	Naphthalene	302-AG08	Phase 1B	6	0.13 - 12	2.2	66	25
SVOC	Naphthalene	302-AH04	Phase 1B	8	0.063 - 12	2.5	66	25
SVOC	Naphthalene	302-AH05	Phase 1B	11	0.032 - 8.1	1.2	66	25
SVOC	Naphthalene	302-AH06	Phase 1B	4	U (0.0415)	0.019	66	25
SVOC	Naphthalene	302-AH07	Phase 1B	21	U (0.37)	0.066	66	25
SVOC	Naphthalene	302-AH08	Phase 1B	13	U (0.061)	0.028	66	25
SVOC	Naphthalene	302-AI05	Phase 1B	12	U (0.2) - 0.94	0.15	66	25
SVOC	Naphthalene	302-AI06	Phase 1B	19	0.029 - 2.6	0.24	66	25
SVOC	Naphthalene	302-AI07	Phase 1B	10	U (0.375) - 0.0651	0.074	66	25
SVOC	Naphthalene	302-AI08	Phase 1B	2	U (0.38)	0.11	66	25
SVOC	Naphthalene	302-AI09	Phase 1B	3	U (0.041) - 0.0194	0.019	66	25
SVOC	Naphthalene	302-AJ05	Phase 1B	2	U (0.2) - 0.039	0.070	66	25
SVOC	Naphthalene	302-AJ06	Phase 1B	5	0.17 - 0.17	0.11	66	25
SVOC	Naphthalene	302-AK05	Phase 1B	5	0.074 - 1.2	0.32	66	25
SVOC	Naphthalene	302-AK07	Phase 1B	13	U (0.059) - 2.3	0.37	66	25
SVOC	Naphthalene	302-AL03	Phase 1B	2	U (0.37) - 8.94	4.5	66	25
SVOC	Naphthalene	302-AL05	Phase 1B	13	U (0.25) - 3.4	0.35	66	25
SVOC	Naphthalene	302-AL08	Phase 1B	2	U (0.041)	0.019	66	25
SVOC	Naphthalene	302-AN01	Phase 1B	2	U (0.035)	0.017	66	25
SVOC	Naphthalene	302-AP02	Phase 1B	2	0.166 - 0.166	0.094	66	25
SVOC	Naphthalene	302-AP03	Phase 1B	23	U (0.4) - 0.063	0.077	66	25
SVOC	Naphthalene	302-AP04	Phase 1B	2	0.0317 - 2.44	1.2	66	25
SVOC	Naphthalene	302-AP05	Phase 1B	2	U (0.035)	0.017	66	25
SVOC	Naphthalene	302-AQ01	Phase 1B	2	0.13 - 0.19	0.16	66	25
SVOC	Naphthalene	302-AQ04	Phase 1B	2	U (0.11)	0.055	66	25
SVOC	Naphthalene	302-AR01	Phase 1B	2	0.11 - 0.11	0.53	66	25
SVOC	Naphthalene	302-AR04	Phase 1B	3	U (0.12)	0.050	66	25
SVOC	Naphthalene	302-AS04	Phase 1B	2	U (0.0419)	0.021	66	25
SVOC	Naphthalene	302-AT02	Phase 1B	2	0.0643 - 11.9	6.0	66	25
SVOC	Naphthalene	302-AT03	Phase 1B	4	U (0.039)	0.019	66	25
SVOC	Naphthalene	302-AU01	Phase 1B	2	U (0.0052)	0.0024	66	25
SVOC	Naphthalene	302-AU02	Phase 1B	8	U (4)	0.34	66	25
SVOC	Naphthalene	302-AU03	Phase 1B	2	U (0.19)	0.095	66	25
SVOC	Naphthalene	302-AV02	Phase 1B	4	U (0.98) - 3.4	0.92	66	25
SVOC	Naphthalene	302-AV04	Phase 1B	2	U (0.0415)	0.020	66	25
SVOC	Naphthalene	302-AW02	Phase 1B	2	U (1.9)	0.53	66	25
SVOC	Naphthalene	302-AX02	Phase 1B	3	U (0.038)	0.018	66	25



**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Naphthalene	302-AY02	Phase 1B	21	0.2 - 118	17	66	25
SVOC	Naphthalene	302-AY03	Phase 1B	2	U (0.041) - 0.0214	0.020	66	25
SVOC	Naphthalene	302-AY05	Phase 1B	2	U (0.19)	0.058	66	25
SVOC	Naphthalene	302-AZ02	Phase 1B	6	U (2.1) - 21	4.5	66	25
SVOC	Naphthalene	302-AZ03	Phase 1B	1	U (2)	1.0	66	25
SVOC	Naphthalene	302-BB07	Phase 1B	13	U (3) - 48	5.6	66	25
SVOC	Naphthalene	302-BB08	Phase 1B	1	U (0.19)	0.095	66	25
SVOC	Naphthalene	302-BC06	Phase 1B	1	U (0.23)	0.12	66	25
SVOC	Phenanthrene	301-AA02	Phase 1B	2	0.0219 - 0.0328	0.027	190000	10000
SVOC	Phenanthrene	301-AA05	Phase 1B	11	0.019 - 2.8	0.91	190000	10000
SVOC	Phenanthrene	301-AB05	Phase 1B	6	U (0.4) - 3.42	0.73	190000	10000
SVOC	Phenanthrene	301-AC03	Phase 1B	2	0.529 - 1.8	1.2	190000	10000
SVOC	Phenanthrene	301-T01	Phase 1B	5	U (5.3) - 11	3.0	190000	10000
SVOC	Phenanthrene	301-T02	Phase 1B	7	0.099 - 39	8.4	190000	10000
SVOC	Phenanthrene	301-U01	Phase 1B	2	U (0.19) - 2.8	1.4	190000	10000
SVOC	Phenanthrene	301-U03	Phase 1B	1	U (0.17)	0.085	190000	10000
SVOC	Phenanthrene	301-V01	Phase 1B	7	U (0.041) - 2.6	0.63	190000	10000
SVOC	Phenanthrene	301-V02	Phase 1B	19	0.0024 - 4.7	0.86	190000	10000
SVOC	Phenanthrene	301-W01	Phase 1B	24	0.0026 - 4.1	0.27	190000	10000
SVOC	Phenanthrene	301-X01	Phase 1B	11	U (0.18) - 3.7	1.1	190000	10000
SVOC	Phenanthrene	301-Y01	Phase 1B	10	0.0187 - 4.64	0.55	190000	10000
SVOC	Phenanthrene	301-Y02	Phase 1B	4	U (0.17) - 3.1	0.82	190000	10000
SVOC	Phenanthrene	301-Z01	Phase 1B	6	U (0.039) - 0.0753	0.029	190000	10000
SVOC	Phenanthrene	301-Z02	Phase 1B	2	U (0.18) - 0.57	0.29	190000	10000
SVOC	Phenanthrene	301-Z03	Phase 1B	5	0.0371 - 14	3.8	190000	10000
SVOC	Phenanthrene	302-AD06	Phase 1B	2	0.065 - 0.065	0.043	190000	10000
SVOC	Phenanthrene	302-AD07	Phase 1B	2	0.14 - 0.14	0.095	190000	10000
SVOC	Phenanthrene	302-AE03	Phase 1B	4	U (0.18) - 20	5.3	190000	10000
SVOC	Phenanthrene	302-AE04	Phase 1B	8	U (0.56) - 1.2	0.19	190000	10000
SVOC	Phenanthrene	302-AE05	Phase 1B	20	0.032 - 0.39	0.090	190000	10000
SVOC	Phenanthrene	302-AE07	Phase 1B	3	U (0.11) - 0.839	0.31	190000	10000
SVOC	Phenanthrene	302-AE08	Phase 1B	3	0.00093 - 0.00093	0.039	190000	10000
SVOC	Phenanthrene	302-AF04	Phase 1B	22	0.031 - 6.2	0.64	190000	10000
SVOC	Phenanthrene	302-AF05	Phase 1B	2	0.228 - 0.318	0.27	190000	10000
SVOC	Phenanthrene	302-AF09	Phase 1B	5	U (0.04) - 0.72	0.16	190000	10000
SVOC	Phenanthrene	302-AG04	Phase 1B	9	0.026 - 7	1.3	190000	10000
SVOC	Phenanthrene	302-AG06	Phase 1B	5	U (0.041) - 0.172	0.054	190000	10000
SVOC	Phenanthrene	302-AG08	Phase 1B	6	0.18 - 4.1	1.7	190000	10000
SVOC	Phenanthrene	302-AH05	Phase 1B	11	0.12 - 4.7	1.3	190000	10000
SVOC	Phenanthrene	302-AH06	Phase 1B	4	0.1 - 0.1	0.039	190000	10000
SVOC	Phenanthrene	302-AH07	Phase 1B	21	U (0.37) - 2.1	0.19	190000	10000
SVOC	Phenanthrene	302-AH08	Phase 1B	13	U (0.041) - 3.4	0.47	190000	10000
SVOC	Phenanthrene	302-AI05	Phase 1B	11	0.0303 - 1.1	0.16	190000	10000
SVOC	Phenanthrene	302-AI06	Phase 1B	19	0.056 - 5.6	0.62	190000	10000
SVOC	Phenanthrene	302-AI07	Phase 1B	10	0.16 - 1.04	0.26	190000	10000
SVOC	Phenanthrene	302-AI08	Phase 1B	2	U (0.38)	0.11	190000	10000
SVOC	Phenanthrene	302-AI09	Phase 1B	3	U (0.041) - 0.296	0.11	190000	10000
SVOC	Phenanthrene	302-AJ05	Phase 1B	2	U (0.12) - 0.04	0.050	190000	10000
SVOC	Phenanthrene	302-AJ06	Phase 1B	5	0.074 - 0.37	0.12	190000	10000
SVOC	Phenanthrene	302-AK05	Phase 1B	5	0.164 - 1.8	0.52	190000	10000
SVOC	Phenanthrene	302-AK07	Phase 1B	13	U (0.2) - 9.3	1.9	190000	10000
SVOC	Phenanthrene	302-AL03	Phase 1B	2	0.0807 - 10	5.0	190000	10000
SVOC	Phenanthrene	302-AL05	Phase 1B	13	U (0.42) - 4.3	1.2	190000	10000
SVOC	Phenanthrene	302-AL08	Phase 1B	2	U (0.041)	0.019	190000	10000

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Phenanthrene	302-AN01	Phase 1B	2	0.0826 - 0.0826	0.050	190000	10000
SVOC	Phenanthrene	302-AP02	Phase 1B	2	0.459 - 0.577	0.52	190000	10000
SVOC	Phenanthrene	302-AP03	Phase 1B	23	0.043 - 0.3	0.080	190000	10000
SVOC	Phenanthrene	302-AP04	Phase 1B	2	0.11 - 0.371	0.24	190000	10000
SVOC	Phenanthrene	302-AP05	Phase 1B	2	U (0.035)	0.017	190000	10000
SVOC	Phenanthrene	302-AQ01	Phase 1B	2	0.41 - 3.7	2.1	190000	10000
SVOC	Phenanthrene	302-AQ04	Phase 1B	2	U (0.11)	0.055	190000	10000
SVOC	Phenanthrene	302-AR01	Phase 1B	2	0.26 - 7.3	3.8	190000	10000
SVOC	Phenanthrene	302-AR04	Phase 1B	3	U (0.12)	0.050	190000	10000
SVOC	Phenanthrene	302-AS04	Phase 1B	2	U (0.0419) - 0.0446	0.032	190000	10000
SVOC	Phenanthrene	302-AT01	Phase 1B	2	U (0.64) - 2.26	1.3	190000	10000
SVOC	Phenanthrene	302-AT02	Phase 1B	2	0.214 - 34.1	17	190000	10000
SVOC	Phenanthrene	302-AT03	Phase 1B	4	0.0298 - 0.901	0.24	190000	10000
SVOC	Phenanthrene	302-AU01	Phase 1B	4	U (0.21) - 2.4	0.80	190000	10000
SVOC	Phenanthrene	302-AU02	Phase 1B	8	U (4)	0.30	190000	10000
SVOC	Phenanthrene	302-AU03	Phase 1B	2	U (0.12)	0.060	190000	10000
SVOC	Phenanthrene	302-AV02	Phase 1B	4	U (0.59) - 14	3.6	190000	10000
SVOC	Phenanthrene	302-AV04	Phase 1B	2	U (0.0415)	0.020	190000	10000
SVOC	Phenanthrene	302-AW02	Phase 1B	2	3.8 - 3.8	1.9	190000	10000
SVOC	Phenanthrene	302-AX02	Phase 1B	3	U (0.038)	0.018	190000	10000
SVOC	Phenanthrene	302-AY02	Phase 1B	13	0.0508 - 160	28	190000	10000
SVOC	Phenanthrene	302-AY03	Phase 1B	2	0.0871 - 0.171	0.13	190000	10000
SVOC	Phenanthrene	302-AY05	Phase 1B	2	U (0.19)	0.058	190000	10000
SVOC	Phenanthrene	302-AZ02	Phase 1B	8	0.611 - 58	11	190000	10000
SVOC	Phenanthrene	302-AZ03	Phase 1B	1	0.82 - 0.82	0.82	190000	10000
SVOC	Phenanthrene	302-BA03	Phase 1B	3	U (0.21)	0.11	190000	10000
SVOC	Phenanthrene	302-BB07	Phase 1B	2	U (0.00774) - 0.421	0.21	190000	10000
SVOC	Phenanthrene	302-BB08	Phase 1B	1	0.3 - 0.3	0.30	190000	10000
SVOC	Phenanthrene	302-BC06	Phase 1B	1	U (0.23)	0.12	190000	10000
SVOC	Pyrene	301-AA02	Phase 1B	2	0.0573 - 0.0573	0.038	96000	2200
SVOC	Pyrene	301-AA05	Phase 1B	11	U (2.1) - 0.89	0.28	96000	2200
SVOC	Pyrene	301-AB05	Phase 1B	6	U (0.4) - 0.348	0.12	96000	2200
SVOC	Pyrene	301-AC03	Phase 1B	2	0.822 - 1.6	1.2	96000	2200
SVOC	Pyrene	301-T01	Phase 1B	5	U (5.3) - 13	3.9	96000	2200
SVOC	Pyrene	301-T02	Phase 1B	2	0.528 - 1.7	1.1	96000	2200
SVOC	Pyrene	301-U01	Phase 1B	2	U (0.19) - 3	1.5	96000	2200
SVOC	Pyrene	301-U03	Phase 1B	1	U (0.17)	0.085	96000	2200
SVOC	Pyrene	301-V01	Phase 1B	7	U (0.041) - 0.307	0.11	96000	2200
SVOC	Pyrene	301-V02	Phase 1B	19	0.0013 - 41	2.5	96000	2200
SVOC	Pyrene	301-W01	Phase 1B	24	0.0023 - 0.28	0.053	96000	2200
SVOC	Pyrene	301-X01	Phase 1B	11	U (0.18) - 2.2	0.65	96000	2200
SVOC	Pyrene	301-Y01	Phase 1B	10	0.0199 - 0.569	0.13	96000	2200
SVOC	Pyrene	301-Y02	Phase 1B	4	U (0.17) - 1.7	0.55	96000	2200
SVOC	Pyrene	301-Z01	Phase 1B	6	U (0.039) - 0.0349	0.021	96000	2200
SVOC	Pyrene	301-Z02	Phase 1B	2	U (0.18) - 0.56	0.29	96000	2200
SVOC	Pyrene	301-Z03	Phase 1B	5	0.018 - 0.935	0.30	96000	2200
SVOC	Pyrene	302-AD06	Phase 1B	2	0.064 - 0.131	0	96000	2200
SVOC	Pyrene	302-AD07	Phase 1B	2	0.18 - 0.18	0.12	96000	2200
SVOC	Pyrene	302-AE03	Phase 1B	4	0.043 - 3	0.83	96000	2200
SVOC	Pyrene	302-AE04	Phase 1B	8	0.0178 - 1.2	0.19	96000	2200
SVOC	Pyrene	302-AE05	Phase 1B	20	0.018 - 0.53	0	96000	2200
SVOC	Pyrene	302-AE07	Phase 1B	3	U (0.11) - 1.04	0.38	96000	2200
SVOC	Pyrene	302-AE08	Phase 1B	3	0.0014 - 0.0014	0.039	96000	2200
SVOC	Pyrene	302-AF04	Phase 1B	22	0.038 - 0.39	0.069	96000	2200

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
SVOC	Pyrene	302-AF05	Phase 1B	2	0.0615 - 0.42	0.24	96000	2200
SVOC	Pyrene	302-AF09	Phase 1B	5	U (0.04) - 0.0898	0.035	96000	2200
SVOC	Pyrene	302-AG04	Phase 1B	9	0.0632 - 0.34	0	96000	2200
SVOC	Pyrene	302-AG06	Phase 1B	5	U (0.041) - 0.0583	0.029	96000	2200
SVOC	Pyrene	302-AG08	Phase 1B	6	0.17 - 3	0.83	96000	2200
SVOC	Pyrene	302-AH05	Phase 1B	11	0.085 - 0.99	0.42	96000	2200
SVOC	Pyrene	302-AH06	Phase 1B	4	0.173 - 0.173	0.058	96000	2200
SVOC	Pyrene	302-AH07	Phase 1B	21	U (0.37) - 1.5	0.17	96000	2200
SVOC	Pyrene	302-AH08	Phase 1B	13	U (0.041) - 1.1	0.28	96000	2200
SVOC	Pyrene	302-AI05	Phase 1B	11	0.0613 - 0.71	0.14	96000	2200
SVOC	Pyrene	302-AI06	Phase 1B	19	0.0295 - 7.4	0.66	96000	2200
SVOC	Pyrene	302-AI07	Phase 1B	10	0.143 - 0.53	0.19	96000	2200
SVOC	Pyrene	302-AI08	Phase 1B	2	U (0.38)	0.11	96000	2200
SVOC	Pyrene	302-AI09	Phase 1B	3	U (0.041) - 0.351	0.13	96000	2200
SVOC	Pyrene	302-AJ05	Phase 1B	2	U (0.12) - 0.061	0.061	96000	2200
SVOC	Pyrene	302-AJ06	Phase 1B	5	0.13 - 0.41	0.14	96000	2200
SVOC	Pyrene	302-AK05	Phase 1B	5	0.046 - 2	0.51	96000	2200
SVOC	Pyrene	302-AK07	Phase 1B	13	U (0.2) - 7.2	1.1	96000	2200
SVOC	Pyrene	302-AL03	Phase 1B	2	0.12 - 0.629	0.37	96000	2200
SVOC	Pyrene	302-AL05	Phase 1B	13	U (0.42) - 4.4	1.3	96000	2200
SVOC	Pyrene	302-AL08	Phase 1B	2	U (0.041)	0.019	96000	2200
SVOC	Pyrene	302-AN01	Phase 1B	2	0.12 - 0.12	0.069	96000	2200
SVOC	Pyrene	302-AP02	Phase 1B	2	0.0448 - 0.623	0.33	96000	2200
SVOC	Pyrene	302-AP03	Phase 1B	23	0.05 - 0.31	0.077	96000	2200
SVOC	Pyrene	302-AP04	Phase 1B	2	0.022 - 0.127	0.075	96000	2200
SVOC	Pyrene	302-AP05	Phase 1B	2	U (0.035)	0.017	96000	2200
SVOC	Pyrene	302-AQ01	Phase 1B	2	0.46 - 4.5	2.5	96000	2200
SVOC	Pyrene	302-AQ04	Phase 1B	2	U (0.11)	0.055	96000	2200
SVOC	Pyrene	302-AR01	Phase 1B	2	0.36 - 13	6.7	96000	2200
SVOC	Pyrene	302-AR04	Phase 1B	3	0.0604 - 0.0604	0.052	96000	2200
SVOC	Pyrene	302-AS04	Phase 1B	2	U (0.0419)	0.021	96000	2200
SVOC	Pyrene	302-AT01	Phase 1B	2	U (0.3) - 0.808	0.48	96000	2200
SVOC	Pyrene	302-AT02	Phase 1B	2	0.185 - 7.26	3.7	96000	2200
SVOC	Pyrene	302-AT03	Phase 1B	4	0.0273 - 0.0404	0.027	96000	2200
SVOC	Pyrene	302-AU01	Phase 1B	4	0.212 - 3.1	1	96000	2200
SVOC	Pyrene	302-AU02	Phase 1B	8	U (4)	0.30	96000	2200
SVOC	Pyrene	302-AU03	Phase 1B	2	U (0.12)	0.060	96000	2200
SVOC	Pyrene	302-AV02	Phase 1B	4	U (0.59) - 0.58	0.19	96000	2200
SVOC	Pyrene	302-AV04	Phase 1B	2	U (0.0415)	0.020	96000	2200
SVOC	Pyrene	302-AW02	Phase 1B	2	5.3 - 5.3	2.7	96000	2200
SVOC	Pyrene	302-AX02	Phase 1B	3	U (0.038)	0.018	96000	2200
SVOC	Pyrene	302-AY02	Phase 1B	13	0.0767 - 32	7.6	96000	2200
SVOC	Pyrene	302-AY03	Phase 1B	2	0.154 - 0.172	0.16	96000	2200
SVOC	Pyrene	302-AY05	Phase 1B	2	U (0.19)	0.058	96000	2200
SVOC	Pyrene	302-AZ02	Phase 1B	8	U (4.9) - 60	10	96000	2200
SVOC	Pyrene	302-AZ03	Phase 1B	1	1.1 - 1.1	1.1	96000	2200
SVOC	Pyrene	302-BA03	Phase 1B	3	U (0.074) - 0.18	0.12	96000	2200
SVOC	Pyrene	302-BB07	Phase 1B	2	U (0.00774) - 0.0452	0.025	96000	2200
SVOC	Pyrene	302-BB08	Phase 1B	1	0.9 - 0.9	0.90	96000	2200
SVOC	Pyrene	302-BC06	Phase 1B	1	U (0.23)	0.12	96000	2200
INORG	Lead	301-AA02	Phase 1B	2	7.6 - 26.2	17	1000	450
INORG	Lead	301-AA05	Phase 1B	16	4.7 - 1100	186	1000	450
INORG	Lead	301-AB05	Phase 1B	6	5.14 - 216	67	1000	450
INORG	Lead	301-AC03	Phase 1B	2	9.9 - 64.7	37	1000	450

**Table 3.3**

**Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
INORG	Lead	301-T01	Phase 1B	5	3.1 - 384	145	1000	450
INORG	Lead	301-T02	Phase 1B	2	25.4 - 121	73	1000	450
INORG	Lead	301-U01	Phase 1B	2	7.9 - 145	76	1000	450
INORG	Lead	301-U03	Phase 1B	1	4.31 - 4.31	4.3	1000	450
INORG	Lead	301-V01	Phase 1B	7	2.6 - 99.5	25	1000	450
INORG	Lead	301-V02	Phase 1B	19	0.007 - 168	35	1000	450
INORG	Lead	301-W01	Phase 1B	24	4 - 433	26	1000	450
INORG	Lead	301-X01	Phase 1B	9	2.4 - 47.6	16	1000	450
INORG	Lead	301-Y01	Phase 1B	5	4.6 - 55	21	1000	450
INORG	Lead	301-Z01	Phase 1B	6	3.2 - 33.1	10	1000	450
INORG	Lead	301-Z02	Phase 1B	2	10 - 48.4	29	1000	450
INORG	Lead	301-Z03	Phase 1B	6	3.5 - 393	110	1000	450
INORG	Lead	302-AD06	Phase 1B	2	7.1 - 17.8	12	1000	450
INORG	Lead	302-AD07	Phase 1B	2	3.27 - 53.1	28	1000	450
INORG	Lead	302-AE04	Phase 1B	8	5.16 - 278	54	1000	450
INORG	Lead	302-AE05	Phase 1B	20	2.51 - 103	12	1000	450
INORG	Lead	302-AE07	Phase 1B	3	2.6 - 258	89	1000	450
INORG	Lead	302-AE08	Phase 1B	3	4.2 - 6.1	5.1	1000	450
INORG	Lead	302-AF03	Phase 1B	2	11.5 - 50.1	31	1000	450
INORG	Lead	302-AF04	Phase 1B	12	7.72 - 176	65	1000	450
INORG	Lead	302-AF05	Phase 1B	11	4.2 - 3100	1222	1000	450
INORG	Lead	302-AF09	Phase 1B	5	4.4 - 22.2	11	1000	450
INORG	Lead	302-AG04	Phase 1B	3	9.8 - 165	99	1000	450
INORG	Lead	302-AG06	Phase 1B	5	10.8 - 18.5	14	1000	450
INORG	Lead	302-AH04	Phase 1B	8	7.08 - 344	136	1000	450
INORG	Lead	302-AH05	Phase 1B	2	6.6 - 51.1	29	1000	450
INORG	Lead	302-AH06	Phase 1B	4	4.1 - 46.9	16	1000	450
INORG	Lead	302-AH07	Phase 1B	12	2.5 - 92	16	1000	450
INORG	Lead	302-AI05	Phase 1B	3	7.88 - 41.8	19	1000	450
INORG	Lead	302-AI06	Phase 1B	9	4.2 - 222	70	1000	450
INORG	Lead	302-AI07	Phase 1B	8	3.9 - 255	97	1000	450
INORG	Lead	302-AI08	Phase 1B	2	13.3 - 60.8	37	1000	450
INORG	Lead	302-AI09	Phase 1B	3	1.5 - 206	73	1000	450
INORG	Lead	302-AK05	Phase 1B	2	63.5 - 86.2	75	1000	450
INORG	Lead	302-AK07	Phase 1B	2	5.91 - 6.97	6.4	1000	450
INORG	Lead	302-AL03	Phase 1B	2	2.6 - 114	58	1000	450
INORG	Lead	302-AL08	Phase 1B	2	8.1 - 24.3	16	1000	450
INORG	Lead	302-AN01	Phase 1B	2	4.3 - 85.4	45	1000	450
INORG	Lead	302-AP02	Phase 1B	2	10.8 - 128	69	1000	450
INORG	Lead	302-AP03	Phase 1B	23	2.9 - 268	50	1000	450
INORG	Lead	302-AP04	Phase 1B	2	13.3 - 500	257	1000	450
INORG	Lead	302-AP05	Phase 1B	2	5.2 - 49.5	27	1000	450
INORG	Lead	302-AQ01	Phase 1B	2	254 - 538	396	1000	450
INORG	Lead	302-AQ04	Phase 1B	2	7.3 - 60.8	34	1000	450
INORG	Lead	302-AR01	Phase 1B	2	27.3 - 814	421	1000	450
INORG	Lead	302-AR04	Phase 1B	3	6.2 - 43.8	21	1000	450
INORG	Lead	302-AS04	Phase 1B	2	13.6 - 370	192	1000	450
INORG	Lead	302-AT01	Phase 1B	2	230 - 440	335	1000	450
INORG	Lead	302-AT02	Phase 1B	2	162 - 674	418	1000	450
INORG	Lead	302-AT03	Phase 1B	4	2.6 - 103	54	1000	450
INORG	Lead	302-AU01	Phase 1B	3	U (2.4) - 237	122	1000	450
INORG	Lead	302-AU02	Phase 1B	8	4.1 - 536	73	1000	450
INORG	Lead	302-AU03	Phase 1B	2	4.27 - 4.91	4.6	1000	450
INORG	Lead	302-AV02	Phase 1B	4	6.94 - 74.3	26	1000	450

**Table 3.3****Historical and AST Sampling Results Summary**

Soil Management Plan Addendum No. 3

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

Chem Group	Chemical	Cell	Phase Area	Number of Samples	Range (mg/kg)	Average (mg/kg)	Non-Res Direct Contact Soil MSC (mg/kg)	Non-Res Used Aquifer (TDS ≤ 2500) Soil to-GW (mg/kg)
INORG	Lead	302-AV04	Phase 1B	2	2.22 - 9.54	5.9	1000	450
INORG	Lead	302-AW02	Phase 1B	2	4.52 - 151	78	1000	450
INORG	Lead	302-AX02	Phase 1B	3	5.7 - 14.4	10	1000	450
INORG	Lead	302-AY02	Phase 1B	19	58 - 479	235	1000	450
INORG	Lead	302-AY03	Phase 1B	2	93.2 - 409	251	1000	450
INORG	Lead	302-AY05	Phase 1B	2	2.73 - 11.2	7.0	1000	450
INORG	Lead	302-AZ02	Phase 1B	11	110 - 1110	412	1000	450
INORG	Lead	302-AZ03	Phase 1B	1	320 - 320	320	1000	450
INORG	Lead	302-BA03	Phase 1B	3	30.3 - 179	85	1000	450
INORG	Lead	302-BB07	Phase 1B	2	7.25 - 7.79	7.5	1000	450
INORG	Lead	302-BB08	Phase 1B	1	192 - 192	192	1000	450
INORG	Lead	302-BC06	Phase 1B	1	18.2 - 18.2	18	1000	450

**Notes:**

U -- Not Detected.

Detection limits are in parentheses.

All samples at a location are included, regardless of depth.

Calculation of the average used half the analytical limit if the chemical was non-detect, except for 1,2-dibromoethane and 1,2-dichloroethane which were detected at a frequency of &lt;1%.

Indicates average concentration exceeds the Non-Res Soil-to-GW Numeric Value.

Indicates average concentration exceeds the Non-Residential Soil DC and Soil-to-GW Numeric Values.

**Table 4.1**

**Bulk Soil Movement and Placement, Soil Reuse Categories and Volume Estimates**

Soil Management Plan Addendum No. 3

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

Area ID	Soil Reuse Category	Description	Volume (yd <sup>3</sup> )
IP1B-06	E	To be reused beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table.	1,928
IP1B-07			9,784
IP1B-08			8,601
IP1B-09			7,469
IP1B-16			6,283
IP1B-18			5,898
IP1B-19			6,814
<b>Total (yd<sup>3</sup>):</b>			<b>46,778</b>
IP1B-01	B	To be reused (1) in areas beneath an impervious surface cap that will serve as an engineering control at elevations above the groundwater table, or (2) in areas not beneath a surface cap that are more than 500 ft. from a shoreline as long as a risk assessment demonstrates attainment of the Site-specific standard.	16,214
IP1B-02			18,594
IP1B-03			9,497
IP1B-04			17,360
IP1B-05			5,296
IP1B-10			8,180
IP1B-11			11,898
IP1B-12			8,435
IP1B-13			13,473
IP1B-14			12,403
IP1B-15			4,149
IP1B-17			36,293
IP1B-20			8,901
IP1B-21			11,109
IP1B-22	13,036		
IP1B-23	20,888		
<b>Total (yd<sup>3</sup>):</b>			<b>215,726</b>
--	A	--	618,097
<b>Overall Total (yd<sup>3</sup>):</b>			<b>880,600</b>

**Notes:**

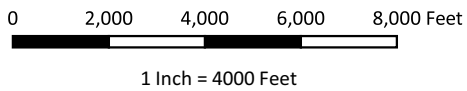
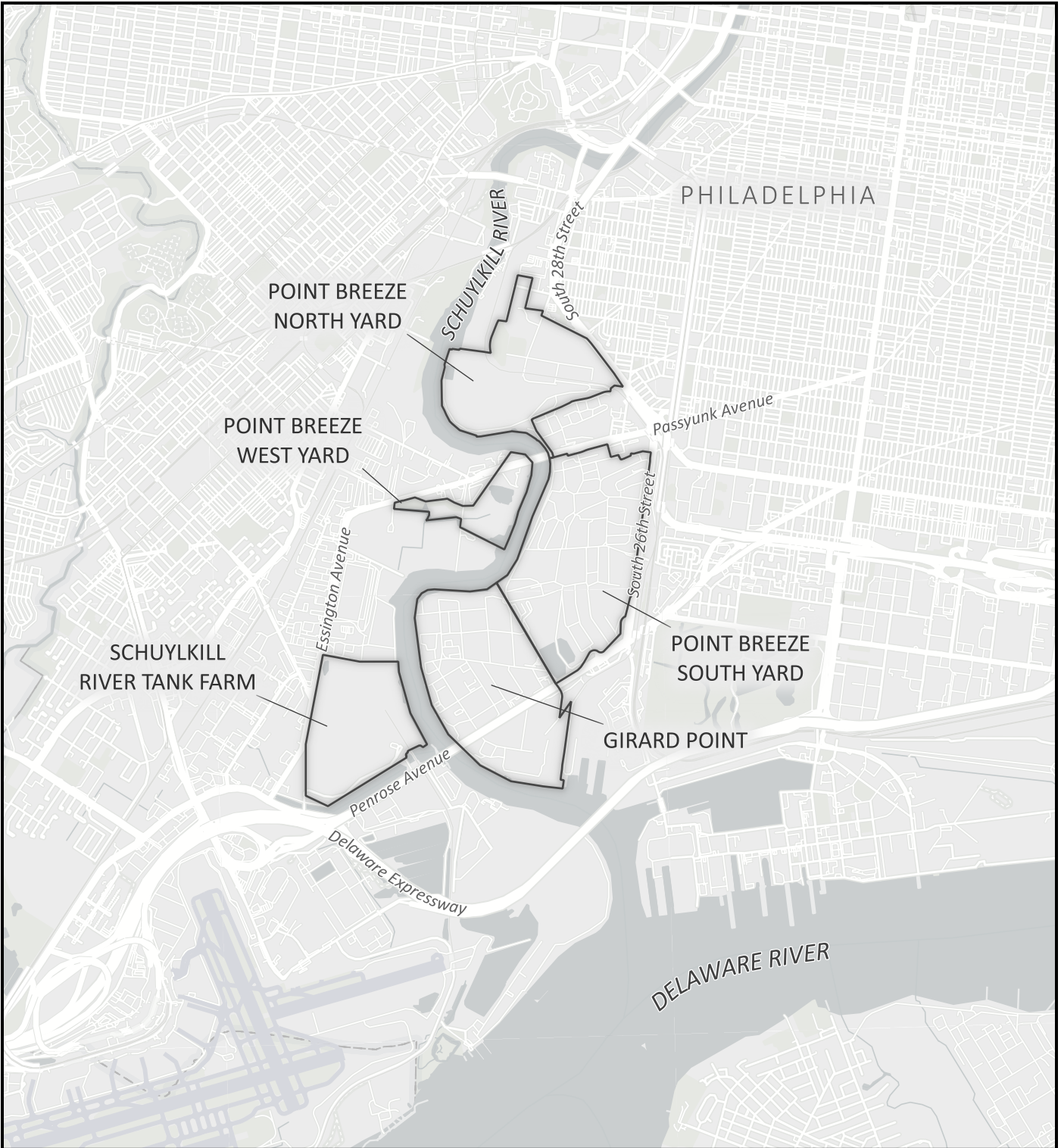
Area IDs are presented on Figure 4.1.

# Figures

- 1.1 Site Location
- 1.2 Property and Development Area Boundaries
- 1.3 Industrial Phase 1B Development Area (SMP Sampling Area)
- 2.1 Soil Boring Locations – Industrial Phase 1B
- 2.2 Soil Boring Locations and Cell Boundaries
- 3.1 Soil Management Plan Categorization
- 4.1 Soil Management Plan Categorization



N:\GIS\Proj\044.001\_PESRM-PES\GIS\OGZ and GPK\20220712\OGZ322\_P044.001\_Hilco.qgz Industrial Development Phase 1A - Site Location 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

 Property Boundary

**SAFETY FIRST**



CLIENT: Philadelphia Energy Solutions  
Refining and Marketing LLC

PROJECT: Soil Management Plan  
Addendum, Phase 1B

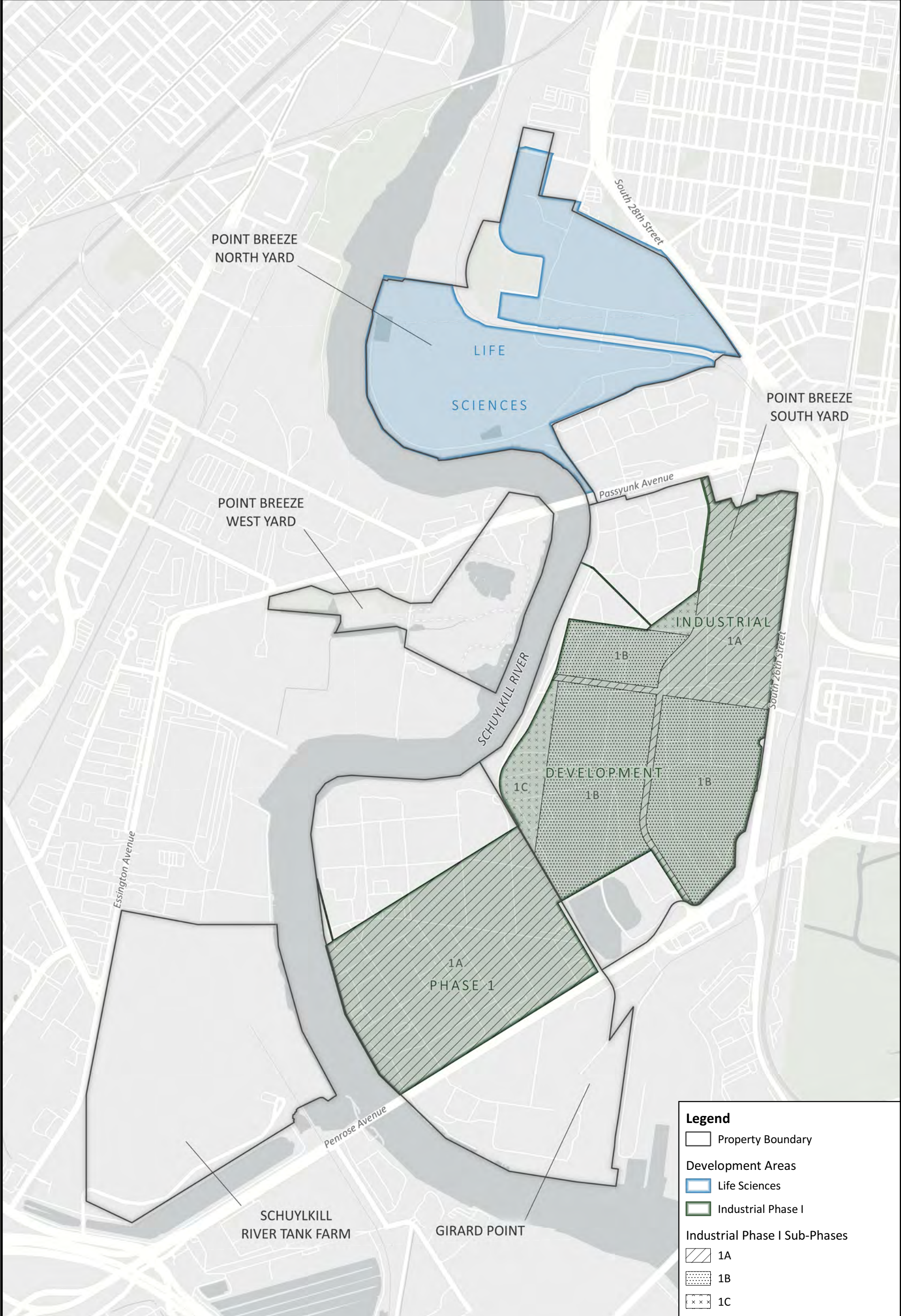
PROJECT NUMBER:  
P044.001.001

**Site Location**

**FIGURE 1.1**



N:\GIS\PI\P044.001\_PESRM-PES\GIS\OGZ and GPKG\Main Branch\20221205\OGZ and GPKG\Main Branch\20221205\OGZ and GPKG\Main Branch\20221205\OGZ and GPKG - Industrial Development Phase 1 - SMP Addendum Phase 1A - Property and Development Area Boundaries 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



N

0 300 600 900 1,200 ft

1 Inch = 1200 Feet

SAFETY FIRST

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Soil Management Plan Addendum, Phase 1A

PROJECT NUMBER: P044.001.001

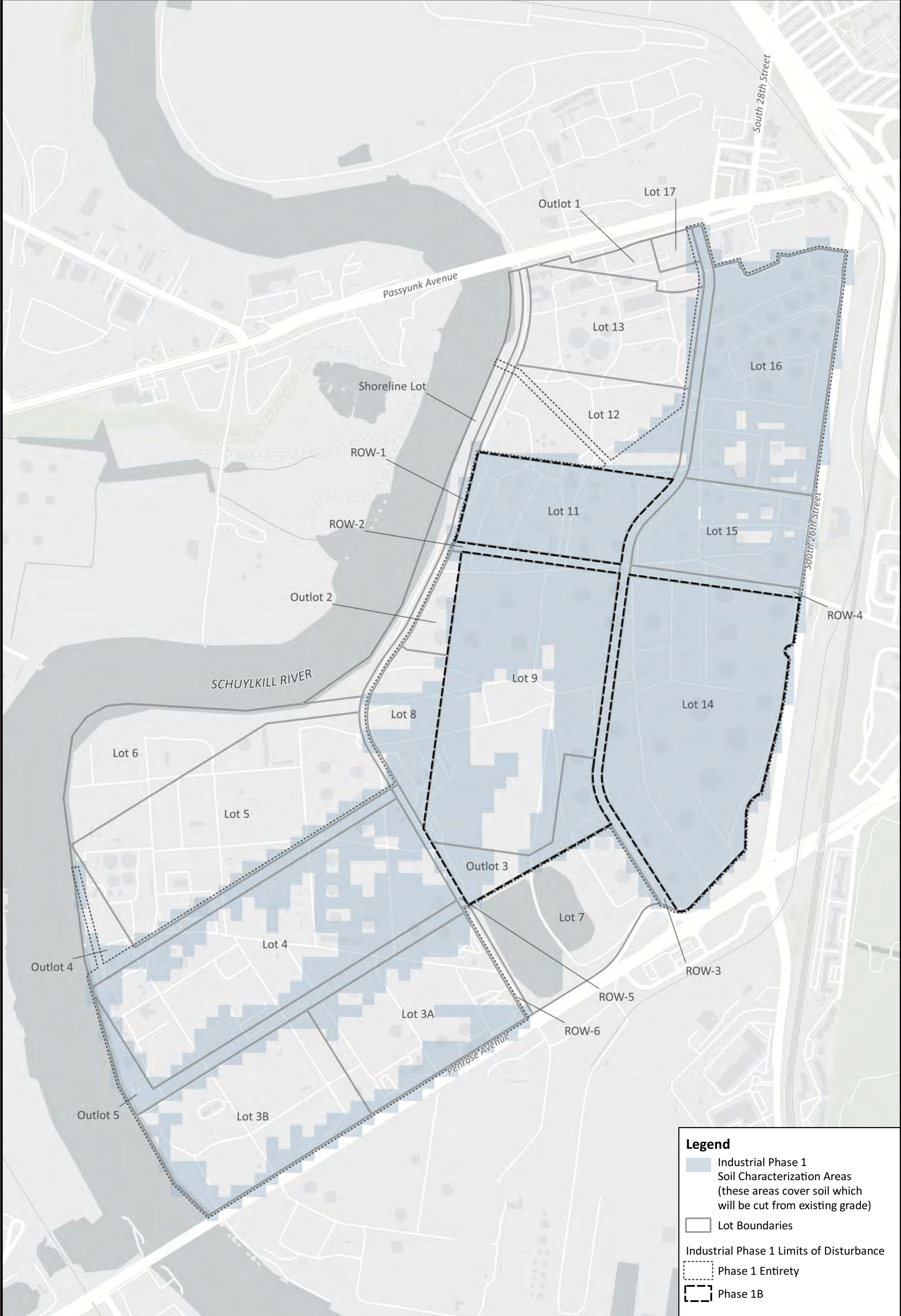
**Legend**

- Property Boundary
- Development Areas**
- Life Sciences
- Industrial Phase I
- Industrial Phase I Sub-Phases**
- 1A
- 1B
- 1C

Property and Development Area Boundaries

FIGURE 1.2

N:\GIS\Proj\044.001\_PESRM-PES\GIS\OGZ and GPK\Main Branch\20221108\OGZ\OGZ\_062322\_P044.001\_Hilco.qgz - Industrial Development Phase 1 - SMP Addendum Phase 1B - Development Area - 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

- Industrial Phase 1 Soil Characterization Areas (these areas cover soil which will be cut from existing grade)
- Lot Boundaries
- Industrial Phase 1 Limits of Disturbance**
- Phase 1 Entirety
- Phase 1B

N

0 250 500 750 1,000 ft

1 Inch = 750 Feet

**SAFETY FIRST**

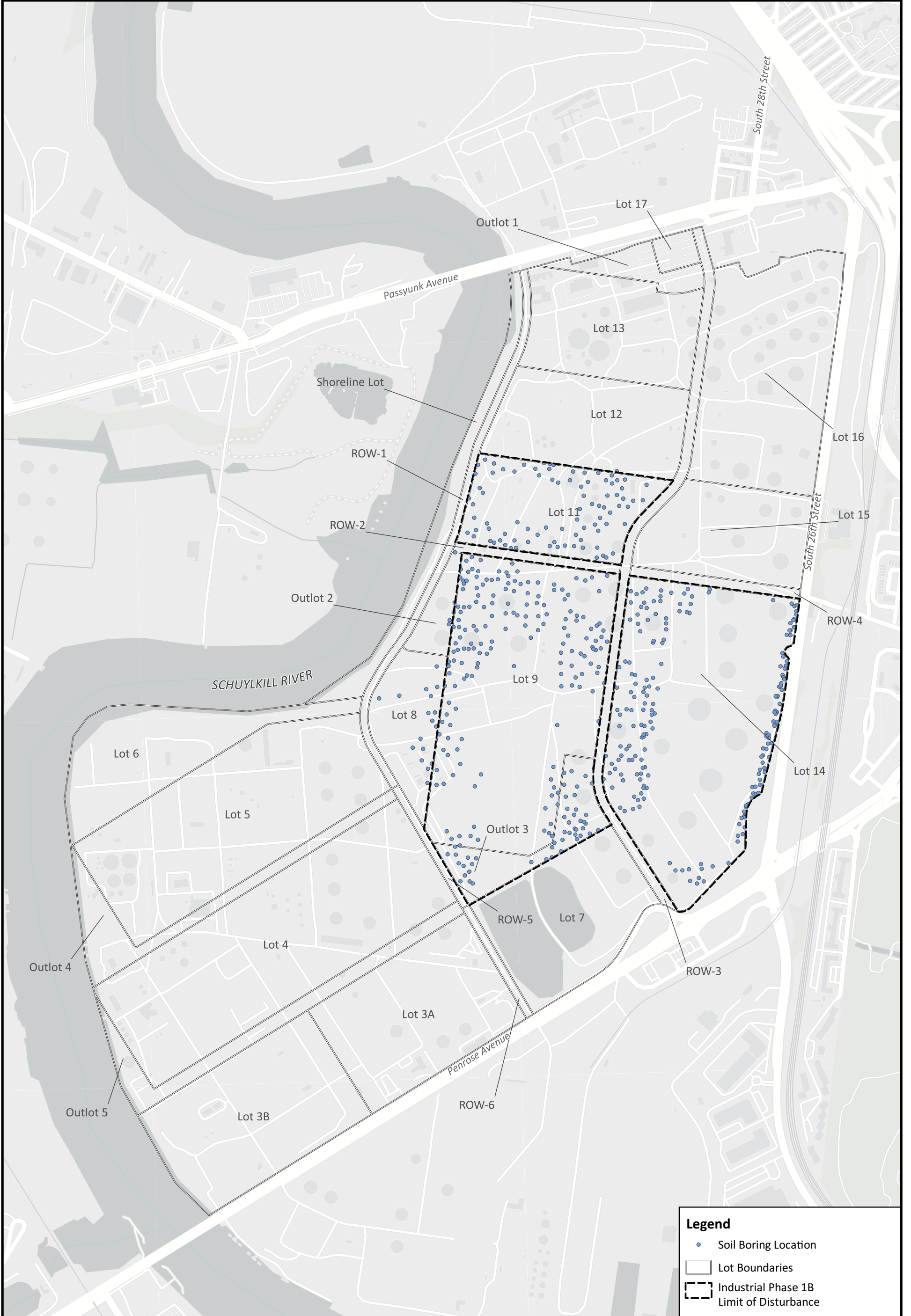
terrphase  
engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum, Phase 1B
PROJECT NUMBER:	P044.001.001

**Industrial Phase 1B Development Area (SMP Sampling Area)**

**FIGURE 1.3**

N:\GIS\Proj\P044.001\_PESRM-PES\GIS\Main Branch\2022\1108\OGZ and GPKG\Industrial Development Phase 1B - SMP Addendum Phase 1B - Boring Locations\_2021-03-26T15:56:13.000\_Created by: Marcus Checked by: initial



**Legend**

- Soil Boring Location
- Lot Boundaries
- ⌈ Industrial Phase 1B Limit of Disturbance



0 250 500 750 1,000 ft



1 Inch = 750 Feet

**SAFETY FIRST**



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

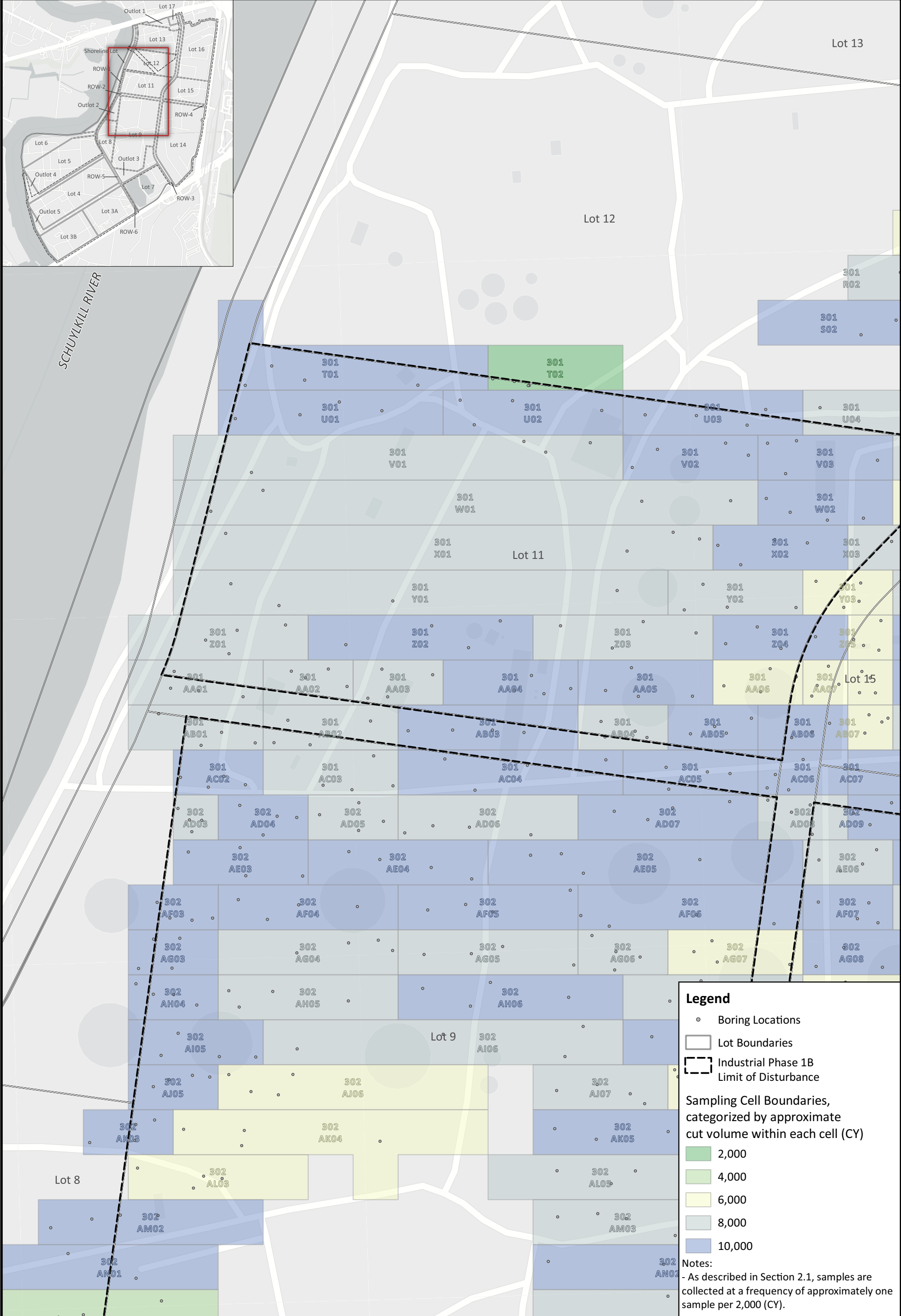
PROJECT: Soil Management Plan Addendum, Phase 1B

PROJECT NUMBER: P044.001.001

**Soil Boring Locations Industrial Phase 1B**

**FIGURE 2.1**

N:\GIS\Proj\044.001\_PESRM-PES\GIS\OGZ and GPKG\Main Branch\20221108\OGZ\OGZ\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - Boring Locations and Cell Boundaries by Volume - portrait - 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

- Boring Locations
- Lot Boundaries
- ▭ Industrial Phase 1B Limit of Disturbance

Sampling Cell Boundaries, categorized by approximate cut volume within each cell (CY)

- 2,000
- 4,000
- 6,000
- 8,000
- 10,000

Notes:  
- As described in Section 2.1, samples are collected at a frequency of approximately one sample per 2,000 (CY).

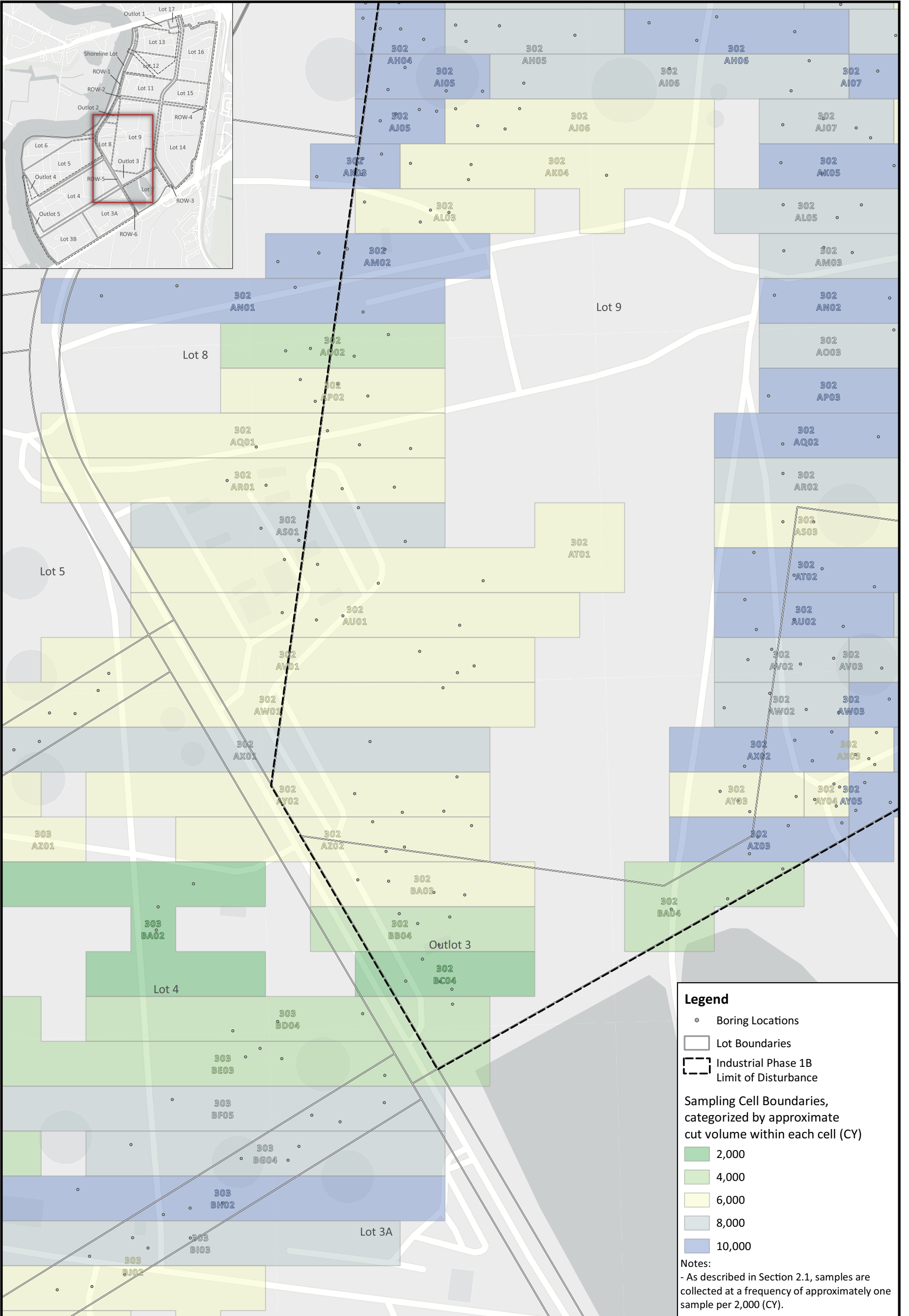


 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Soil Management Plan Addendum, Phase 1B
	PROJECT NUMBER: P044.001.001

**Soil Boring Locations and Cell Boundaries**

**FIGURE 2.2A**

N:\GIS\PI\P044.001\_PESRM-PES\GIS\OGZ and GPKS\Main Branch\20221108\OGZ322\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - Boring Locations and Cell Boundaries by Volume - portrait - 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



0 50 100 150 200 ft  
1 Inch = 200 Feet

**SAFETY FIRST**



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

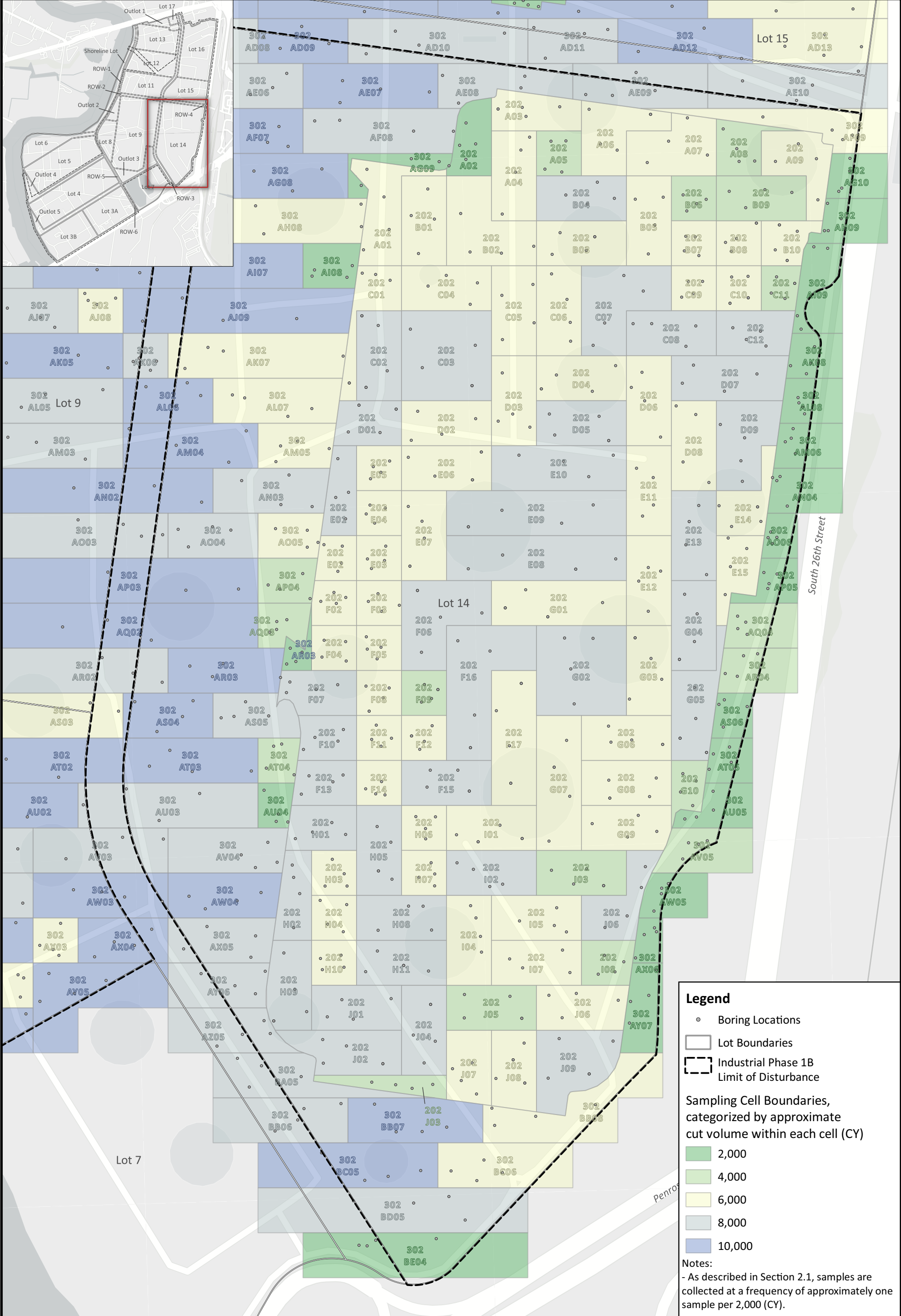
PROJECT: Soil Management Plan Addendum, Phase 1B

PROJECT NUMBER: P044.001.001

**Soil Boring Locations and Cell Boundaries**

**FIGURE 2.2B**

N:\GIS\Proj\044.001\_PESRM-PES\GIS\OGZ and GPKG\Main Branch\20221108\062322\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - Boring Locations and Cell Boundaries by Volume - portrait - 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

- Boring Locations
- Lot Boundaries
- Industrial Phase 1B Limit of Disturbance

Sampling Cell Boundaries, categorized by approximate cut volume within each cell (CY)

- 2,000
- 4,000
- 6,000
- 8,000
- 10,000

Notes:  
- As described in Section 2.1, samples are collected at a frequency of approximately one sample per 2,000 (CY).

N

0 50 100 150 200 ft

1 Inch = 200 Feet

**SAFETY FIRST**

terraphase  
engineering

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum, Phase 1B
PROJECT NUMBER:	P044.001.001

**Soil Boring Locations and Cell Boundaries**

**FIGURE 2.2C**



**Legend**

- Lot Boundaries
- Industrial Phase 1B Limit of Disturbance

**Sampling Cell Boundaries and Categorization**

- A ( $\leq$  NonRes DC & S-GW MSCs)
- B ( $>$  NonRes S-GW MSC only)
- E ( $>$  NonRes DC & S-GW MSCs)

N

0 50 100 150 200 ft

1 Inch = 200 Feet

**SAFETY FIRST**

terrphase  
engineering

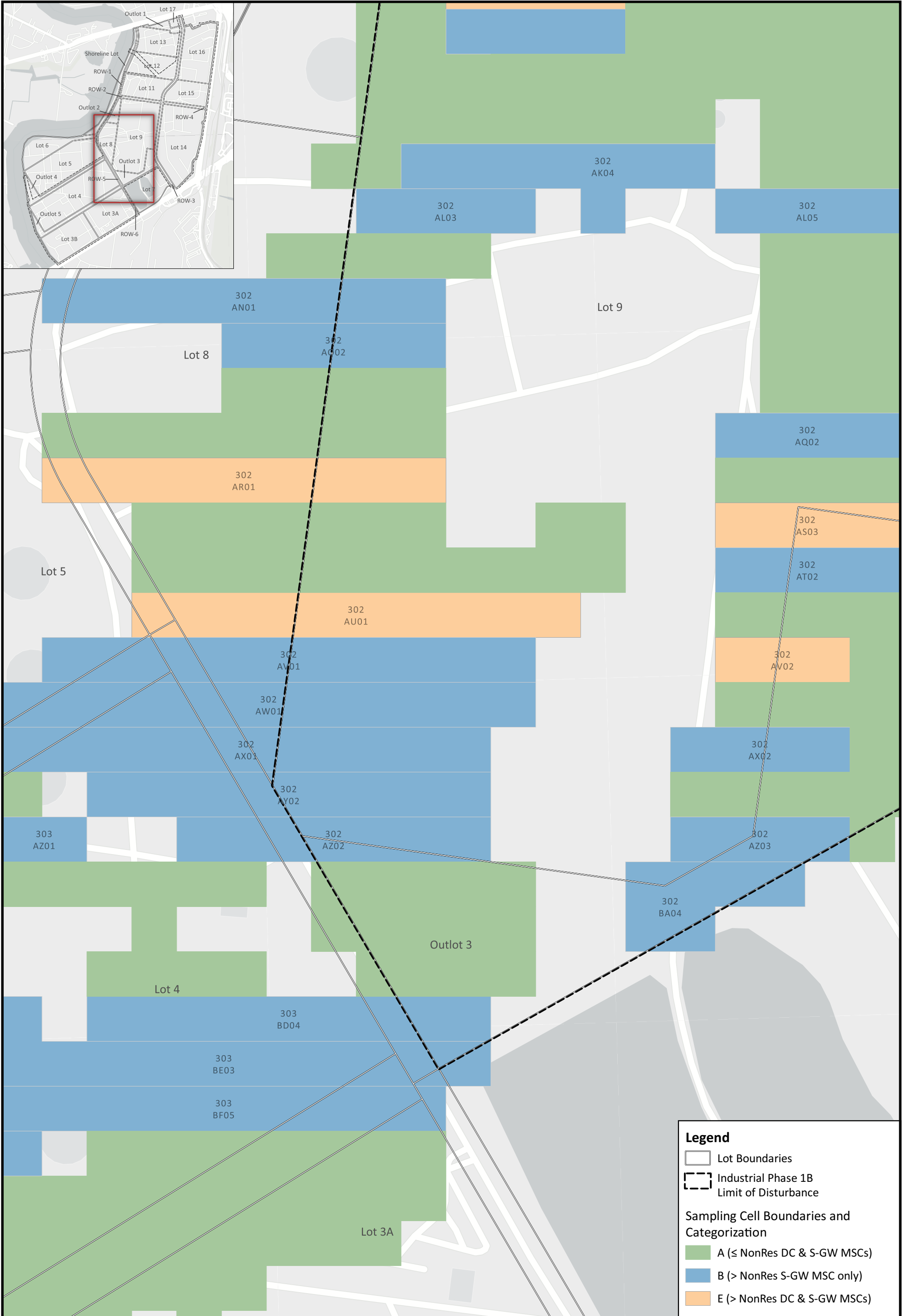
CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum, Phase 1B
PROJECT NUMBER:	P044.001.001

**Soil Management Plan Categorization**

**FIGURE 3.1A**

N:\GIS\Proj\P044.001\_PESRM-PES\GIS\OGZ and GPKS\Main Branch\20221108\OGZ322\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - Cell Categorization - portrait 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial

N:\GIS\Proj\P044.001\_PESRM-PE\GIS\OGZ and GPKS\Main Branch\20221108\OGZ\OGZ\_062322\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - Cell Categorization - portrait 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

- Lot Boundaries
- Industrial Phase 1B Limit of Disturbance

**Sampling Cell Boundaries and Categorization**

- A ( $\leq$  NonRes DC & S-GW MSCs)
- B ( $>$  NonRes S-GW MSC only)
- E ( $>$  NonRes DC & S-GW MSCs)



0 50 100 150 200 ft

1 Inch = 200 Feet

**SAFETY FIRST**



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Soil Management Plan Addendum, Phase 1B

PROJECT NUMBER: P044.001.001

**Soil Management Plan Categorization**

**FIGURE 3.1B**



N:\GIS\Proj\044.001\_PESRM-PES\GIS\OGZ and GPKS\Main Branch\20221108\OGZ\22\062322\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - Cell Categorization - portrait 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

- Lot Boundaries
- Industrial Phase 1B Limit of Disturbance

**Sampling Cell Boundaries and Categorization**

- A ( $\leq$  NonRes DC & S-GW MSCs)
- B ( $>$  NonRes S-GW MSC only)
- E ( $>$  NonRes DC & S-GW MSCs)



0 50 100 150 200 ft



1 Inch = 200 Feet

**SAFETY FIRST**



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Soil Management Plan Addendum, Phase 1B

PROJECT NUMBER: P044.001.001

**Soil Management Plan Categorization**

**FIGURE 3.1C**



**Legend**

- Control Points
- Lot Boundaries
- ▭ Industrial Phase 1B Limit of Disturbance

**Sampling Cell Boundaries and Categorization**

- A (≤ NonRes DC & S-GW MSCs)
- B (> NonRes S-GW MSC only)
- E (> NonRes DC & S-GW MSCs)

**Notes:**

- The ID for each control point is preceded with the Cell ID. For example, the first control point for the northernmost blue cell (shown on figure 4.1A), has an ID of "IP1B-01-0-1". Only the suffix of each control point is shown on the map for visual clarity.
- Control points are only shown for Phase 1B cells
- Phase 1A cells are slightly transparent

N

0 50 100 150 200 ft

1 Inch = 200 Feet

**SAFETY FIRST**

terrphase  
engineering

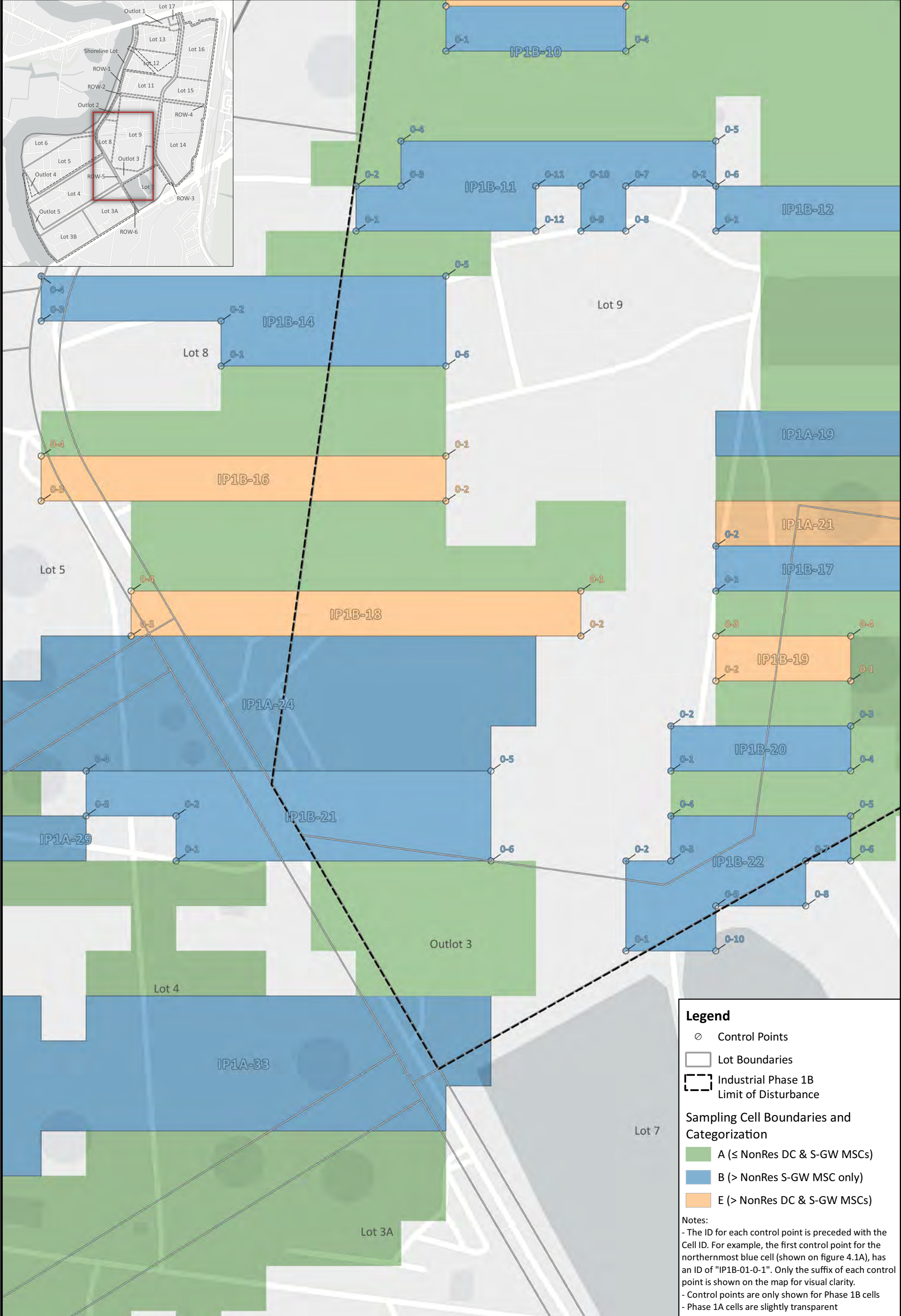
CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum, Phase 1B
PROJECT NUMBER:	P044.001.001

**Soil Management Plan Categorization**

**FIGURE 4.1A**

N:\GIS\Proj\044.001\_PESRM-PES\OGIS\OGZ and GPKS\Main Branch\20221108\062322\_P044.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - CAD Figure - portrait - 2021-03-26T15:56:13.000 - Created by: Marcus - Checked by: initial

N:\GIS\Proj\PO44.001\_PESRM-PES\GIS\OGZ and GPKS\Main Branch\20221108\OGZ322\_PO44.001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - CAD Figure - portrait 2021-03-26T15:56:13.000 Created by: Marcus Checked by: initial



**Legend**

- Control Points
- Lot Boundaries
- Industrial Phase 1B Limit of Disturbance

**Sampling Cell Boundaries and Categorization**

- A ( $\leq$  NonRes DC & S-GW MSCs)
- B ( $>$  NonRes S-GW MSC only)
- E ( $>$  NonRes DC & S-GW MSCs)

**Notes:**

- The ID for each control point is preceded with the Cell ID. For example, the first control point for the northernmost blue cell (shown on figure 4.1A), has an ID of "IP1B-01-0-1". Only the suffix of each control point is shown on the map for visual clarity.
- Control points are only shown for Phase 1B cells
- Phase 1A cells are slightly transparent



 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Soil Management Plan Addendum, Phase 1B
	PROJECT NUMBER: P044.001.001

**Soil Management Plan Categorization**

**FIGURE 4.1B**



N:\GIS\Project\044\_001\_PESRM-PES\GIS\OGZ and GPK\Main Branch\20221108\OGZ322\_P044\_001\_Hilco.qgz - Industrial Development Phase I - SMP Addendum Phase 1B - CAD Figure - portrait - 2021-03-26T15:56:13.000 - Created by: Marcus - Checked by: initial

**Legend**

- Control Points
- Lot Boundaries
- Industrial Phase 1B Limit of Disturbance

**Sampling Cell Boundaries and Categorization**

- A ( $\leq$  NonRes DC & S-GW MSCs)
- B ( $>$  NonRes S-GW MSC only)
- E ( $>$  NonRes DC & S-GW MSCs)

**Notes:**

- The ID for each control point is preceded with the Cell ID. For example, the first control point for the northernmost blue cell (shown on figure 4.1A), has an ID of "IP1B-01-0-1". Only the suffix of each control point is shown on the map for visual clarity.
- Control points are only shown for Phase 1B cells
- Phase 1A cells are slightly transparent



 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Soil Management Plan Addendum, Phase 1B
	PROJECT NUMBER: P044.001.001

**Soil Management Plan Categorization**

**FIGURE 4.1C**

# Appendix A

## Laboratory Reports





## ANALYTICAL REPORT

Lab Number:	L2242048
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/15/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2242048

Report Date: 08/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2242048-01	301-T01-C1-VOC	SOIL	PHILADELPHIA, PA	08/04/22 10:00	08/04/22
L2242048-02	301-T01-C1-COMP	SOIL	PHILADELPHIA, PA	08/04/22 10:00	08/04/22
L2242048-03	301-T01-C2-VOC	SOIL	PHILADELPHIA, PA	08/04/22 10:10	08/04/22
L2242048-04	301-T01-C2-COMP	SOIL	PHILADELPHIA, PA	08/04/22 10:10	08/04/22
L2242048-05	301-T01-C3-VOC	SOIL	PHILADELPHIA, PA	08/04/22 10:20	08/04/22
L2242048-06	301-T01-C3-COMP	SOIL	PHILADELPHIA, PA	08/04/22 10:20	08/04/22
L2242048-07	301-T01-C4-VOC	SOIL	PHILADELPHIA, PA	08/04/22 10:30	08/04/22
L2242048-08	301-T01-C4-COMP	SOIL	PHILADELPHIA, PA	08/04/22 10:30	08/04/22
L2242048-09	301-T01-C5-VOC	SOIL	PHILADELPHIA, PA	08/04/22 10:40	08/04/22
L2242048-10	301-T01-C5-COMP	SOIL	PHILADELPHIA, PA	08/04/22 10:40	08/04/22
L2242048-11	301-T02-C1-VOC	SOIL	PHILADELPHIA, PA	08/04/22 10:50	08/04/22
L2242048-12	301-T02-C1-COMP	SOIL	PHILADELPHIA, PA	08/04/22 10:50	08/04/22
L2242048-13	301-U01-C1-VOC	SOIL	PHILADELPHIA, PA	08/04/22 11:00	08/04/22
L2242048-14	301-U01-C1-COMP	SOIL	PHILADELPHIA, PA	08/04/22 11:00	08/04/22
L2242048-15	301-U01-C2-VOC	SOIL	PHILADELPHIA, PA	08/04/22 11:10	08/04/22
L2242048-16	301-U01-C2-COMP	SOIL	PHILADELPHIA, PA	08/04/22 11:10	08/04/22
L2242048-17	301-U01-C3-VOC	SOIL	PHILADELPHIA, PA	08/04/22 11:20	08/04/22
L2242048-18	301-U01-C3-COMP	SOIL	PHILADELPHIA, PA	08/04/22 11:20	08/04/22
L2242048-19	301-U01-C4-VOC	SOIL	PHILADELPHIA, PA	08/04/22 11:30	08/04/22
L2242048-20	301-U01-C4-COMP	SOIL	PHILADELPHIA, PA	08/04/22 11:30	08/04/22
L2242048-21	301-U01-C5-VOC	SOIL	PHILADELPHIA, PA	08/04/22 11:40	08/04/22
L2242048-22	301-U01-C5-COMP	SOIL	PHILADELPHIA, PA	08/04/22 11:40	08/04/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2242048-01: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2242048-01: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (140%, 135%, respectively) and 4-bromofluorobenzene (439%, 151%, respectively); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242048-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (226%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242048-11: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2242048-15D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (152%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242048-15D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2242048-17, -19, and -21: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (135%, 154%, and 149%, respectively) and 4-bromofluorobenzene (173%, 189%, and 207%, respectively); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

The WG1673699-5 Method Blank, associated with L2242048-09 and -13, has a concentration above the

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

### Case Narrative (continued)

reporting limit for toluene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

#### Semivolatile Organics

L2242048-14D, -20D, and -22D: The sample has elevated detection limits due to the dilution required by the sample matrix.

#### Total Metals

L2242048-20: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Steven Gniadek

Title: Technical Director/Representative

Date: 08/15/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-01  
 Client ID: 301-T01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 11:56  
 Analyst: LAC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.023	J	mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.072	0.018	1
Toluene	ND		mg/kg	0.072	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.080		mg/kg	0.072	0.010	1
p/m-Xylene	0.067	J	mg/kg	0.14	0.040	1
o-Xylene	ND		mg/kg	0.072	0.021	1
Xylenes, Total	0.067	J	mg/kg	0.072	0.021	1
Isopropylbenzene	1.5		mg/kg	0.072	0.0078	1
1,3,5-Trimethylbenzene	0.052	J	mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	0.070	J	mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	135	Q	70-130
4-Bromofluorobenzene	151	Q	70-130
Dibromofluoromethane	76		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-01  
 Client ID: 301-T01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 12:17  
 Analyst: LAC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.012		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.0065		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	0.0012		mg/kg	0.00052	0.00030	1
Ethylbenzene	0.017		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.013		mg/kg	0.0021	0.00058	1
o-Xylene	0.0038		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.017		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.33	E	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0048		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0060		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	140	Q	70-130
4-Bromofluorobenzene	439	Q	70-130
Dibromofluoromethane	76		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-03  
 Client ID: 301-T01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:10  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 02:17  
 Analyst: MKS  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0039		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	0.0010		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	0.0016		mg/kg	0.0010	0.00015	1
p/m-Xylene	0.0027		mg/kg	0.0021	0.00058	1
o-Xylene	0.00067	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0034	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.013		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00086	J	mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0059		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	79		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-05  
 Client ID: 301-T01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:20  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 12:34  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.0031		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	0.00056	J	mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.00052	J	mg/kg	0.00088	0.00012	1
p/m-Xylene	0.00050	J	mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	0.00050	J	mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.0054		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	0.00029	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	80		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-07  
 Client ID: 301-T01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 12:55  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00036	J	mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0012	0.00033	1
Xylenes, Total	ND		mg/kg	0.0012	0.00033	1
Isopropylbenzene	0.00023	J	mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	86		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-09  
 Client ID: 301-T01-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/09/22 19:17  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00092		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00073	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-11  
 Client ID: 301-T02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:50  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:39  
 Analyst: NLK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.011	1
Benzene	0.50		mg/kg	0.026	0.0088	1
1,2-Dichloroethane	ND		mg/kg	0.053	0.014	1
Toluene	0.11		mg/kg	0.053	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.10		mg/kg	0.053	0.0074	1
p/m-Xylene	0.27		mg/kg	0.10	0.030	1
o-Xylene	0.033	J	mg/kg	0.053	0.015	1
Xylenes, Total	0.30	J	mg/kg	0.053	0.015	1
Isopropylbenzene	0.049	J	mg/kg	0.053	0.0058	1
1,3,5-Trimethylbenzene	0.031	J	mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	0.057	J	mg/kg	0.10	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	226	Q	70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-13  
 Client ID: 301-U01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/09/22 19:56  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0017		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.00065	JB	mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	0.00029	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.00079	J	mg/kg	0.0020	0.00056	1
o-Xylene	0.00030	J	mg/kg	0.0010	0.00029	1
Xylenes, Total	0.0011	J	mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00098	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-15 D  
 Client ID: 301-U01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:10  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 14:23  
 Analyst: NLK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.26	0.026	2
Benzene	1.5		mg/kg	0.064	0.021	2
1,2-Dichloroethane	ND		mg/kg	0.13	0.033	2
Toluene	1.3		mg/kg	0.13	0.070	2
1,2-Dibromoethane	ND		mg/kg	0.064	0.038	2
Ethylbenzene	1.0		mg/kg	0.13	0.018	2
p/m-Xylene	2.4		mg/kg	0.26	0.072	2
o-Xylene	0.25		mg/kg	0.13	0.038	2
Xylenes, Total	2.6		mg/kg	0.13	0.038	2
Isopropylbenzene	2.5		mg/kg	0.13	0.014	2
1,3,5-Trimethylbenzene	0.14	J	mg/kg	0.26	0.025	2
1,2,4-Trimethylbenzene	0.67		mg/kg	0.26	0.043	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	152	Q	70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-17  
 Client ID: 301-U01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:20  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 10:33  
 Analyst: NLK  
 Percent Solids: 63%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.22	0.022	1
Benzene	5.4		mg/kg	0.056	0.018	1
1,2-Dichloroethane	ND		mg/kg	0.11	0.029	1
Toluene	3.4		mg/kg	0.11	0.060	1
1,2-Dibromoethane	ND		mg/kg	0.056	0.033	1
Ethylbenzene	3.7		mg/kg	0.11	0.016	1
p/m-Xylene	7.7		mg/kg	0.22	0.062	1
o-Xylene	0.57		mg/kg	0.11	0.032	1
Xylenes, Total	8.3		mg/kg	0.11	0.032	1
Isopropylbenzene	5.0		mg/kg	0.11	0.012	1
1,3,5-Trimethylbenzene	0.31		mg/kg	0.22	0.021	1
1,2,4-Trimethylbenzene	1.6		mg/kg	0.22	0.037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	135	Q	70-130
4-Bromofluorobenzene	173	Q	70-130
Dibromofluoromethane	78		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-19  
 Client ID: 301-U01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 11:35  
 Analyst: LAC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	0.39		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	0.072		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	1.5		mg/kg	0.055	0.0078	1
p/m-Xylene	0.040	J	mg/kg	0.11	0.031	1
o-Xylene	0.048	J	mg/kg	0.055	0.016	1
Xylenes, Total	0.088	J	mg/kg	0.055	0.016	1
Isopropylbenzene	3.0		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	0.24		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	1.3		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	154	Q	70-130
4-Bromofluorobenzene	189	Q	70-130
Dibromofluoromethane	74		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-21  
 Client ID: 301-U01-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 01:45  
 Analyst: MKS  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.43		mg/kg	0.030	0.0099	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	0.066		mg/kg	0.060	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	2.1		mg/kg	0.060	0.0084	1
p/m-Xylene	0.038	J	mg/kg	0.12	0.033	1
o-Xylene	0.055	J	mg/kg	0.060	0.017	1
Xylenes, Total	0.093	J	mg/kg	0.060	0.017	1
Isopropylbenzene	3.3		mg/kg	0.060	0.0065	1
1,3,5-Trimethylbenzene	0.26		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	1.8		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	149	Q	70-130
4-Bromofluorobenzene	207	Q	70-130
Dibromofluoromethane	85		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/08/22 08:37  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,07 Batch: WG1672815-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/08/22 08:37  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11,15 Batch: WG1672957-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/10/22 06:44  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,17,19 Batch: WG1673529-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	113		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 19:42  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1673610-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 19:08  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 21 Batch: WG1673619-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 12:34  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09,13 Batch: WG1673699-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	0.0011		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/10/22 06:44  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1673750-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	113		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,07 Batch: WG1672815-3 WG1672815-4								
Methyl tert butyl ether	85		89		66-130	5		30
Benzene	96		98		70-130	2		30
1,2-Dichloroethane	90		95		70-130	5		30
Toluene	92		94		70-130	2		30
1,2-Dibromoethane	94		97		70-130	3		30
Ethylbenzene	97		98		70-130	1		30
p/m-Xylene	97		98		70-130	1		30
o-Xylene	96		98		70-130	2		30
Isopropylbenzene	96		97		70-130	1		30
1,3,5-Trimethylbenzene	97		98		70-130	1		30
1,2,4-Trimethylbenzene	97		98		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		97		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	91		90		70-130
Dibromofluoromethane	92		94		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11,15 Batch: WG1672957-3 WG1672957-4								
Methyl tert butyl ether	85		89		66-130	5		30
Benzene	96		98		70-130	2		30
1,2-Dichloroethane	90		95		70-130	5		30
Toluene	92		94		70-130	2		30
1,2-Dibromoethane	94		97		70-130	3		30
Ethylbenzene	97		98		70-130	1		30
p/m-Xylene	97		98		70-130	1		30
o-Xylene	96		98		70-130	2		30
Isopropylbenzene	96		97		70-130	1		30
1,3,5-Trimethylbenzene	97		98		70-130	1		30
1,2,4-Trimethylbenzene	97		98		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		97		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	91		90		70-130
Dibromofluoromethane	92		94		70-130

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,17,19 Batch: WG1673529-3 WG1673529-4								
Methyl tert butyl ether	75		75		66-130	0		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	75		75		70-130	0		30
Toluene	86		85		70-130	1		30
1,2-Dibromoethane	86		87		70-130	1		30
Ethylbenzene	88		88		70-130	0		30
p/m-Xylene	90		90		70-130	0		30
o-Xylene	89		89		70-130	0		30
Isopropylbenzene	90		88		70-130	2		30
1,3,5-Trimethylbenzene	91		90		70-130	1		30
1,2,4-Trimethylbenzene	92		89		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	86		85		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	97		95		70-130
Dibromofluoromethane	89		87		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1673610-3 WG1673610-4								
Methyl tert butyl ether	89		86		66-130	3		30
Benzene	102		97		70-130	5		30
1,2-Dichloroethane	90		89		70-130	1		30
Toluene	98		93		70-130	5		30
1,2-Dibromoethane	96		95		70-130	1		30
Ethylbenzene	100		94		70-130	6		30
p/m-Xylene	102		96		70-130	6		30
o-Xylene	100		95		70-130	5		30
Isopropylbenzene	102		93		70-130	9		30
1,3,5-Trimethylbenzene	103		95		70-130	8		30
1,2,4-Trimethylbenzene	104		94		70-130	10		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	89		92		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	98		96		70-130
Dibromofluoromethane	89		89		70-130



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 21 Batch: WG1673619-3 WG1673619-4								
Methyl tert butyl ether	104		95		66-130	9		30
Benzene	102		94		70-130	8		30
1,2-Dichloroethane	101		95		70-130	6		30
Toluene	93		87		70-130	7		30
1,2-Dibromoethane	98		94		70-130	4		30
Ethylbenzene	100		94		70-130	6		30
p/m-Xylene	99		93		70-130	6		30
o-Xylene	100		94		70-130	6		30
Isopropylbenzene	102		99		70-130	3		30
1,3,5-Trimethylbenzene	102		98		70-130	4		30
1,2,4-Trimethylbenzene	100		96		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09,13 Batch: WG1673699-3 WG1673699-4								
Methyl tert butyl ether	112		112		66-130	0		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	107		107		70-130	0		30
Toluene	108		127		70-130	16		30
1,2-Dibromoethane	117		129		70-130	10		30
Ethylbenzene	110		112		70-130	2		30
p/m-Xylene	112		114		70-130	2		30
o-Xylene	113		116		70-130	3		30
Isopropylbenzene	110		100		70-130	10		30
1,3,5-Trimethylbenzene	111		103		70-130	7		30
1,2,4-Trimethylbenzene	113		105		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		92		70-130
Toluene-d8	95		113		70-130
4-Bromofluorobenzene	98		88		70-130
Dibromofluoromethane	101		100		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1673750-3 WG1673750-4								
Methyl tert butyl ether	75		75		66-130	0		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	75		75		70-130	0		30
Toluene	86		85		70-130	1		30
1,2-Dibromoethane	86		87		70-130	1		30
Ethylbenzene	88		88		70-130	0		30
p/m-Xylene	90		90		70-130	0		30
o-Xylene	89		89		70-130	0		30
Isopropylbenzene	90		88		70-130	2		30
1,3,5-Trimethylbenzene	91		90		70-130	1		30
1,2,4-Trimethylbenzene	92		89		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	86		85		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	97		95		70-130
Dibromofluoromethane	89		87		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-02  
 Client ID: 301-T01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 01:01  
 Analyst: SZ  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.097	J	mg/kg	0.19	0.023	1
Fluorene	0.10	J	mg/kg	0.19	0.018	1
Phenanthrene	1.5		mg/kg	0.11	0.023	1
Anthracene	0.39		mg/kg	0.11	0.036	1
Pyrene	1.8		mg/kg	0.11	0.019	1
Benzo(a)anthracene	1.2		mg/kg	0.11	0.021	1
Chrysene	1.1		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	1.7		mg/kg	0.11	0.032	1
Benzo(a)pyrene	1.3		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.69		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	67		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-04  
 Client ID: 301-T01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:10  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 01:23  
 Analyst: SZ  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.088	J	mg/kg	0.18	0.022	1
Fluorene	0.094	J	mg/kg	0.18	0.018	1
Phenanthrene	0.76		mg/kg	0.11	0.022	1
Anthracene	0.24		mg/kg	0.11	0.036	1
Pyrene	1.0		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.69		mg/kg	0.11	0.021	1
Chrysene	0.64		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.83		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.74		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.38		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-06  
 Client ID: 301-T01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:20  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 17:44  
 Analyst: JG  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.025	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.16		mg/kg	0.11	0.022	1
Anthracene	0.060	J	mg/kg	0.11	0.034	1
Pyrene	0.32		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.22		mg/kg	0.11	0.020	1
Chrysene	0.22		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.31		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.27		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	32		30-120
4-Terphenyl-d14	27		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-08  
 Client ID: 301-T01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 02:08  
 Analyst: SZ  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.62		mg/kg	0.18	0.022	1
Fluorene	1.1		mg/kg	0.18	0.018	1
Phenanthrene	3.2		mg/kg	0.11	0.022	1
Anthracene	0.47		mg/kg	0.11	0.036	1
Pyrene	1.0		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.43		mg/kg	0.11	0.021	1
Chrysene	0.41		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.35		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.32		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	105		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-10  
 Client ID: 301-T01-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 02:31  
 Analyst: SZ  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.051	J	mg/kg	0.19	0.023	1
Fluorene	0.050	J	mg/kg	0.19	0.019	1
Phenanthrene	0.42		mg/kg	0.12	0.023	1
Anthracene	0.21		mg/kg	0.12	0.037	1
Pyrene	0.98		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.81		mg/kg	0.12	0.022	1
Chrysene	0.76		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	1.4		mg/kg	0.12	0.032	1
Benzo(a)pyrene	1.2		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.64		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-12  
 Client ID: 301-T02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:50  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 02:53  
 Analyst: SZ  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.37		mg/kg	0.20	0.024	1
Fluorene	0.75		mg/kg	0.20	0.019	1
Phenanthrene	1.5		mg/kg	0.12	0.024	1
Anthracene	0.37		mg/kg	0.12	0.039	1
Pyrene	0.81		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.46		mg/kg	0.12	0.022	1
Chrysene	0.60		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.48		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.44		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.26		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-14 D  
 Client ID: 301-U01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 17:40  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.18	J	mg/kg	0.94	0.12	5
Fluorene	0.21	J	mg/kg	0.94	0.092	5
Phenanthrene	1.5		mg/kg	0.57	0.11	5
Anthracene	0.38	J	mg/kg	0.57	0.18	5
Pyrene	1.6		mg/kg	0.57	0.094	5
Benzo(a)anthracene	1.2		mg/kg	0.57	0.11	5
Chrysene	1.3		mg/kg	0.57	0.098	5
Benzo(b)fluoranthene	1.7		mg/kg	0.57	0.16	5
Benzo(a)pyrene	1.6		mg/kg	0.76	0.23	5
Benzo(ghi)perylene	0.86		mg/kg	0.76	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-16  
 Client ID: 301-U01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:10  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 03:38  
 Analyst: SZ  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	0.39		mg/kg	0.21	0.020	1
Phenanthrene	0.72		mg/kg	0.13	0.026	1
Anthracene	0.070	J	mg/kg	0.13	0.041	1
Pyrene	0.18		mg/kg	0.13	0.021	1
Benzo(a)anthracene	0.095	J	mg/kg	0.13	0.024	1
Chrysene	0.12	J	mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.094	J	mg/kg	0.13	0.036	1
Benzo(a)pyrene	0.074	J	mg/kg	0.17	0.052	1
Benzo(ghi)perylene	0.037	J	mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-18  
 Client ID: 301-U01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:20  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/10/22 23:54  
 Analyst: SZ  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.64		mg/kg	0.20	0.024	1
Fluorene	1.2		mg/kg	0.20	0.019	1
Phenanthrene	3.4		mg/kg	0.12	0.024	1
Anthracene	0.54		mg/kg	0.12	0.039	1
Pyrene	1.1		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.46		mg/kg	0.12	0.022	1
Chrysene	0.42		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.39		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.34		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	105		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-20 D  
 Client ID: 301-U01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 18:04  
 Analyst: JG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.98	0.12	5
Fluorene	0.58	J	mg/kg	0.98	0.095	5
Phenanthrene	1.5		mg/kg	0.58	0.12	5
Anthracene	0.28	J	mg/kg	0.58	0.19	5
Pyrene	0.69		mg/kg	0.58	0.097	5
Benzo(a)anthracene	0.33	J	mg/kg	0.58	0.11	5
Chrysene	0.41	J	mg/kg	0.58	0.10	5
Benzo(b)fluoranthene	0.31	J	mg/kg	0.58	0.16	5
Benzo(a)pyrene	0.26	J	mg/kg	0.78	0.24	5
Benzo(ghi)perylene	0.14	J	mg/kg	0.78	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-22 D  
 Client ID: 301-U01-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 19:14  
 Analyst: JG  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.25	J	mg/kg	0.99	0.12	5
Fluorene	1.1		mg/kg	0.99	0.096	5
Phenanthrene	2.0		mg/kg	0.59	0.12	5
Anthracene	0.38	J	mg/kg	0.59	0.19	5
Pyrene	0.47	J	mg/kg	0.59	0.098	5
Benzo(a)anthracene	0.17	J	mg/kg	0.59	0.11	5
Chrysene	0.21	J	mg/kg	0.59	0.10	5
Benzo(b)fluoranthene	0.20	J	mg/kg	0.59	0.17	5
Benzo(a)pyrene	ND		mg/kg	0.79	0.24	5
Benzo(ghi)perylene	ND		mg/kg	0.79	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/09/22 22:28  
Analyst: SZ

Extraction Method: EPA 3546  
Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1671945-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	84		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1671945-2 WG1671945-3								
Naphthalene	74		80		40-140	8		50
Fluorene	78		86		40-140	10		50
Phenanthrene	74		84		40-140	13		50
Anthracene	79		88		40-140	11		50
Pyrene	75		80		35-142	6		50
Benzo(a)anthracene	80		90		40-140	12		50
Chrysene	76		82		40-140	8		50
Benzo(b)fluoranthene	93		105		40-140	12		50
Benzo(a)pyrene	98		110		40-140	12		50
Benzo(ghi)perylene	79		92		40-140	15		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	83		88		23-120
2-Fluorobiphenyl	74		77		30-120
4-Terphenyl-d14	87		92		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-02

Date Collected: 08/04/22 10:00

Client ID: 301-T01-C1-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	142		mg/kg	2.13	0.114	1	08/06/22 08:00	08/06/22 16:07	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-04

Date Collected: 08/04/22 10:10

Client ID: 301-T01-C2-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	43.9		mg/kg	2.16	0.116	1	08/06/22 08:00	08/06/22 16:12	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-06  
 Client ID: 301-T01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:20  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.2		mg/kg	2.07	0.111	1	08/06/22 08:00	08/06/22 16:17	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-08

Date Collected: 08/04/22 10:30

Client ID: 301-T01-C4-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.48		mg/kg	2.19	0.117	1	08/06/22 08:00	08/06/22 16:23	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-10

Date Collected: 08/04/22 10:40

Client ID: 301-T01-C5-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	64.3		mg/kg	2.29	0.123	1	08/06/22 08:00	08/06/22 16:28	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-12  
 Client ID: 301-T02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 10:50  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.5		mg/kg	2.34	0.125	1	08/06/22 08:00	08/06/22 16:33	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-14

Date Collected: 08/04/22 11:00

Client ID: 301-U01-C1-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	73.9		mg/kg	2.22	0.119	1	08/06/22 08:00	08/06/22 16:39	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-16  
 Client ID: 301-U01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 11:10  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	157		mg/kg	2.49	0.133	1	08/06/22 08:00	08/06/22 16:44	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-18

Date Collected: 08/04/22 11:20

Client ID: 301-U01-C3-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.1		mg/kg	2.32	0.125	1	08/06/22 08:00	08/06/22 16:49	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-20

Date Collected: 08/04/22 11:30

Client ID: 301-U01-C4-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	111		mg/kg	4.66	0.250	2	08/06/22 08:00	08/06/22 18:14	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-22

Date Collected: 08/04/22 11:40

Client ID: 301-U01-C5-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.4		mg/kg	2.29	0.123	1	08/06/22 08:00	08/06/22 17:09	EPA 3050B	1,6010D	MC





Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1671984-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/06/22 08:00	08/06/22 15:07	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1671984-2 SRM Lot Number: D113-540								
Lead, Total	92		-		72-128			-

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22    QC Batch ID: WG1671984-3    QC Sample: L2242002-01    Client ID: MS Sample												
Lead, Total	197	51	276	155	Q	-	-		75-125	-		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-01

Date Collected: 08/04/22 10:00

Client ID: 301-T01-C1-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.5		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-02

Date Collected: 08/04/22 10:00

Client ID: 301-T01-C1-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.1		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-03

Date Collected: 08/04/22 10:10

Client ID: 301-T01-C2-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-04

Date Collected: 08/04/22 10:10

Client ID: 301-T01-C2-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.2		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-05

Date Collected: 08/04/22 10:20

Client ID: 301-T01-C3-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242048-06

Date Collected: 08/04/22 10:20

Client ID: 301-T01-C3-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.5		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-07

Date Collected: 08/04/22 10:30

Client ID: 301-T01-C4-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.9		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-08

Date Collected: 08/04/22 10:30

Client ID: 301-T01-C4-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.3		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-09

Date Collected: 08/04/22 10:40

Client ID: 301-T01-C5-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-10

Date Collected: 08/04/22 10:40

Client ID: 301-T01-C5-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.6		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-11

Date Collected: 08/04/22 10:50

Client ID: 301-T02-C1-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.3		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-12

Date Collected: 08/04/22 10:50

Client ID: 301-T02-C1-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242048-13

Date Collected: 08/04/22 11:00

Client ID: 301-U01-C1-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-14

Date Collected: 08/04/22 11:00

Client ID: 301-U01-C1-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.1		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242048-15

Date Collected: 08/04/22 11:10

Client ID: 301-U01-C2-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.5		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-16

Date Collected: 08/04/22 11:10

Client ID: 301-U01-C2-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.4		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-17

Date Collected: 08/04/22 11:20

Client ID: 301-U01-C3-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	63.2		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

**Lab ID:** L2242048-18  
**Client ID:** 301-U01-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 11:20  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.0		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

**Lab ID:** L2242048-19  
**Client ID:** 301-U01-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 11:30  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.5		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242048

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242048-20

Date Collected: 08/04/22 11:30

Client ID: 301-U01-C4-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	08/05/22 12:32	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242048-21

Date Collected: 08/04/22 11:40

Client ID: 301-U01-C5-VOC

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

**Lab ID:** L2242048-22  
**Client ID:** 301-U01-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 11:40  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2242048

**Report Date:** 08/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1671779-1 QC Sample: L2242048-01 Client ID: 301-T01-C1-VOC						
Solids, Total	88.5	87.6	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1671780-1 QC Sample: L2242049-01 Client ID: DUP Sample						
Solids, Total	85.8	86.1	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
B	Absent
C	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242048-01A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2242048-01B	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260H(14),PA-8260HLW(14)
L2242048-01C	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260H(14),PA-8260HLW(14)
L2242048-01D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2242048-02A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2242048-02B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2242048-03A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2242048-03B	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-03C	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-03D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2242048-04A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2242048-04B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2242048-05A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2242048-05B	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-05C	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-05D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2242048-06A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2242048-06B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2242048-07A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2242048-07B	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-07C	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-07D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242048**Project Number:** 200.00135.006**Report Date:** 08/15/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242048-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2242048-08B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2242048-09A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2242048-09B	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-09C	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-09D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2242048-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2242048-10B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2242048-11A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2242048-11B	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-11C	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-11D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2242048-12A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		PB-TI(180)
L2242048-12B	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2242048-13A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2242048-13B	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-13C	Vial water preserved	B	NA		4.7	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-13D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2242048-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2242048-14B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2242048-15A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2242048-15B	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-15C	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-15D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2242048-16A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		PB-TI(180)
L2242048-16B	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2242048-17A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2242048-17B	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Serial\_No:**08152212:54  
**Lab Number:** L2242048  
**Report Date:** 08/15/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242048-17C	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-17D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2242048-18A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		PB-TI(180)
L2242048-18B	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2242048-19A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2242048-19B	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-19C	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-19D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2242048-20A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		PB-TI(180)
L2242048-20B	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2242048-21A	Vial MeOH preserved	C	NA		5.1	Y	Absent		PA-8260HLW(14)
L2242048-21B	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-21C	Vial water preserved	C	NA		5.1	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242048-21D	Plastic 2oz unpreserved for TS	C	NA		5.1	Y	Absent		TS(7)
L2242048-22A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		5.1	Y	Absent		PB-TI(180)
L2242048-22B	Glass 120ml/4oz unpreserved	C	NA		5.1	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
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## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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**Lab Number:** L2242048  
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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242048  
**Report Date:** 08/15/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242048

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/3/22

ALPHA Job #: 02242048

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											
42048-01	301-T01-C1-VOC	8/4/22	1000	S	as	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-02	301-T01-C1-COMP		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-03	301-T01-C2-VOC		1010			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-04	301-T01-C2-COMP		1010			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-05	301-T01-C3-VOC		1020			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-06	301-T01-C3-COMP		1020			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-07	301-T01-C4-VOC		1030			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-08	301-T01-C4-COMP		1030			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-09	301-T01-C5-VOC		1040			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	301-T01-C5-COMP	<input checked="" type="checkbox"/>	1040	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/4/22/1500	STONES AAL	8/4/22/1500
STONES AAL	8/4/22/1755/1000	<i>[Signature]</i>	8-4-22/1500
<i>[Signature]</i>	8-4-22/130	<i>[Signature]</i>	8-4-22/2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-8220 TEL: 508-822-6300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/5/22

ALPHA Job #: L2242048

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead										
42648-11	301-TOZ-C1-VOC	8/4/22	1050	S	an	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-12	301-TOZ-C1-COMP		1050			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-13	301-U01-C1-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-14	301-U01-C1-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-15	301-U01-C2-VOC		1110			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-16	301-U01-C2-COMP		1110			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-17	301-U01-C3-VOC		1120			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-18	301-U01-C3-COMP		1120			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-19	301-U01-C4-VOC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-20	301-U01-C4-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42648-11	301-TOZ-C1-VOC	8/4/22	1050	S	an
-12	301-TOZ-C1-COMP		1050		
-13	301-U01-C1-VOC		1100		
-14	301-U01-C1-COMP		1100		
-15	301-U01-C2-VOC		1110		
-16	301-U01-C2-COMP		1110		
-17	301-U01-C3-VOC		1120		
-18	301-U01-C3-COMP		1120		
-19	301-U01-C4-VOC		1130		
-20	301-U01-C4-COMP		1130		

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/4/22/1500	STONES AAL	8/4/22/1500
STONES AAL	8/4/22/1755	<i>[Signature]</i>	8/4/22/1755
<i>[Signature]</i>	8-4-22	<i>[Signature]</i>	8-4-22 9:00
<i>[Signature]</i>	8-4-22	<i>[Signature]</i>	8-5-22 1:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hiltcoglobal.com

Date Rec'd in Lab: 8/5/22

ALPHA Job #: 12242048

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead													
42048-21	8/4/22	1140	S	a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
-22	↓	1140	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42048-21	301-U01-C5-VOC	8/4/22	1140	S	a
-22	301-U01-C5-COMP	↓	1140	↓	↓

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/4/22/1500	STONES AAL	8/4/22/1500
STONES AAL	8/4/22/1755	<i>[Signature]</i>	8/4/22
<i>[Signature]</i>	8/4/22	<i>[Signature]</i>	8/4/22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

**PADEP Short List Analytical Suites per Table III-5:**

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

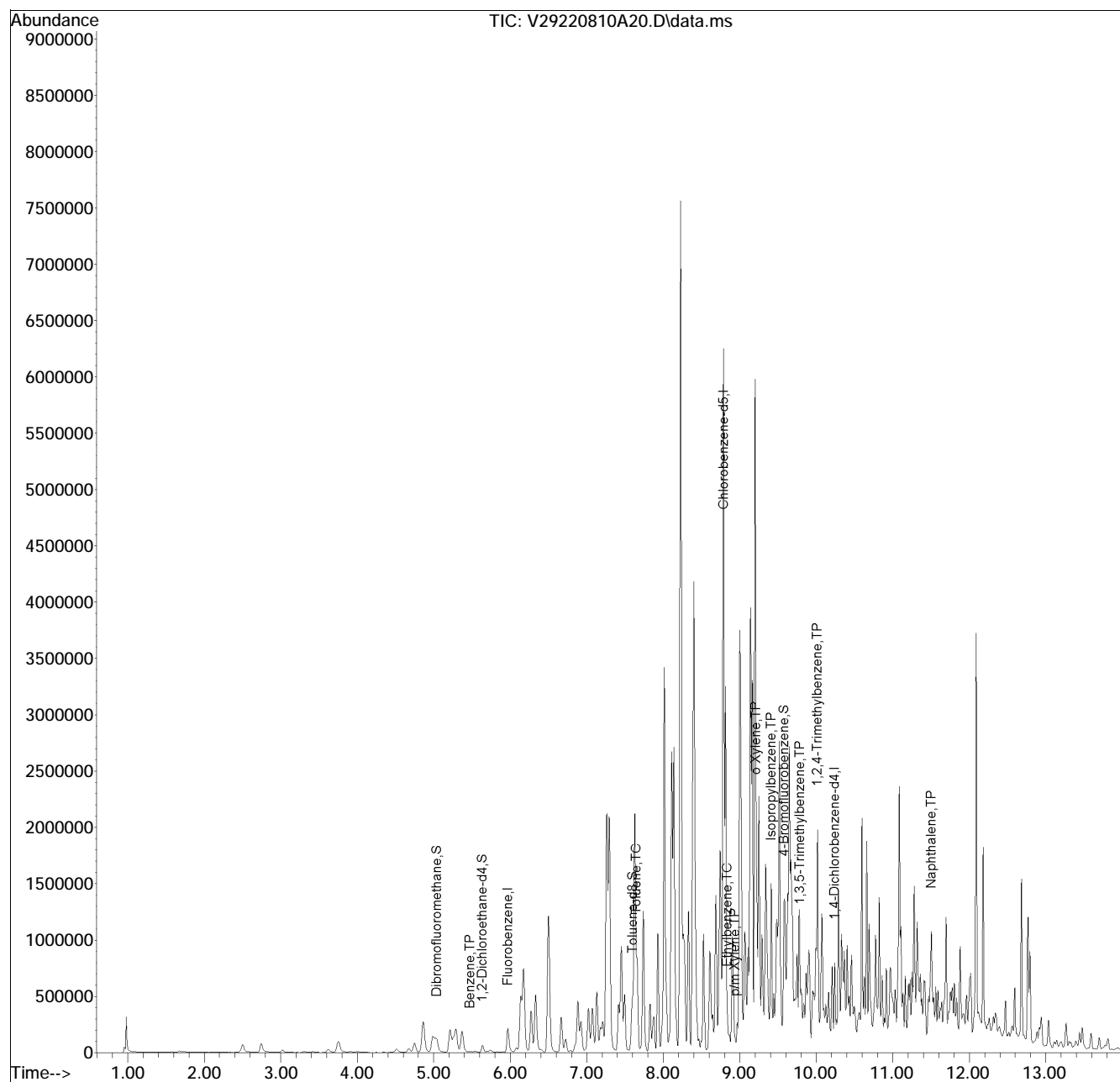
67

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220810A\  
 Data File : V29220810A20.D  
 Acq On : 10 Aug 2022 11:56 am  
 Operator : VOA129:LAC  
 Sample : 12242048-01,31h,4.32,5,0.100,,a  
 Misc : WG1673529,ICAL19173  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 10 15:46:52 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220810A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list10A\V29220810A01.D•



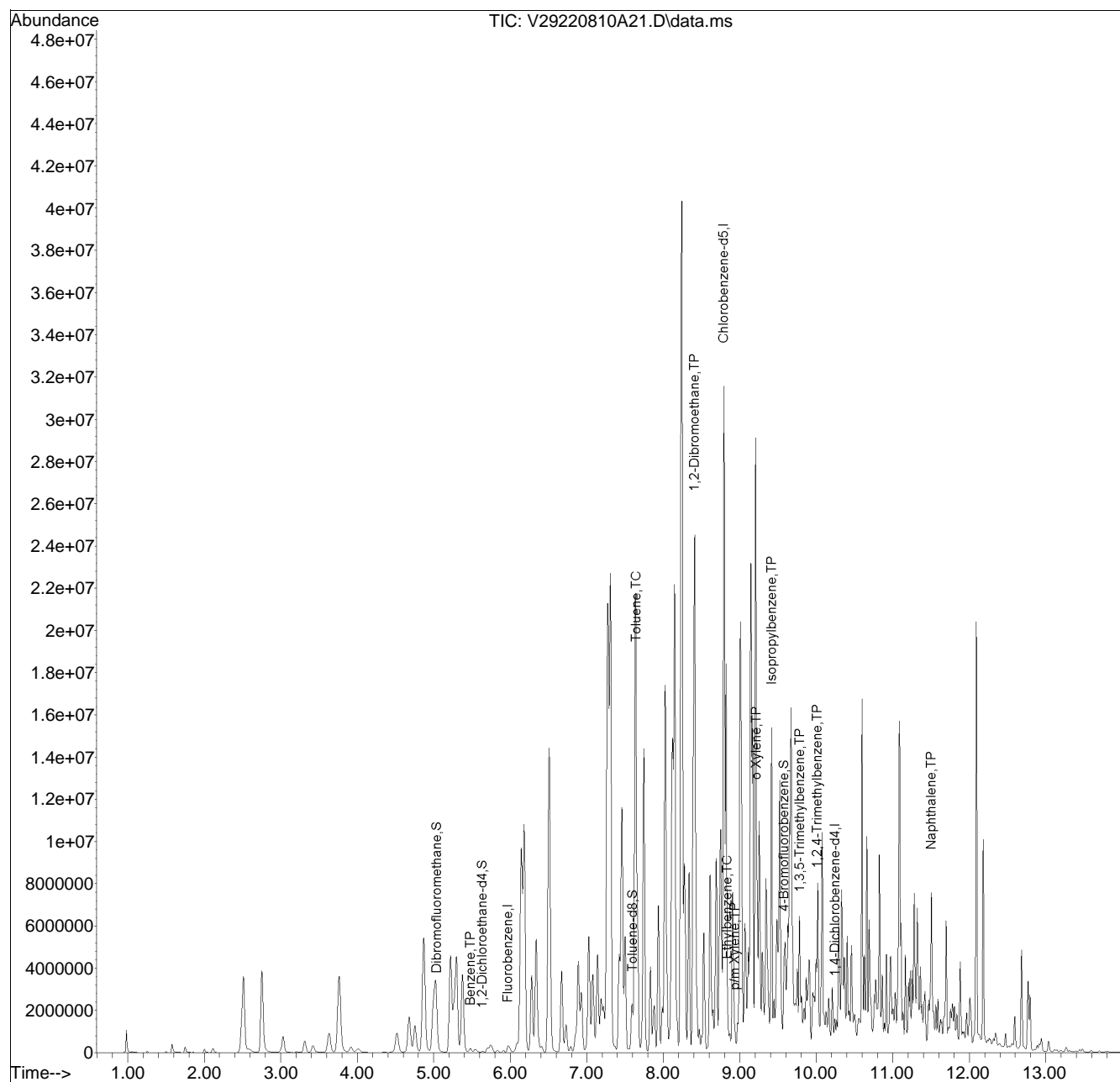


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220810A\  
 Data File : V29220810A21.D  
 Acq On : 10 Aug 2022 12:17 pm  
 Operator : VOA129:LAC  
 Sample : 12242048-01,31,5.46,5,,b  
 Misc : WG1673750,ICAL19173  
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 10 15:51:30 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220810A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list10A\V29220810A01.D•

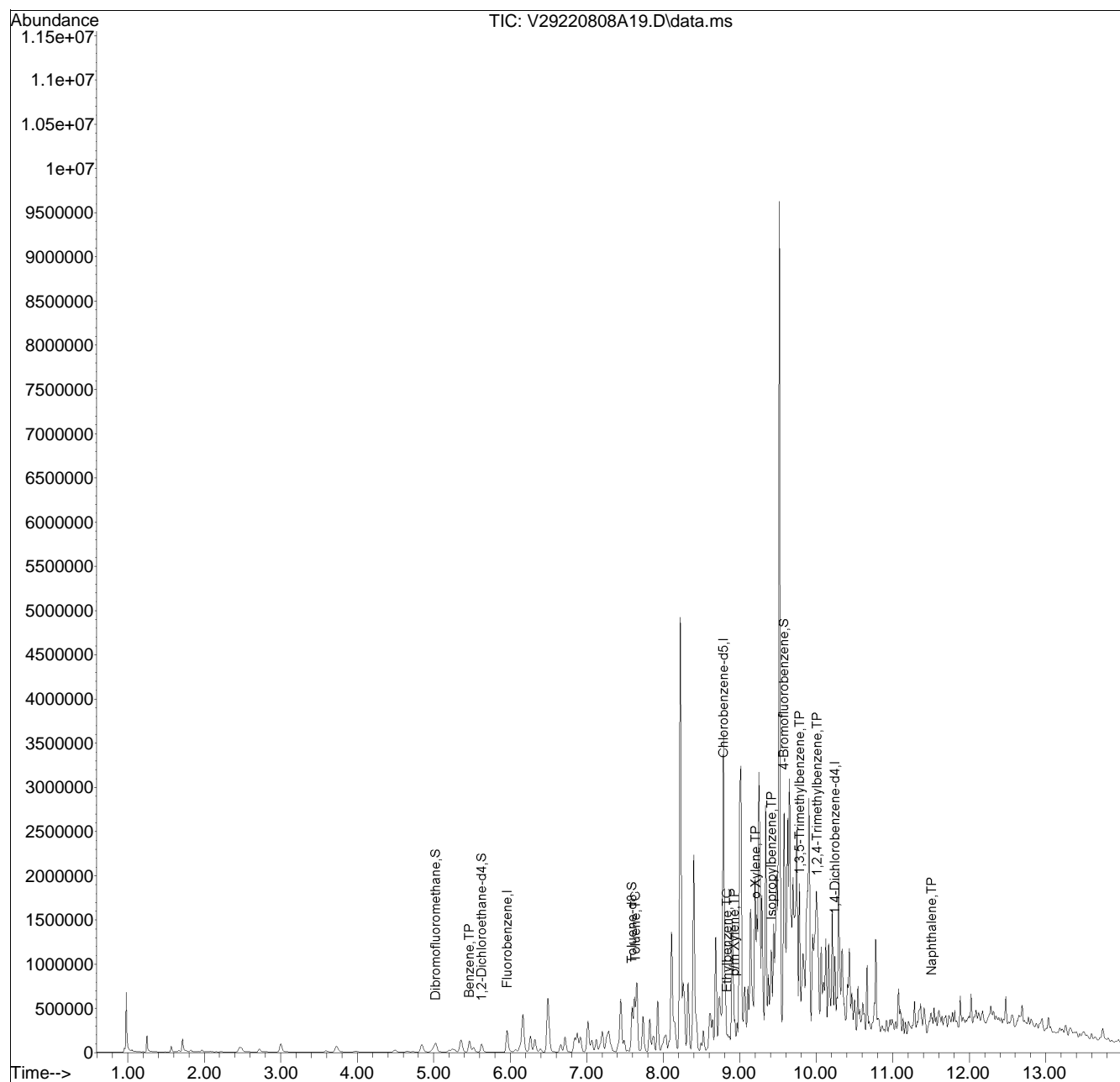


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220808A\  
 Data File : V29220808A19.D  
 Acq On : 08 Aug 2022 01:39 pm  
 Operator : VOA129:NLK  
 Sample : 12242048-11,31h,5.10,5,0.100,,a  
 Misc : WG1672957,ICAL19173  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 09 08:45:56 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220808A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V29220808A02.D•

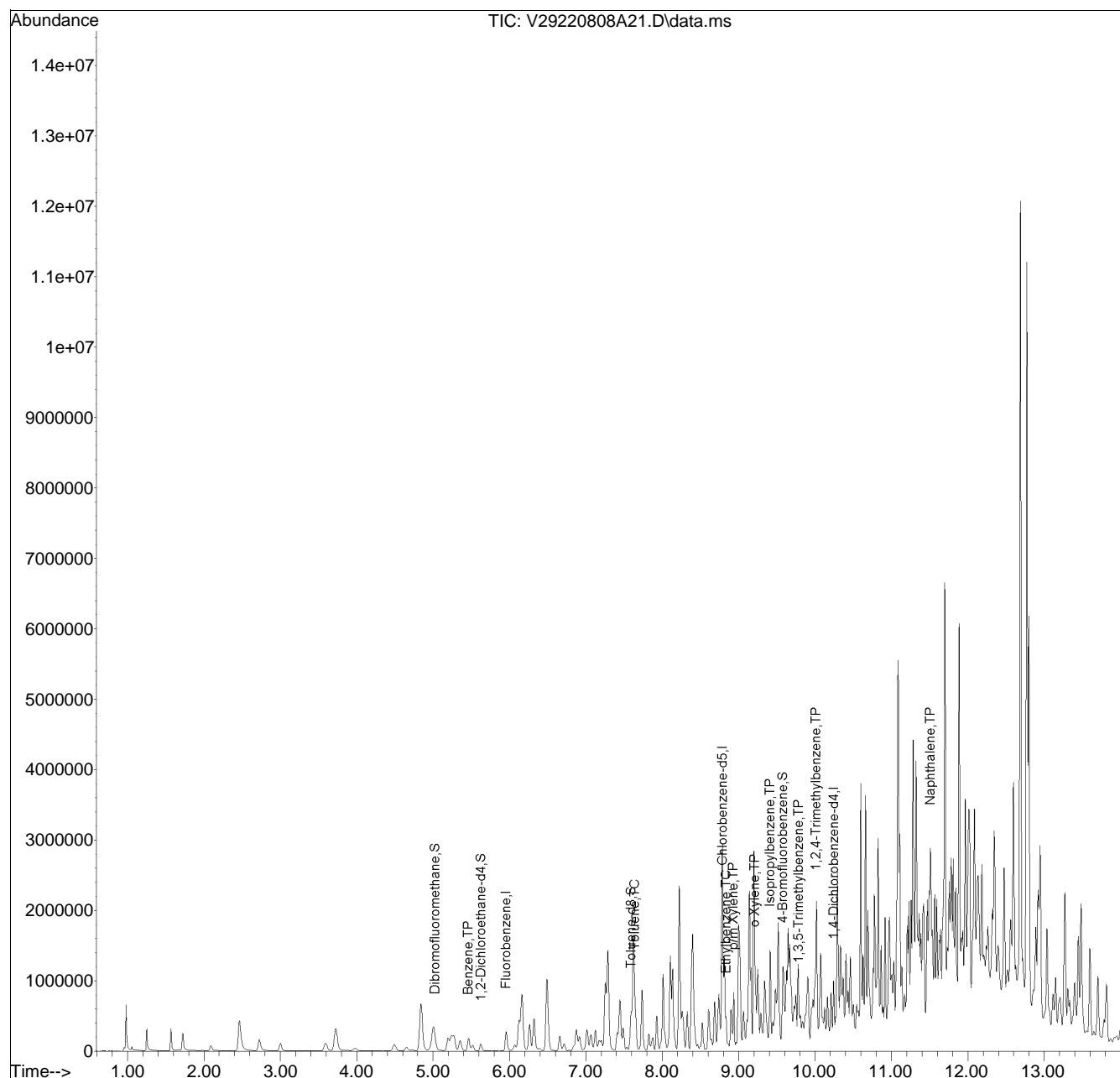


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220808A\  
 Data File : V29220808A21.D  
 Acq On : 08 Aug 2022 02:23 pm  
 Operator : VOA129:NLK  
 Sample : 12242048-15D,31h,4.76,5,0.050,,a  
 Misc : WG1672957,ICAL19173  
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 09 08:31:03 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220808A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V29220808A02.D•

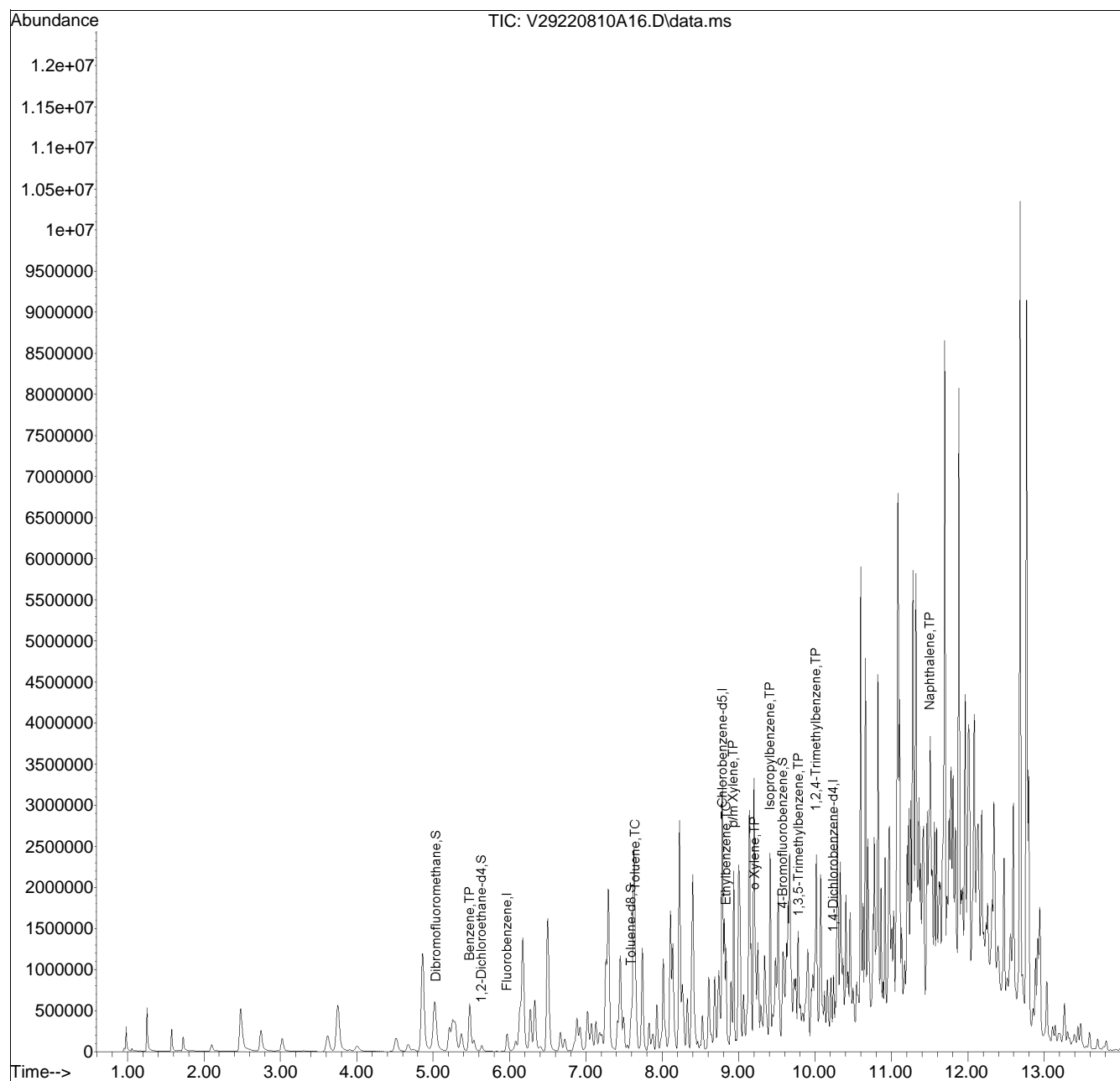


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220810A\  
 Data File : V29220810A16.D  
 Acq On : 10 Aug 2022 10:33 am  
 Operator : VOA129:NLK  
 Sample : 12242048-17,31h,4.81,5,0.100,,a  
 Misc : WG1673529,ICAL19173  
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 10 10:51:14 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220810A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list10A\V29220810A01.D•

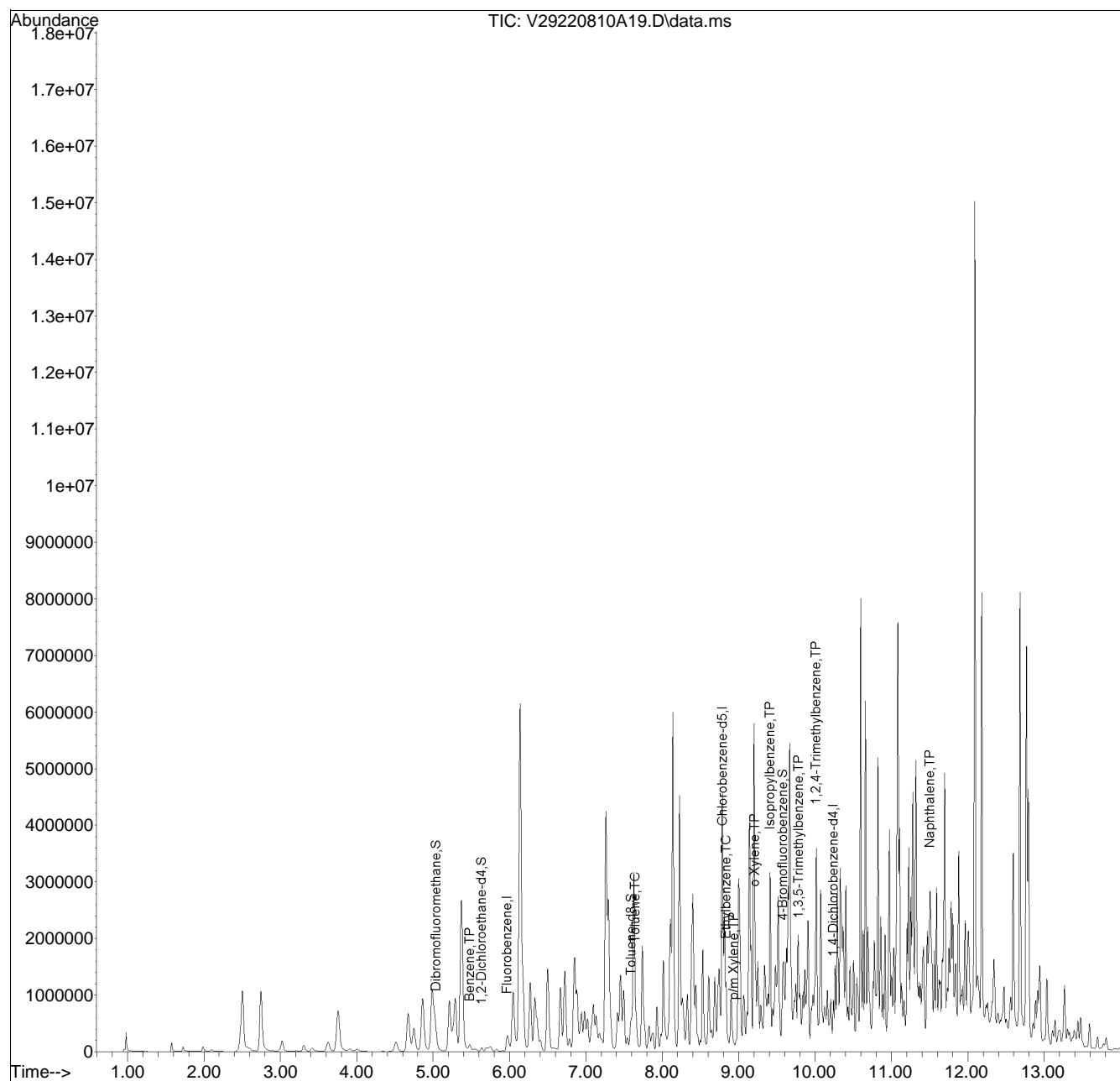


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220810A\  
Data File : V29220810A19.D  
Acq On : 10 Aug 2022 11:35 am  
Operator : VOA129:LAC  
Sample : 12242048-19,31h,6.98,5,0.100,,a  
Misc : WG1673529,ICAL19173  
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 10 15:46:15 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220810A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list10A\V29220810A01.D•

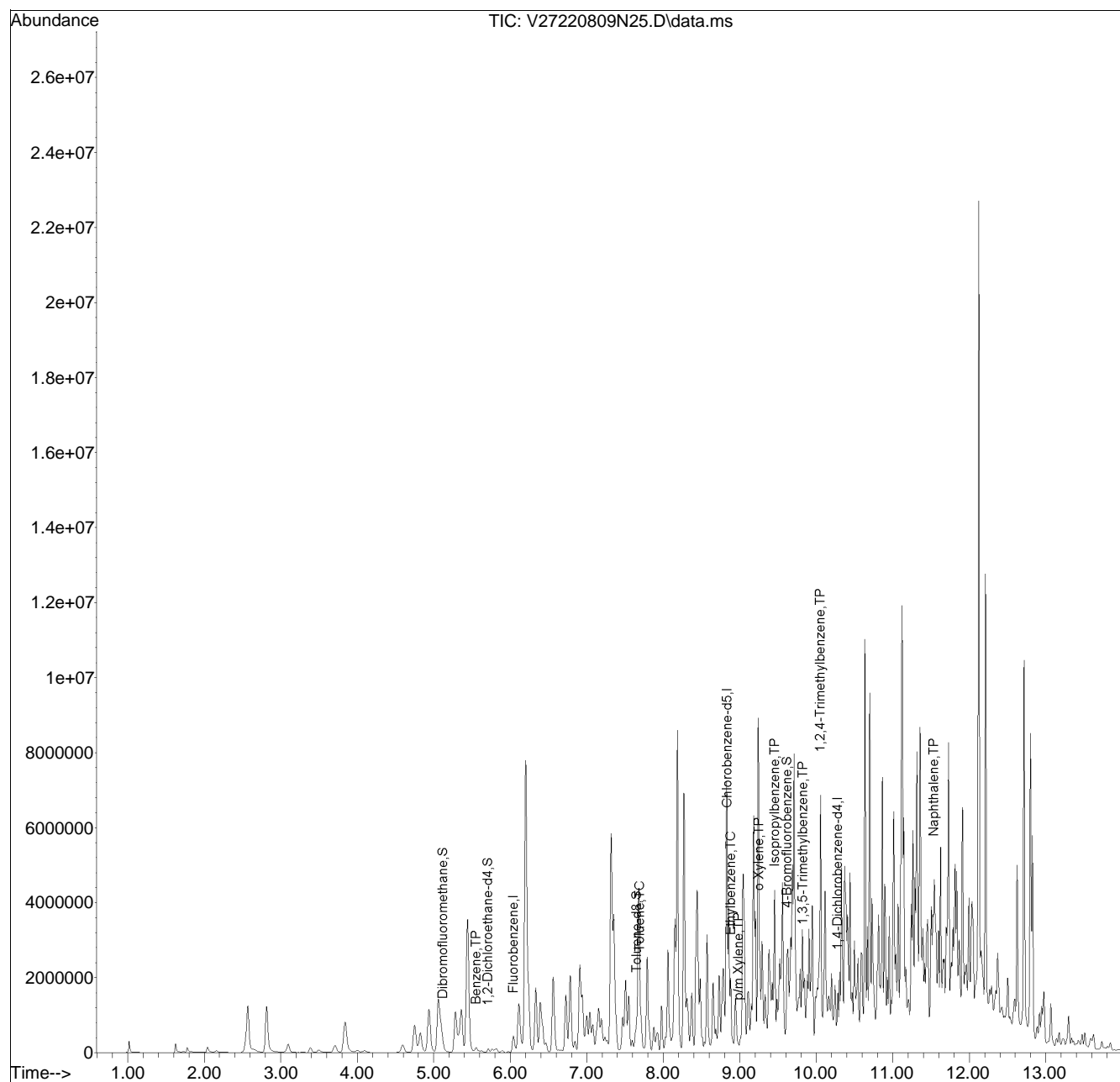


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220809N\  
 Data File : V27220809N25.D  
 Acq On : 10 Aug 2022 01:45 am  
 Operator : VOA127:MKS  
 Sample : L2242048-21,31H,5.86,5,0.100,,A  
 Misc : WG1673619,ICAL19153  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Aug 10 12:30:23 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220809N\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V27220809N01.D•





## ANALYTICAL REPORT

Lab Number:	L2242049
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/12/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2242049-01	301-U02-C1-VOC	SOIL	PHILADELPHIA, PA	08/04/22 13:00	08/04/22
L2242049-02	301-U02-C1-COMP	SOIL	PHILADELPHIA, PA	08/04/22 13:00	08/04/22
L2242049-03	301-U02-C2-VOC	SOIL	PHILADELPHIA, PA	08/04/22 13:30	08/04/22
L2242049-04	301-U02-C2-COMP	SOIL	PHILADELPHIA, PA	08/04/22 13:30	08/04/22
L2242049-05	301-U02-C3-VOC	SOIL	PHILADELPHIA, PA	08/04/22 13:40	08/04/22
L2242049-06	301-U02-C3-COMP	SOIL	PHILADELPHIA, PA	08/04/22 13:40	08/04/22
L2242049-07	301-U02-C4-VOC	SOIL	PHILADELPHIA, PA	08/04/22 13:50	08/04/22
L2242049-08	301-U02-C4-COMP	SOIL	PHILADELPHIA, PA	08/04/22 13:50	08/04/22
L2242049-09	301-U02-C5-VOC	SOIL	PHILADELPHIA, PA	08/04/22 14:00	08/04/22
L2242049-10	301-U02-C5-COMP	SOIL	PHILADELPHIA, PA	08/04/22 14:00	08/04/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2242049-05: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2242049-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (155%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242049-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (154%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242049-09: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (146%) and 4-bromofluorobenzene (261%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2242049-06D and -08D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 08/12/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-01  
 Client ID: 301-U02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:09  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0025	0.00069	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-03  
 Client ID: 301-U02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:29  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00032	J	mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.00016	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00026	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-05  
 Client ID: 301-U02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:50  
 Analyst: NLK  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.013	1
Benzene	0.013	J	mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.013	J	mg/kg	0.063	0.0089	1
p/m-Xylene	0.044	J	mg/kg	0.12	0.035	1
o-Xylene	ND		mg/kg	0.063	0.018	1
Xylenes, Total	0.044	J	mg/kg	0.063	0.018	1
Isopropylbenzene	0.088		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.022	J	mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	155	Q	70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-07  
 Client ID: 301-U02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:50  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 02:05  
 Analyst: MKS  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.027		mg/kg	0.026	0.0087	1
1,2-Dichloroethane	ND		mg/kg	0.053	0.014	1
Toluene	0.032	J	mg/kg	0.053	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.037	J	mg/kg	0.053	0.0074	1
p/m-Xylene	0.065	J	mg/kg	0.10	0.030	1
o-Xylene	0.044	J	mg/kg	0.053	0.015	1
Xylenes, Total	0.11	J	mg/kg	0.053	0.015	1
Isopropylbenzene	3.8		mg/kg	0.053	0.0057	1
1,3,5-Trimethylbenzene	0.26		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	0.78		mg/kg	0.10	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	130		70-130
4-Bromofluorobenzene	154	Q	70-130
Dibromofluoromethane	89		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-09  
 Client ID: 301-U02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 14:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 14:31  
 Analyst: NLK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00051	J	mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	0.00024	J	mg/kg	0.0012	0.00016	1
p/m-Xylene	0.0011	J	mg/kg	0.0023	0.00065	1
o-Xylene	0.00085	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.0020	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.059		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.0024		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0049		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	146	Q	70-130
4-Bromofluorobenzene	261	Q	70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/08/22 08:29  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,09 Batch: WG1673052-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/08/22 08:29  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05 Batch: WG1673053-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 19:08  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07 Batch: WG1673619-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,09 Batch: WG1673052-3 WG1673052-4								
Methyl tert butyl ether	94		100		66-130	6		30
Benzene	91		94		70-130	3		30
1,2-Dichloroethane	91		96		70-130	5		30
Toluene	84		86		70-130	2		30
1,2-Dibromoethane	90		95		70-130	5		30
Ethylbenzene	90		92		70-130	2		30
p/m-Xylene	90		92		70-130	2		30
o-Xylene	92		94		70-130	2		30
Isopropylbenzene	93		92		70-130	1		30
1,3,5-Trimethylbenzene	93		93		70-130	0		30
1,2,4-Trimethylbenzene	92		91		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	100		98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242049

Project Number: 200.00135.006

Report Date: 08/12/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05 Batch: WG1673053-3 WG1673053-4								
Methyl tert butyl ether	94		100		66-130	6		30
Benzene	91		94		70-130	3		30
1,2-Dichloroethane	91		96		70-130	5		30
Toluene	84		86		70-130	2		30
1,2-Dibromoethane	90		95		70-130	5		30
Ethylbenzene	90		92		70-130	2		30
p/m-Xylene	90		92		70-130	2		30
o-Xylene	92		94		70-130	2		30
Isopropylbenzene	93		92		70-130	1		30
1,3,5-Trimethylbenzene	93		93		70-130	0		30
1,2,4-Trimethylbenzene	92		91		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		102		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	100		98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07 Batch: WG1673619-3 WG1673619-4								
Methyl tert butyl ether	104		95		66-130	9		30
Benzene	102		94		70-130	8		30
1,2-Dichloroethane	101		95		70-130	6		30
Toluene	93		87		70-130	7		30
1,2-Dibromoethane	98		94		70-130	4		30
Ethylbenzene	100		94		70-130	6		30
p/m-Xylene	99		93		70-130	6		30
o-Xylene	100		94		70-130	6		30
Isopropylbenzene	102		99		70-130	3		30
1,3,5-Trimethylbenzene	102		98		70-130	4		30
1,2,4-Trimethylbenzene	100		96		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130

# SEMIVOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-02  
 Client ID: 301-U02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 19:14  
 Analyst: JG  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.037	J	mg/kg	0.22	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	0.18		mg/kg	0.13	0.026	1
Anthracene	0.062	J	mg/kg	0.13	0.042	1
Pyrene	0.30		mg/kg	0.13	0.021	1
Benzo(a)anthracene	0.19		mg/kg	0.13	0.024	1
Chrysene	0.18		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.25		mg/kg	0.13	0.036	1
Benzo(a)pyrene	0.23		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	0.096	J	mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	44		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-04  
 Client ID: 301-U02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 04:23  
 Analyst: SZ  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-06 D  
 Client ID: 301-U02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/11/22 19:36  
 Analyst: IM  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.19	J	mg/kg	1.0	0.13	5
Fluorene	0.50	J	mg/kg	1.0	0.10	5
Phenanthrene	1.9		mg/kg	0.62	0.13	5
Anthracene	0.28	J	mg/kg	0.62	0.20	5
Pyrene	0.44	J	mg/kg	0.62	0.10	5
Benzo(a)anthracene	0.21	J	mg/kg	0.62	0.12	5
Chrysene	0.83		mg/kg	0.62	0.11	5
Benzo(b)fluoranthene	ND		mg/kg	0.62	0.17	5
Benzo(a)pyrene	ND		mg/kg	0.83	0.25	5
Benzo(ghi)perylene	ND		mg/kg	0.83	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	24		23-120
2-Fluorobiphenyl	25	Q	30-120
4-Terphenyl-d14	20		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-08 D  
 Client ID: 301-U02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:50  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 12:05  
 Analyst: IM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/07/22 07:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.90	J	mg/kg	0.94	0.11	5
Fluorene	0.22	J	mg/kg	0.94	0.092	5
Phenanthrene	1.3		mg/kg	0.56	0.11	5
Anthracene	0.34	J	mg/kg	0.56	0.18	5
Pyrene	1.3		mg/kg	0.56	0.094	5
Benzo(a)anthracene	2.3		mg/kg	0.56	0.11	5
Chrysene	3.0		mg/kg	0.56	0.098	5
Benzo(b)fluoranthene	3.2		mg/kg	0.56	0.16	5
Benzo(a)pyrene	5.2		mg/kg	0.75	0.23	5
Benzo(ghi)perylene	5.7		mg/kg	0.75	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-10  
 Client ID: 301-U02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 14:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 12:28  
 Analyst: IM  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 08/07/22 07:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.87		mg/kg	0.18	0.022	1
Fluorene	0.15	J	mg/kg	0.18	0.017	1
Phenanthrene	1.2		mg/kg	0.11	0.022	1
Anthracene	0.29		mg/kg	0.11	0.035	1
Pyrene	1.1		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.3		mg/kg	0.11	0.020	1
Chrysene	1.7		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	2.1		mg/kg	0.11	0.030	1
Benzo(a)pyrene	2.9		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	3.4		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/09/22 22:28  
Analyst: SZ

Extraction Method: EPA 3546  
Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1671945-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/12/22 09:45  
Analyst: IM

Extraction Method: EPA 3546  
Extraction Date: 08/07/22 07:11

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08,10 Batch: WG1672161-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	88		25-120
Phenol-d6	89		10-120
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	97		30-120
2,4,6-Tribromophenol	98		10-136
4-Terphenyl-d14	102		18-120

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1671945-2 WG1671945-3								
Naphthalene	74		80		40-140	8		50
Fluorene	78		86		40-140	10		50
Phenanthrene	74		84		40-140	13		50
Anthracene	79		88		40-140	11		50
Pyrene	75		80		35-142	6		50
Benzo(a)anthracene	80		90		40-140	12		50
Chrysene	76		82		40-140	8		50
Benzo(b)fluoranthene	93		105		40-140	12		50
Benzo(a)pyrene	98		110		40-140	12		50
Benzo(ghi)perylene	79		92		40-140	15		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	83		88		23-120
2-Fluorobiphenyl	74		77		30-120
4-Terphenyl-d14	87		92		18-120





## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08,10 Batch: WG1672161-2 WG1672161-3								
Naphthalene	76		71		40-140	7		50
Fluorene	81		77		40-140	5		50
Phenanthrene	80		76		40-140	5		50
Anthracene	82		77		40-140	6		50
Pyrene	86		83		35-142	4		50
Benzo(a)anthracene	77		74		40-140	4		50
Chrysene	81		76		40-140	6		50
Benzo(b)fluoranthene	88		86		40-140	2		50
Benzo(a)pyrene	92		88		40-140	4		50
Benzo(ghi)perylene	87		81		40-140	7		50

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
2-Fluorophenol	83		76		25-120
Phenol-d6	84		79		10-120
Nitrobenzene-d5	90		83		23-120
2-Fluorobiphenyl	89		85		30-120
2,4,6-Tribromophenol	106		101		10-136
4-Terphenyl-d14	95		89		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-02  
 Client ID: 301-U02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	179		mg/kg	2.52	0.135	1	08/06/22 08:00	08/06/22 17:14	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-04  
 Client ID: 301-U02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:30  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	163		mg/kg	2.27	0.122	1	08/06/22 08:00	08/06/22 17:19	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-06  
 Client ID: 301-U02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:40  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.4		mg/kg	2.46	0.132	1	08/06/22 08:00	08/06/22 17:24	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-08  
 Client ID: 301-U02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 13:50  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.16		mg/kg	2.22	0.119	1	08/06/22 08:00	08/06/22 17:29	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

Lab ID: L2242049-10  
 Client ID: 301-U02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/04/22 14:00  
 Date Received: 08/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	134		mg/kg	2.06	0.111	1	08/06/22 08:00	08/06/22 18:09	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1671984-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/06/22 08:00	08/06/22 15:07	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1671984-2 SRM Lot Number: D113-540								
Lead, Total	92		-		72-128			-



**Matrix Spike Analysis**  
**Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10    QC Batch ID: WG1671984-3    QC Sample: L2242002-01    Client ID: MS Sample												
Lead, Total	197	51	276	155	Q	-	-		75-125	-		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-01  
**Client ID:** 301-U02-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:00  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242049**Project Number:** 200.00135.006**Report Date:** 08/12/22**SAMPLE RESULTS**

Lab ID: L2242049-02

Date Collected: 08/04/22 13:00

Client ID: 301-U02-C1-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	76.7		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-03  
**Client ID:** 301-U02-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:30  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.6		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-04  
**Client ID:** 301-U02-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:30  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-05  
**Client ID:** 301-U02-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:40  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.4		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-06  
**Client ID:** 301-U02-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:40  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.3		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-07  
**Client ID:** 301-U02-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:50  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.9		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-08  
**Client ID:** 301-U02-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 13:50  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

**SAMPLE RESULTS**

**Lab ID:** L2242049-09  
**Client ID:** 301-U02-C5-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/04/22 14:00  
**Date Received:** 08/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.1		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242049

Project Number: 200.00135.006

Report Date: 08/12/22

## SAMPLE RESULTS

Lab ID: L2242049-10

Date Collected: 08/04/22 14:00

Client ID: 301-U02-C5-COMP

Date Received: 08/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	08/05/22 12:46	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1671780-1 QC Sample: L2242049-01 Client ID: 301-U02-C1-VOC						
Solids, Total	85.8	86.1	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242049**Project Number:** 200.00135.006**Report Date:** 08/12/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242049-01A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2242049-01B	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-01C	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-01D	Plastic 2oz unpreserved for TS	A	NA		5.0	Y	Absent		TS(7)
L2242049-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2242049-02B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2242049-03A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2242049-03B	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-03C	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-03D	Plastic 2oz unpreserved for TS	A	NA		5.0	Y	Absent		TS(7)
L2242049-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2242049-04B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2242049-05A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2242049-05B	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-05C	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-05D	Plastic 2oz unpreserved for TS	A	NA		5.0	Y	Absent		TS(7)
L2242049-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2242049-06B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2242049-07A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2242049-07B	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-07C	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-07D	Plastic 2oz unpreserved for TS	A	NA		5.0	Y	Absent		TS(7)
L2242049-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242049**Project Number:** 200.00135.006**Report Date:** 08/12/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242049-08B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)
L2242049-09A	Vial MeOH preserved	A	NA		5.0	Y	Absent		PA-8260HLW(14)
L2242049-09B	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-09C	Vial water preserved	A	NA		5.0	Y	Absent	05-AUG-22 12:23	PA-8260HLW(14)
L2242049-09D	Plastic 2oz unpreserved for TS	A	NA		5.0	Y	Absent		TS(7)
L2242049-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.0	Y	Absent		PB-TI(180)
L2242049-10B	Glass 120ml/4oz unpreserved	A	NA		5.0	Y	Absent		TS(7),PA-PAH(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242049  
**Report Date:** 08/12/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242049

**Project Number:** 200.00135.006

**Report Date:** 08/12/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

---

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 1

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/5/22 ALPHA Job #: 12242049

**Report Information Data Deliverables Billing Information**

FAX  EMAIL  Same as Client Info PO #: 3562

ADEx  Add'l Deliverables

**Regulatory Requirements/Report Limits**

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	LEAD	Other Analytes												
42049-01	301-U02-C1-VOC	8/4	1300	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-02	301-U02-C1-Comp		1300			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-03	301-U02-C2-VOC		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-04	301-U02-C2-Comp		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-05	301-U02-C3-VOC		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-06	301-U02-C3-Comp		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-07	301-U02-C4-VOC		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-08	301-U02-C4-Comp		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-09	301-U02-C5-VOC		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	301-U02-C5-Comp		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**

Filtration

Done

Not Needed

Lab to do

Preservation

Lab to do

(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type: G Preservative: \_\_\_\_\_

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/4/1506	<i>[Signature]</i>	8.4.22 (150)
<i>[Signature]</i>	8/4 1755	<i>[Signature]</i>	8/4 180
<i>[Signature]</i>	8/4 2130	<i>[Signature]</i>	8.4.22 2100
<i>[Signature]</i>	8.4.22	<i>[Signature]</i>	8/4/22 1:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

**PADEP Short List Analytical Suites per Table III-5:**

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

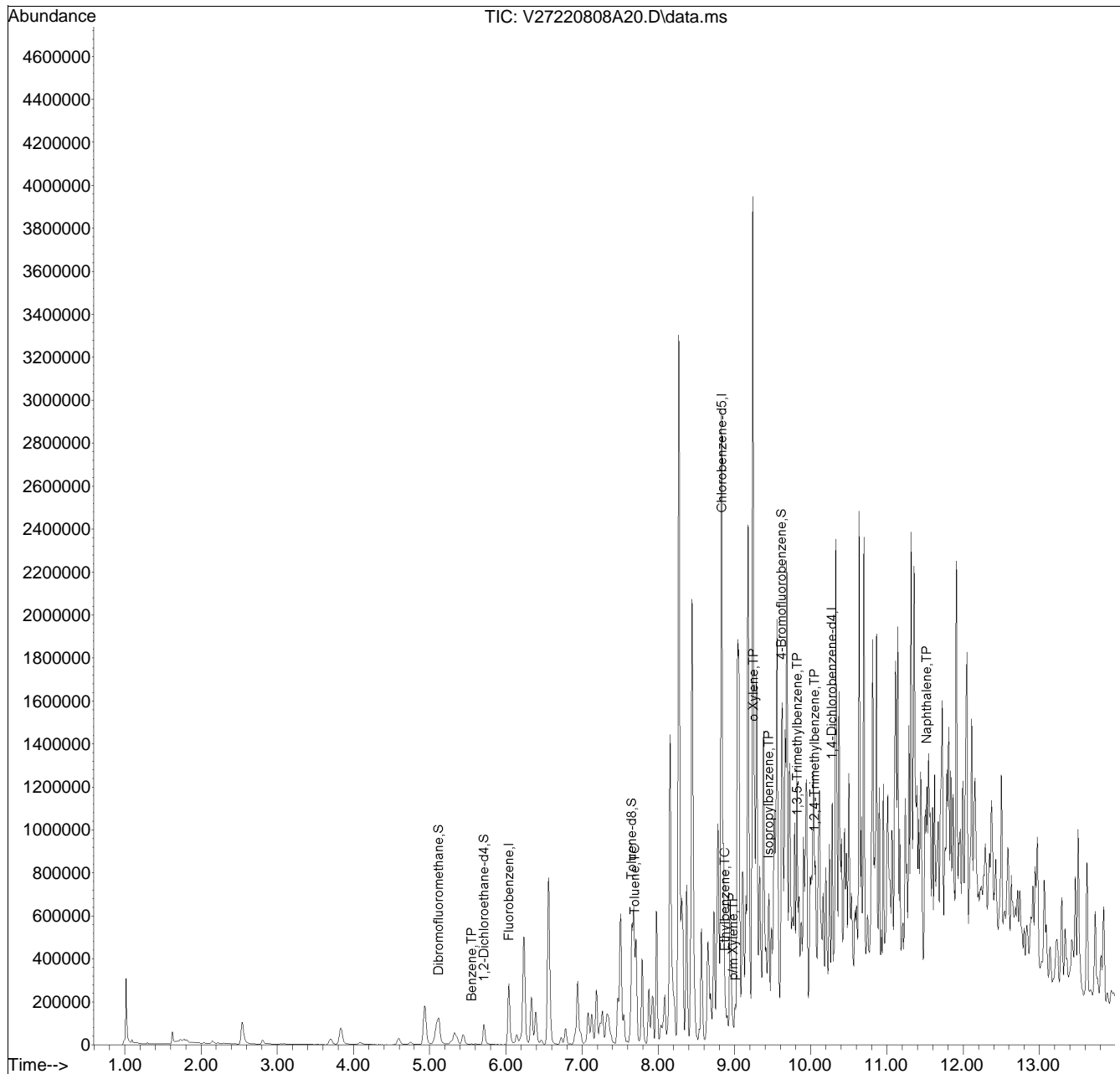
( )

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220808A\  
 Data File : V27220808A20.D  
 Acq On : 08 Aug 2022 01:50 pm  
 Operator : VOA127:NLK  
 Sample : L2242049-05,31H,6.68,5,0.100,,A  
 Misc : WG1673053,ICAL19153  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 09 12:55:26 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220808A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V27220808A01.D•



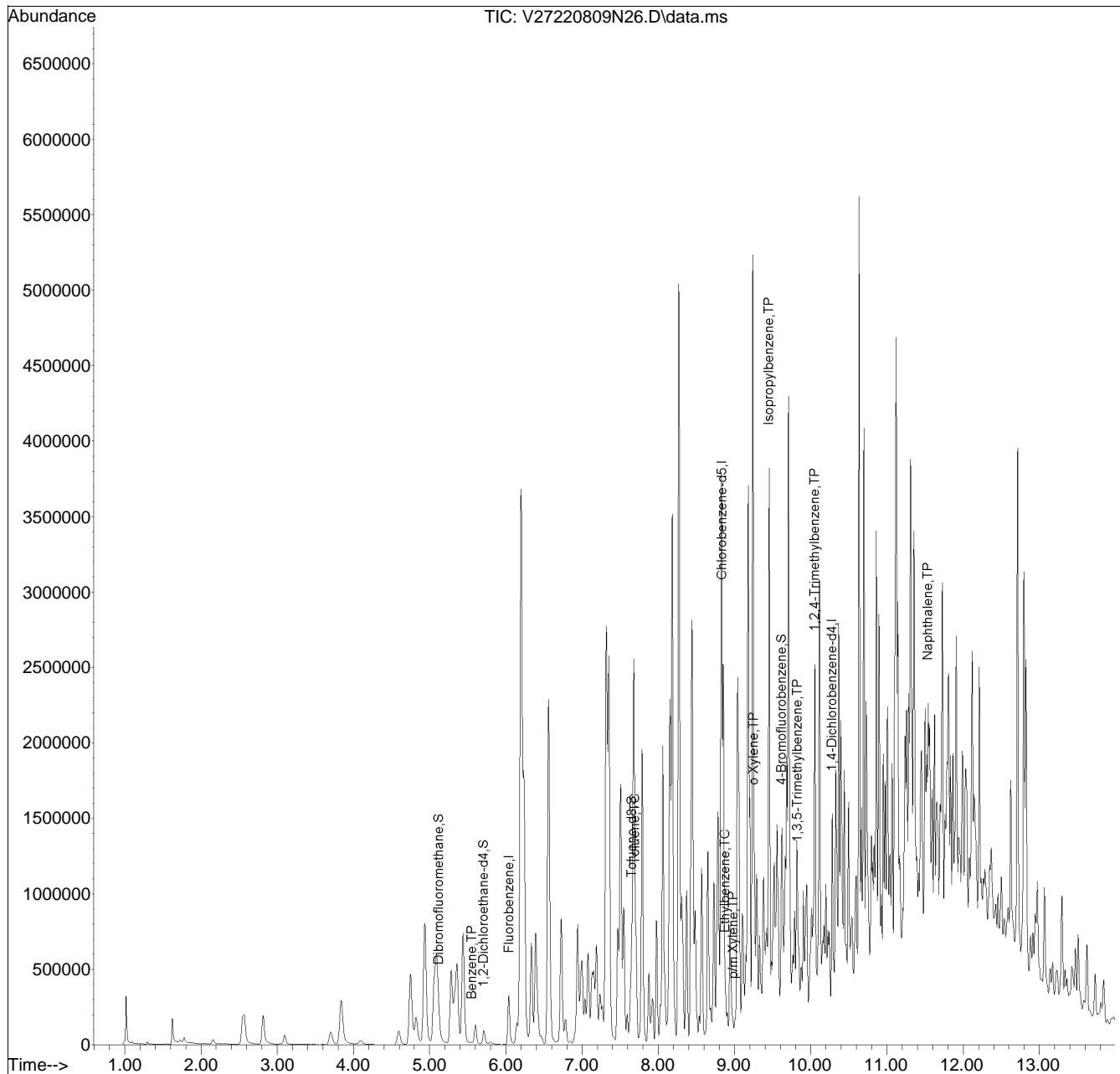


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220809N\  
 Data File : V27220809N26.D  
 Acq On : 10 Aug 2022 02:05 am  
 Operator : VOA127:MKS  
 Sample : L2242049-07,31H,6.54,5,0.100,,A  
 Misc : WG1673619,ICAL19153  
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Aug 10 12:30:43 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220809N\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V27220809N01.D•

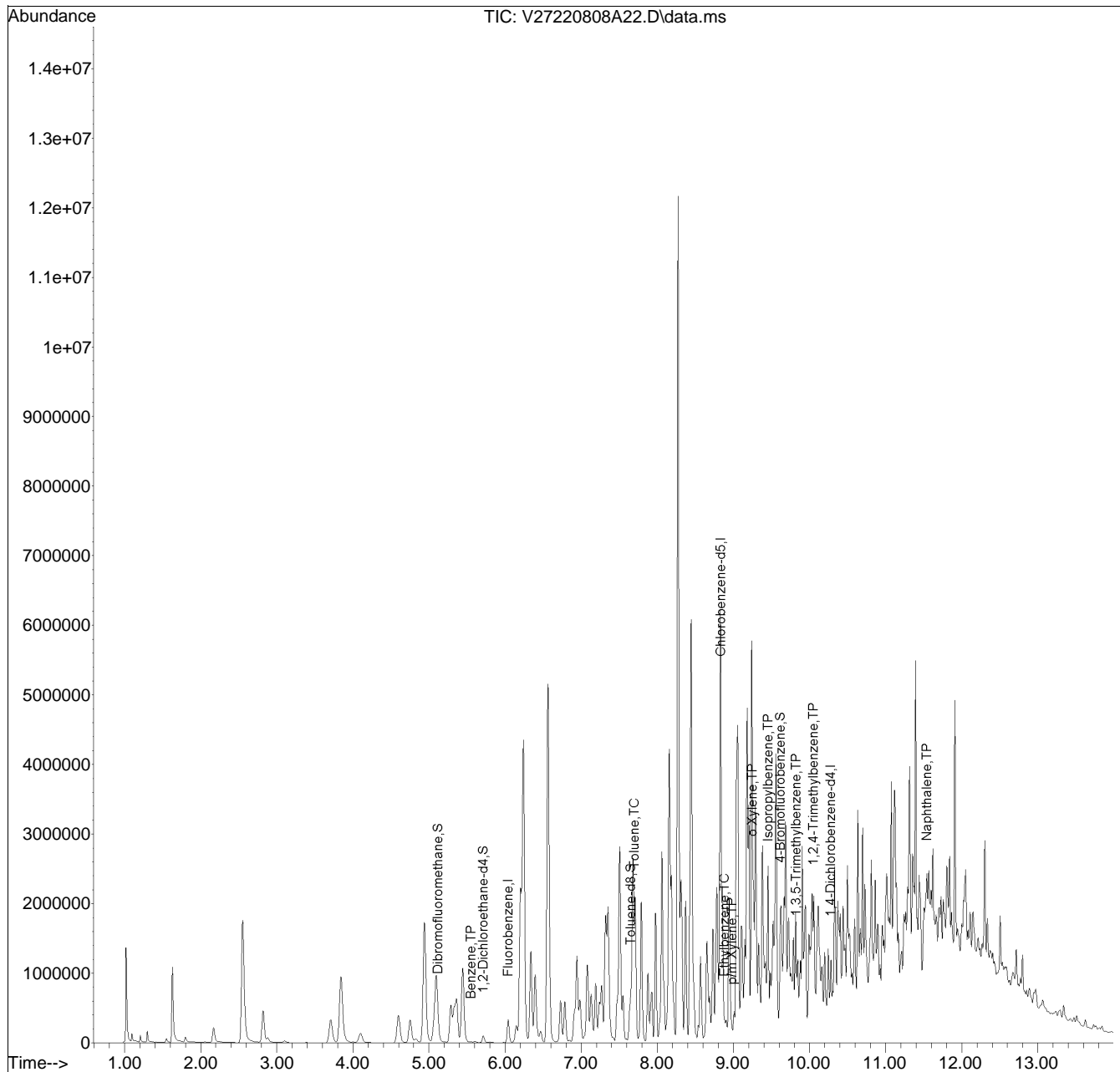


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220808A\  
 Data File : V27220808A22.D  
 Acq On : 08 Aug 2022 02:31 pm  
 Operator : VOA127:NLK  
 Sample : L2242049-09,31,4.69,5,,B  
 Misc : WG1673052,ICAL19153  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 09 12:56:18 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220808A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V27220808A01.D•





## ANALYTICAL REPORT

Lab Number:	L2242391
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/15/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2242391-01	301-Z01-C1-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:00	08/05/22
L2242391-02	301-Z01-C1-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:00	08/05/22
L2242391-03	301-Z01-C2-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:15	08/05/22
L2242391-04	301-Z01-C2-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:15	08/05/22
L2242391-05	301-Z01-C3-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:30	08/05/22
L2242391-06	301-Z01-C3-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:30	08/05/22
L2242391-07	301-Z01-C4-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:45	08/05/22
L2242391-08	301-Z01-C4-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:45	08/05/22
L2242391-09	301-AA02-C1-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:30	08/05/22
L2242391-10	301-AA02-C1-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:30	08/05/22
L2242391-11	301-AA02-C2-VOC	SOIL	PHILADELPHIA, PA	08/05/22 12:00	08/05/22
L2242391-12	301-AA02-C2-COMP	SOIL	PHILADELPHIA, PA	08/05/22 12:00	08/05/22
L2242391-13	301-AA02-C3-VOC	SOIL	PHILADELPHIA, PA	08/05/22 12:10	08/05/22
L2242391-14	301-AA02-C3-COMP	SOIL	PHILADELPHIA, PA	08/05/22 12:10	08/05/22
L2242391-15	301-AA02-C4-VOC	SOIL	PHILADELPHIA, PA	08/05/22 12:20	08/05/22
L2242391-16	301-AA02-C4-COMP	SOIL	PHILADELPHIA, PA	08/05/22 12:20	08/05/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Semivolatile Organics

L2242391-12D: The sample has elevated detection limits due to the dilution required

#### Total Metals

The WG1672533-3 MS recovery, performed on L2242391-02, is outside the acceptance criteria for lead (65%). A post digestion spike was performed and yielded an unacceptable recovery for lead (70%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

The WG1672533-4 Laboratory Duplicate RPD for lead (37%), performed on L2242391-02, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 08/15/22

# ORGANICS

# VOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-01  
 Client ID: 301-Z01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:47  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-03  
 Client ID: 301-Z01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:15  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/09/22 23:52  
 Analyst: MKS  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	106		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-05  
 Client ID: 301-Z01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 14:40  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-07  
 Client ID: 301-Z01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:45  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 15:07  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-09  
 Client ID: 301-AA02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 15:34  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-11  
 Client ID: 301-AA02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 16:01  
 Analyst: NLK  
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-13  
 Client ID: 301-AA02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 16:28  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0037	0.00037	1
Benzene	ND		mg/kg	0.00093	0.00031	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00048	1
Toluene	ND		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00093	0.00054	1
Ethylbenzene	ND		mg/kg	0.0019	0.00026	1
p/m-Xylene	ND		mg/kg	0.0037	0.0010	1
o-Xylene	ND		mg/kg	0.0019	0.00054	1
Xylenes, Total	ND		mg/kg	0.0019	0.00054	1
Isopropylbenzene	ND		mg/kg	0.0019	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0037	0.00036	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0037	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-15  
 Client ID: 301-AA02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 16:55  
 Analyst: NLK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00044	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 17:09  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1673608-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:20  
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05,07,09,11,13,15 Batch: WG1673657-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	99		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242391

Project Number: 200.00135.006

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1673608-3 WG1673608-4								
Methyl tert butyl ether	95		92		66-130	3		30
Benzene	94		90		70-130	4		30
1,2-Dichloroethane	107		104		70-130	3		30
Toluene	94		91		70-130	3		30
1,2-Dibromoethane	99		98		70-130	1		30
Ethylbenzene	93		91		70-130	2		30
p/m-Xylene	92		90		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	96		92		70-130	4		30
1,3,5-Trimethylbenzene	96		92		70-130	4		30
1,2,4-Trimethylbenzene	93		91		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	119		115		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	101		100		70-130
Dibromofluoromethane	104		101		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05,07,09,11,13,15 Batch: WG1673657-3 WG1673657-4								
Methyl tert butyl ether	95		94		66-130	1		30
Benzene	98		99		70-130	1		30
1,2-Dichloroethane	96		94		70-130	2		30
Toluene	102		101		70-130	1		30
1,2-Dibromoethane	100		99		70-130	1		30
Ethylbenzene	104		105		70-130	1		30
p/m-Xylene	106		107		70-130	1		30
o-Xylene	106		107		70-130	1		30
Isopropylbenzene	101		101		70-130	0		30
1,3,5-Trimethylbenzene	103		103		70-130	0		30
1,2,4-Trimethylbenzene	104		105		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		103		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		99		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-02  
 Client ID: 301-Z01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 01:22  
 Analyst: WR  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-04  
 Client ID: 301-Z01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:15  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 02:29  
 Analyst: WR  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-06  
 Client ID: 301-Z01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 12:52  
 Analyst: IM  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	0.025	J	mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	97		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-08  
 Client ID: 301-Z01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:45  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 13:15  
 Analyst: IM  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-10  
 Client ID: 301-AA02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 13:39  
 Analyst: IM  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.022	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	109		30-120
4-Terphenyl-d14	112		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-12 D  
 Client ID: 301-AA02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 14:02  
 Analyst: IM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	1.9	0.23	10
Fluorene	ND		mg/kg	1.9	0.18	10
Phenanthrene	ND		mg/kg	1.1	0.23	10
Anthracene	ND		mg/kg	1.1	0.36	10
Pyrene	0.21	J	mg/kg	1.1	0.18	10
Benzo(a)anthracene	ND		mg/kg	1.1	0.21	10
Chrysene	ND		mg/kg	1.1	0.19	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.31	10
Benzo(a)pyrene	ND		mg/kg	1.5	0.46	10
Benzo(ghi)perylene	ND		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-14  
 Client ID: 301-AA02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 14:25  
 Analyst: IM  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.056	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	0.089	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.067	J	mg/kg	0.10	0.019	1
Chrysene	0.065	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.082	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.071	J	mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.034	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-16  
 Client ID: 301-AA02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 14:49  
 Analyst: IM  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.076	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.096	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.072	J	mg/kg	0.10	0.020	1
Chrysene	0.073	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.090	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.078	J	mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.045	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	86		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/09/22 22:28  
Analyst: SZ

Extraction Method: EPA 3546  
Extraction Date: 08/06/22 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04 Batch: WG1671945-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 10:55  
 Analyst: IM

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06,08,10,12,14,16 Batch: WG1672129-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	90		25-120
Phenol-d6	90		10-120
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	100		30-120
2,4,6-Tribromophenol	107		10-136
4-Terphenyl-d14	110		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2242391

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04 Batch: WG1671945-2 WG1671945-3								
Naphthalene	74		80		40-140	8		50
Fluorene	78		86		40-140	10		50
Phenanthrene	74		84		40-140	13		50
Anthracene	79		88		40-140	11		50
Pyrene	75		80		35-142	6		50
Benzo(a)anthracene	80		90		40-140	12		50
Chrysene	76		82		40-140	8		50
Benzo(b)fluoranthene	93		105		40-140	12		50
Benzo(a)pyrene	98		110		40-140	12		50
Benzo(ghi)perylene	79		92		40-140	15		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	83		88		23-120
2-Fluorobiphenyl	74		77		30-120
4-Terphenyl-d14	87		92		18-120



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06,08,10,12,14,16 Batch: WG1672129-2 WG1672129-3								
Naphthalene	95		98		40-140	3		50
Fluorene	98		104		40-140	6		50
Phenanthrene	98		102		40-140	4		50
Anthracene	100		105		40-140	5		50
Pyrene	104		110		35-142	6		50
Benzo(a)anthracene	94		99		40-140	5		50
Chrysene	98		102		40-140	4		50
Benzo(b)fluoranthene	108		112		40-140	4		50
Benzo(a)pyrene	111		116		40-140	4		50
Benzo(ghi)perylene	105		111		40-140	6		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	99		105		25-120
Phenol-d6	100		106		10-120
Nitrobenzene-d5	107		112		23-120
2-Fluorobiphenyl	107		111		30-120
2,4,6-Tribromophenol	124		129		10-136
4-Terphenyl-d14	109		115		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-02  
 Client ID: 301-Z01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.88		mg/kg	2.12	0.114	1	08/09/22 03:00	08/11/22 21:56	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242391

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-04

Date Collected: 08/05/22 10:15

Client ID: 301-Z01-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.77		mg/kg	2.22	0.119	1	08/09/22 03:00	08/11/22 22:59	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242391

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-06

Date Collected: 08/05/22 10:30

Client ID: 301-Z01-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	22.6		mg/kg	2.52	0.135	1	08/09/22 03:00	08/11/22 23:03	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242391

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-08

Date Collected: 08/05/22 10:45

Client ID: 301-Z01-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.42		mg/kg	2.10	0.113	1	08/09/22 03:00	08/11/22 23:08	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-10  
 Client ID: 301-AA02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.64		mg/kg	2.08	0.112	1	08/09/22 03:00	08/11/22 23:21	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242391

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-12

Date Collected: 08/05/22 12:00

Client ID: 301-AA02-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.90		mg/kg	2.16	0.116	1	08/09/22 03:00	08/11/22 23:26	EPA 3050B	1,6010D	DL





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-14  
 Client ID: 301-AA02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	14.8		mg/kg	2.06	0.110	1	08/09/22 03:00	08/11/22 23:31	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242391

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-16

Date Collected: 08/05/22 12:20

Client ID: 301-AA02-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	62.5		mg/kg	2.05	0.110	1	08/09/22 03:00	08/11/22 23:35	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242391

Project Number: 200.00135.006

Report Date: 08/15/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1672533-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/09/22 03:00	08/11/22 21:34	1,6010D	DL

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1672533-2 SRM Lot Number: D113-540								
Lead, Total	79		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1672533-3 QC Sample: L2242391-02 Client ID: 301-Z01-C1-COMP												
Lead, Total	4.88	45	34.3	65	Q	-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2242391

Report Date: 08/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1672533-4 QC Sample: L2242391-02 Client ID: 301-Z01-C1-COMP						
Lead, Total	4.88	7.08	mg/kg	37	Q	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-01

Date Collected: 08/05/22 10:00

Client ID: 301-Z01-C1-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.0		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-02

Date Collected: 08/05/22 10:00

Client ID: 301-Z01-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.8		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-03

Date Collected: 08/05/22 10:15

Client ID: 301-Z01-C2-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.2		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-04

Date Collected: 08/05/22 10:15

Client ID: 301-Z01-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-05

Date Collected: 08/05/22 10:30

Client ID: 301-Z01-C3-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242391-06  
 Client ID: 301-Z01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.0		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242391

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242391-07

Date Collected: 08/05/22 10:45

Client ID: 301-Z01-C4-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242391

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242391-08

Date Collected: 08/05/22 10:45

Client ID: 301-Z01-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-09

Date Collected: 08/05/22 11:30

Client ID: 301-AA02-C1-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.6		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2242391

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242391-10

Date Collected: 08/05/22 11:30

Client ID: 301-AA02-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-11

Date Collected: 08/05/22 12:00

Client ID: 301-AA02-C2-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.8		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242391

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242391-12

Date Collected: 08/05/22 12:00

Client ID: 301-AA02-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-13

Date Collected: 08/05/22 12:10

Client ID: 301-AA02-C3-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.2		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-14

Date Collected: 08/05/22 12:10

Client ID: 301-AA02-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.3		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-15

Date Collected: 08/05/22 12:20

Client ID: 301-AA02-C4-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.3		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242391-16

Date Collected: 08/05/22 12:20

Client ID: 301-AA02-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.7		%	0.100	NA	1	-	08/06/22 13:08	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2242391

**Report Date:** 08/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-16 QC Batch ID: WG1672014-1 QC Sample: L2242391-01 Client ID: 301-Z01-C1-VOC						
Solids, Total	86.0	88.1	%	2		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242391-01A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-01B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-01C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-01D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-02A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-02B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-03A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-03B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-03C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-03D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-04A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-04B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-05A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-05B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-05C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-05D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-06A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-06B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-07A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-07B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-07C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-07D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-08A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242391**Project Number:** 200.00135.006**Report Date:** 08/15/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242391-08B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-09A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-09B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-09C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-09D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-10A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-10B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-11A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-11B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-11C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-11D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-12A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-12B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-13A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-13B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-13C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-13D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-14A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-14B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2242391-15A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242391-15B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-15C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242391-15D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242391-16A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242391-16B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242391  
**Report Date:** 08/15/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242391

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hllcoglobal.com

Date Rec'd in Lab: 8/16/22

ALPHA Job #: L2242391

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS													Sample Specific Comments	TOTAL # BOTTLES					
		Date	Time			1	2	3	4	5	6	7	8	9	10	11	12	13							
42391-01	301-201-C1-VOC	8/5	1000	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	VOCs (8210) SVOCs (8270) LEAD
02	301-201-C1-Camp		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
03	301-201-C2-VOC		1015			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
04	301-201-C2-Camp		1015			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
05	301-201-C3-VOC		1030			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
06	301-201-C3-Camp		1030			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
07	301-201-C4-VOC		1045			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
08	301-201-C4-Camp		1045			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
09	301-AA02-C1-VOC		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
10	301-AA02-C1-Camp		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Container Type - - - G - - - - -

Preservative - - - - -

Relinquished By: [Signature]

Date/Time: 8/5 5:30

Received By: [Signature]

Date/Time: 8/3/22 15:35



# CHAIN OF CUSTODY

PAGE 2 OF 2



Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~78500~~ 13559

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 8/16/22

ALPHA Job #: L2242391

### Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client info PO #: 3582

### Regulatory Requirements/Report Limits

State/Fed Program Criteria

### ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8260)	LEAD											
42391-11	301-AA02-C2-VOC	8/5	1200	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
12	301-AA02-C2-camp		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
13	301-AA02-C3-VOC		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
14	301-AA02-C3-camp		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
15	301-AA02-C4-VOC		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
16	301-AA02-C4-camp		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42391-11	301-AA02-C2-VOC	8/5	1200	S	TS
12	301-AA02-C2-camp		1200		
13	301-AA02-C3-VOC		1210		
14	301-AA02-C3-camp		1210		
15	301-AA02-C4-VOC		1220		
16	301-AA02-C4-camp		1220		

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/5 1535	<i>[Signature]</i>	8/5 22153
<i>[Signature]</i>	8/5/22/80	<i>[Signature]</i>	8-5-22
<i>[Signature]</i>	8-5-21	<i>[Signature]</i>	8-5-22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2242392
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/15/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2242392

Report Date: 08/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2242392-01	301-V01-C1-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:00	08/05/22
L2242392-02	301-V01-C1-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:00	08/05/22
L2242392-03	301-V01-C2-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:10	08/05/22
L2242392-04	301-V01-C2-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:10	08/05/22
L2242392-05	301-V01-C3-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:20	08/05/22
L2242392-06	301-V01-C3-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:20	08/05/22
L2242392-07	301-V01-C4-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:30	08/05/22
L2242392-08	301-V01-C4-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:30	08/05/22
L2242392-09	301-V02-C1-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:40	08/05/22
L2242392-10	301-V02-C1-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:40	08/05/22
L2242392-11	301-V02-C2-VOC	SOIL	PHILADELPHIA, PA	08/05/22 10:50	08/05/22
L2242392-12	301-V02-C2-COMP	SOIL	PHILADELPHIA, PA	08/05/22 10:50	08/05/22
L2242392-13	301-V02-C3-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:00	08/05/22
L2242392-14	301-V02-C3-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:00	08/05/22
L2242392-15	301-V02-C4-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:10	08/05/22
L2242392-16	301-V02-C4-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:10	08/05/22
L2242392-17	301-V02-C5-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:20	08/05/22
L2242392-18	301-V02-C5-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:20	08/05/22
L2242392-19	301-U03-C1-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:30	08/05/22
L2242392-20	301-U03-C1-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:30	08/05/22
L2242392-21	301-U03-C2-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:40	08/05/22
L2242392-22	301-U03-C2-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:40	08/05/22
L2242392-23	301-U03-C3-VOC	SOIL	PHILADELPHIA, PA	08/05/22 11:50	08/05/22
L2242392-24	301-U03-C3-COMP	SOIL	PHILADELPHIA, PA	08/05/22 11:50	08/05/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2242392-25	301-U03-C4-VOC	SOIL	PHILADELPHIA, PA	08/05/22 12:00	08/05/22
L2242392-26	301-U03-C4-COMP	SOIL	PHILADELPHIA, PA	08/05/22 12:00	08/05/22
L2242392-27	301-U03-C5-VOC	SOIL	PHILADELPHIA, PA	08/05/22 12:10	08/05/22
L2242392-28	301-U03-C5-COMP	SOIL	PHILADELPHIA, PA	08/05/22 12:10	08/05/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2242392-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (289%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-07 and -17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-07, -09, -13, -15, and -17: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2242392-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (136%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-11D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (140%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-11D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2242392-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (134%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (195%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

### Case Narrative (continued)

L2242392-19: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2242392-19: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (46%) and the surrogate recovery for 4-bromofluorobenzene (151%) were outside the acceptance criteria; however, re-analysis achieved the following results: 1,4-dichlorobenzene-d4 (44%) and 4-bromofluorobenzene (146%). The results of both analyses are reported; however, since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias.

L2242392-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-23D2: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (146%) and 4-bromofluorobenzene (204%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-25: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (192%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2242392-27D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2242392-27D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (162%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2242392-16D, -26, and -28D: The sample has elevated detection limits due to the dilution required by the sample matrix.

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
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### Case Narrative (continued)

#### Total Metals

The WG1672516-3 MS recovery, performed on L2242392-02, is outside the acceptance criteria for lead (31%). A post digestion spike was performed and was within acceptance criteria.

The WG1672516-4 Laboratory Duplicate RPD for lead (46%), performed on L2242392-02, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Caitlin Walukevich

Title: Technical Director/Representative

Date: 08/15/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-01  
 Client ID: 301-V01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 18:08  
 Analyst: MKS  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0013	0.00013	1
Benzene	0.00046		mg/kg	0.00032	0.00010	1
1,2-Dichloroethane	ND		mg/kg	0.00063	0.00016	1
Toluene	ND		mg/kg	0.00063	0.00034	1
1,2-Dibromoethane	ND		mg/kg	0.00032	0.00018	1
Ethylbenzene	ND		mg/kg	0.00063	0.00008	1
p/m-Xylene	ND		mg/kg	0.0013	0.00035	1
o-Xylene	ND		mg/kg	0.00063	0.00018	1
Xylenes, Total	ND		mg/kg	0.00063	0.00018	1
Isopropylbenzene	0.00008	J	mg/kg	0.00063	0.00006	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0013	0.00012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0013	0.00021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	126		70-130
Dibromofluoromethane	79		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-03  
 Client ID: 301-V01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 18:29  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	ND		mg/kg	0.00078	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00040	1
Toluene	ND		mg/kg	0.0016	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00078	0.00046	1
Ethylbenzene	ND		mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00087	1
o-Xylene	ND		mg/kg	0.0016	0.00045	1
Xylenes, Total	ND		mg/kg	0.0016	0.00045	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-05  
 Client ID: 301-V01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 00:45  
 Analyst: MKS  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00045	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.00066	J	mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.00036	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0012	J	mg/kg	0.0023	0.00064	1
o-Xylene	0.0014		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0026	J	mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00076	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0021	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	<b>289</b>	Q	70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-07  
 Client ID: 301-V01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 18:42  
 Analyst: NLK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.062	0.0087	1
p/m-Xylene	ND		mg/kg	0.12	0.035	1
o-Xylene	ND		mg/kg	0.062	0.018	1
Xylenes, Total	ND		mg/kg	0.062	0.018	1
Isopropylbenzene	0.016	J	mg/kg	0.062	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-09  
 Client ID: 301-V02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:40  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 19:08  
 Analyst: NLK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.047		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	0.046	J	mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.018	1
Ethylbenzene	0.056	J	mg/kg	0.063	0.0089	1
p/m-Xylene	0.13		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.063	0.018	1
Xylenes, Total	0.13		mg/kg	0.063	0.018	1
Isopropylbenzene	0.18		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	0.014	J	mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.050	J	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	136	Q	70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-11 D  
 Client ID: 301-V02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:50  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 19:35  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.65	0.065	5
Benzene	ND		mg/kg	0.16	0.054	5
1,2-Dichloroethane	ND		mg/kg	0.32	0.084	5
Toluene	ND		mg/kg	0.32	0.18	5
1,2-Dibromoethane	ND		mg/kg	0.16	0.095	5
Ethylbenzene	0.073	J	mg/kg	0.32	0.046	5
p/m-Xylene	ND		mg/kg	0.65	0.18	5
o-Xylene	ND		mg/kg	0.32	0.094	5
Xylenes, Total	ND		mg/kg	0.32	0.094	5
Isopropylbenzene	0.31	J	mg/kg	0.32	0.035	5
1,3,5-Trimethylbenzene	ND		mg/kg	0.65	0.063	5
1,2,4-Trimethylbenzene	ND		mg/kg	0.65	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	140	Q	70-130
Dibromofluoromethane	103		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-13  
 Client ID: 301-V02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 20:01  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.012	1
Benzene	ND		mg/kg	0.029	0.0095	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	ND		mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	ND		mg/kg	0.057	0.0081	1
p/m-Xylene	ND		mg/kg	0.11	0.032	1
o-Xylene	ND		mg/kg	0.057	0.017	1
Xylenes, Total	ND		mg/kg	0.057	0.017	1
Isopropylbenzene	ND		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	<b>134</b>	Q	70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-15  
 Client ID: 301-V02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 01:38  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	ND		mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	ND		mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.064	0.018	1
Xylenes, Total	ND		mg/kg	0.064	0.018	1
Isopropylbenzene	ND		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.024	J	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	195	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-17  
 Client ID: 301-V02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 20:54  
 Analyst: NLK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.0093	J	mg/kg	0.062	0.0087	1
p/m-Xylene	ND		mg/kg	0.12	0.035	1
o-Xylene	ND		mg/kg	0.062	0.018	1
Xylenes, Total	ND		mg/kg	0.062	0.018	1
Isopropylbenzene	ND		mg/kg	0.062	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-19  
 Client ID: 301-U03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 02:05  
 Analyst: MKS  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.16	0.016	1
Benzene	0.24		mg/kg	0.039	0.013	1
1,2-Dichloroethane	ND		mg/kg	0.078	0.020	1
Toluene	0.13		mg/kg	0.078	0.043	1
1,2-Dibromoethane	ND		mg/kg	0.039	0.023	1
Ethylbenzene	0.12		mg/kg	0.078	0.011	1
p/m-Xylene	0.28		mg/kg	0.16	0.044	1
o-Xylene	0.059	J	mg/kg	0.078	0.023	1
Xylenes, Total	0.34	J	mg/kg	0.078	0.023	1
Isopropylbenzene	2.5		mg/kg	0.078	0.0086	1
1,3,5-Trimethylbenzene	0.028	J	mg/kg	0.16	0.015	1
1,2,4-Trimethylbenzene	0.16		mg/kg	0.16	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-19  
 Client ID: 301-U03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 18:50  
 Analyst: MKS  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.0015		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	0.0016		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	0.00079	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.0042		mg/kg	0.0026	0.00073	1
o-Xylene	0.0019		mg/kg	0.0013	0.00038	1
Xylenes, Total	0.0061		mg/kg	0.0013	0.00038	1
Isopropylbenzene	0.25		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.0013	J	mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.0077		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	151	Q	70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-19 R  
 Client ID: 301-U03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/11/22 23:53  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0013		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.0013		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.00068	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0038		mg/kg	0.0023	0.00064	1
o-Xylene	0.0016		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0054		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.20		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00082	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0047		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	146	Q	70-130
Dibromofluoromethane	78		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-21  
 Client ID: 301-U03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:40  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/09/22 09:27  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00041	J	mg/kg	0.0040	0.00040	1
Benzene	0.0077		mg/kg	0.00099	0.00033	1
1,2-Dichloroethane	ND		mg/kg	0.0020	0.00051	1
Toluene	0.0018	J	mg/kg	0.0020	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.00099	0.00058	1
Ethylbenzene	0.00068	J	mg/kg	0.0020	0.00028	1
p/m-Xylene	0.0023	J	mg/kg	0.0040	0.0011	1
o-Xylene	0.00058	J	mg/kg	0.0020	0.00057	1
Xylenes, Total	0.0029	J	mg/kg	0.0020	0.00057	1
Isopropylbenzene	0.0023		mg/kg	0.0020	0.00022	1
1,3,5-Trimethylbenzene	0.00063	J	mg/kg	0.0040	0.00038	1
1,2,4-Trimethylbenzene	0.0020	J	mg/kg	0.0040	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-23 D2  
 Client ID: 301-U03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:50  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 00:26  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	3.2		mg/kg	0.25	0.025	2
Benzene	22.		mg/kg	0.063	0.021	2
1,2-Dichloroethane	ND		mg/kg	0.12	0.032	2
Toluene	ND		mg/kg	0.12	0.068	2
1,2-Dibromoethane	ND		mg/kg	0.063	0.037	2
Ethylbenzene	35.		mg/kg	0.12	0.018	2
p/m-Xylene	43.		mg/kg	0.25	0.070	2
o-Xylene	0.087	J	mg/kg	0.12	0.036	2
Xylenes, Total	43.	J	mg/kg	0.12	0.036	2
Isopropylbenzene	6.7		mg/kg	0.12	0.014	2
1,3,5-Trimethylbenzene	14.		mg/kg	0.25	0.024	2
1,2,4-Trimethylbenzene	44.	E	mg/kg	0.25	0.042	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	146	Q	70-130
4-Bromofluorobenzene	204	Q	70-130
Dibromofluoromethane	94		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-23 D  
 Client ID: 301-U03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:50  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/08/22 13:40  
 Analyst: NLK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
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1,2,4-Trimethylbenzene	66.		mg/kg	12	2.1	100
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-25  
 Client ID: 301-U03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 00:07  
 Analyst: MKS  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	1.8		mg/kg	0.11	0.012	1
Benzene	7.8		mg/kg	0.029	0.0095	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	ND		mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	8.0		mg/kg	0.057	0.0081	1
p/m-Xylene	9.5		mg/kg	0.11	0.032	1
o-Xylene	0.022	J	mg/kg	0.057	0.017	1
Xylenes, Total	9.5	J	mg/kg	0.057	0.017	1
Isopropylbenzene	1.5		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	3.0		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	9.7		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	128		70-130
4-Bromofluorobenzene	192	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-27 D  
 Client ID: 301-U03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 00:46  
 Analyst: MKS  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	0.11	J	mg/kg	0.26	0.026	2
Benzene	1.3		mg/kg	0.064	0.021	2
1,2-Dichloroethane	ND		mg/kg	0.13	0.033	2
Toluene	ND		mg/kg	0.13	0.070	2
1,2-Dibromoethane	ND		mg/kg	0.064	0.038	2
Ethylbenzene	0.88		mg/kg	0.13	0.018	2
p/m-Xylene	0.96		mg/kg	0.26	0.072	2
o-Xylene	ND		mg/kg	0.13	0.037	2
Xylenes, Total	0.96		mg/kg	0.13	0.037	2
Isopropylbenzene	2.9		mg/kg	0.13	0.014	2
1,3,5-Trimethylbenzene	0.48		mg/kg	0.26	0.025	2
1,2,4-Trimethylbenzene	1.6		mg/kg	0.26	0.043	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	162	Q	70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 17:09  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1673608-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 17:09  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15,19 Batch: WG1673609-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 19:08  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 23,25,27 Batch: WG1673619-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/09/22 08:35  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 21 Batch: WG1673642-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/08/22 13:09  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 23 Batch: WG1673654-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	86		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/08/22 13:20  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,09,11,13,17 Batch: WG1673658-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/10/22 17:06  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,19 Batch: WG1674173-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/11/22 17:40  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 19 Batch: WG1674573-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1673608-3 WG1673608-4								
Methyl tert butyl ether	95		92		66-130	3		30
Benzene	94		90		70-130	4		30
1,2-Dichloroethane	107		104		70-130	3		30
Toluene	94		91		70-130	3		30
1,2-Dibromoethane	99		98		70-130	1		30
Ethylbenzene	93		91		70-130	2		30
p/m-Xylene	92		90		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	96		92		70-130	4		30
1,3,5-Trimethylbenzene	96		92		70-130	4		30
1,2,4-Trimethylbenzene	93		91		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	119		115		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	101		100		70-130
Dibromofluoromethane	104		101		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15,19 Batch: WG1673609-3 WG1673609-4								
Methyl tert butyl ether	95		92		66-130	3		30
Benzene	94		90		70-130	4		30
1,2-Dichloroethane	107		104		70-130	3		30
Toluene	94		91		70-130	3		30
1,2-Dibromoethane	99		98		70-130	1		30
Ethylbenzene	93		91		70-130	2		30
p/m-Xylene	92		90		70-130	2		30
o-Xylene	88		88		70-130	0		30
Isopropylbenzene	96		92		70-130	4		30
1,3,5-Trimethylbenzene	96		92		70-130	4		30
1,2,4-Trimethylbenzene	93		91		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	119		115		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	101		100		70-130
Dibromofluoromethane	104		101		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 23,25,27 Batch: WG1673619-3 WG1673619-4								
Methyl tert butyl ether	104		95		66-130	9		30
Benzene	102		94		70-130	8		30
1,2-Dichloroethane	101		95		70-130	6		30
Toluene	93		87		70-130	7		30
1,2-Dibromoethane	98		94		70-130	4		30
Ethylbenzene	100		94		70-130	6		30
p/m-Xylene	99		93		70-130	6		30
o-Xylene	100		94		70-130	6		30
Isopropylbenzene	102		99		70-130	3		30
1,3,5-Trimethylbenzene	102		98		70-130	4		30
1,2,4-Trimethylbenzene	100		96		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	99		99		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 21 Batch: WG1673642-3 WG1673642-4								
Methyl tert butyl ether	85		84		66-130	1		30
Benzene	92		90		70-130	2		30
1,2-Dichloroethane	82		82		70-130	0		30
Toluene	91		89		70-130	2		30
1,2-Dibromoethane	91		89		70-130	2		30
Ethylbenzene	94		91		70-130	3		30
p/m-Xylene	94		91		70-130	3		30
o-Xylene	94		89		70-130	5		30
Isopropylbenzene	98		91		70-130	7		30
1,3,5-Trimethylbenzene	99		91		70-130	8		30
1,2,4-Trimethylbenzene	100		93		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	89		90		70-130
Toluene-d8	101		99		70-130
4-Bromofluorobenzene	101		98		70-130
Dibromofluoromethane	86		87		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 23 Batch: WG1673654-3 WG1673654-4								
Methyl tert butyl ether	91		91		66-130	0		30
Benzene	91		88		70-130	3		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	92		98		70-130	6		30
1,2-Dibromoethane	95		94		70-130	1		30
Ethylbenzene	94		90		70-130	4		30
p/m-Xylene	96		93		70-130	3		30
o-Xylene	95		92		70-130	3		30
Isopropylbenzene	94		90		70-130	4		30
1,3,5-Trimethylbenzene	96		92		70-130	4		30
1,2,4-Trimethylbenzene	95		92		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		103		70-130
Toluene-d8	100		111		70-130
4-Bromofluorobenzene	96		95		70-130
Dibromofluoromethane	99		100		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,09,11,13,17 Batch: WG1673658-3 WG1673658-4								
Methyl tert butyl ether	95		94		66-130	1		30
Benzene	98		99		70-130	1		30
1,2-Dichloroethane	96		94		70-130	2		30
Toluene	102		101		70-130	1		30
1,2-Dibromoethane	100		99		70-130	1		30
Ethylbenzene	104		105		70-130	1		30
p/m-Xylene	106		107		70-130	1		30
o-Xylene	106		107		70-130	1		30
Isopropylbenzene	101		101		70-130	0		30
1,3,5-Trimethylbenzene	103		103		70-130	0		30
1,2,4-Trimethylbenzene	104		105		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		103		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		99		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,19 Batch: WG1674173-3 WG1674173-4								
Methyl tert butyl ether	76		78		66-130	3		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	72		74		70-130	3		30
Toluene	86		83		70-130	4		30
1,2-Dibromoethane	85		86		70-130	1		30
Ethylbenzene	87		85		70-130	2		30
p/m-Xylene	89		86		70-130	3		30
o-Xylene	88		86		70-130	2		30
Isopropylbenzene	88		84		70-130	5		30
1,3,5-Trimethylbenzene	91		87		70-130	4		30
1,2,4-Trimethylbenzene	90		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		85		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	86		87		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 19 Batch: WG1674573-3 WG1674573-4								
Methyl tert butyl ether	78		77		66-130	1		30
Benzene	94		85		70-130	10		30
1,2-Dichloroethane	78		74		70-130	5		30
Toluene	93		83		70-130	11		30
1,2-Dibromoethane	88		85		70-130	3		30
Ethylbenzene	95		84		70-130	12		30
p/m-Xylene	97		87		70-130	11		30
o-Xylene	96		87		70-130	10		30
Isopropylbenzene	97		85		70-130	13		30
1,3,5-Trimethylbenzene	98		86		70-130	13		30
1,2,4-Trimethylbenzene	98		88		70-130	11		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		84		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	95		93		70-130
Dibromofluoromethane	88		87		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-02  
 Client ID: 301-V01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 18:50  
 Analyst: EK  
 Percent Solids: 98%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.040	J	mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	0.065	J	mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.032	1
Pyrene	0.063	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.081	J	mg/kg	0.10	0.019	1
Chrysene	0.099	J	mg/kg	0.10	0.017	1
Benzo(b)fluoranthene	0.12		mg/kg	0.10	0.028	1
Benzo(a)pyrene	0.16		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	0.16		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-04  
 Client ID: 301-V01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 19:14  
 Analyst: EK  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.27		mg/kg	0.12	0.024	1
Anthracene	0.053	J	mg/kg	0.12	0.038	1
Pyrene	0.53		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.36		mg/kg	0.12	0.022	1
Chrysene	0.38		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.53		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.45		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.31		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-06  
 Client ID: 301-V01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 19:37  
 Analyst: EK  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.039	J	mg/kg	0.19	0.018	1
Phenanthrene	0.31		mg/kg	0.11	0.023	1
Anthracene	0.065	J	mg/kg	0.11	0.036	1
Pyrene	0.36		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.20		mg/kg	0.11	0.021	1
Chrysene	0.21		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.23		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.20		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.088	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-08  
 Client ID: 301-V01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 20:01  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.024	J	mg/kg	0.20	0.020	1
Phenanthrene	0.30		mg/kg	0.12	0.024	1
Anthracene	0.068	J	mg/kg	0.12	0.039	1
Pyrene	0.39		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.22		mg/kg	0.12	0.023	1
Chrysene	0.23		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.26		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.21		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.097	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	90		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-10  
 Client ID: 301-V02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:40  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 20:24  
 Analyst: EK  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.034	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.20		mg/kg	0.11	0.023	1
Anthracene	0.044	J	mg/kg	0.11	0.037	1
Pyrene	0.25		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.16		mg/kg	0.11	0.021	1
Chrysene	0.17		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.20		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.17		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-12  
 Client ID: 301-V02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:50  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 20:47  
 Analyst: EK  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.16		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.22		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.13		mg/kg	0.12	0.022	1
Chrysene	0.13		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.15		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.12	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.061	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-14  
 Client ID: 301-V02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 21:11  
 Analyst: EK  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.086	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.088	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.16		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.10	J	mg/kg	0.11	0.021	1
Chrysene	0.12		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.14		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.12	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.079	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-16 D  
 Client ID: 301-V02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/14/22 01:41  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.95	0.12	5
Fluorene	0.22	J	mg/kg	0.95	0.092	5
Phenanthrene	0.43	J	mg/kg	0.57	0.12	5
Anthracene	ND		mg/kg	0.57	0.18	5
Pyrene	0.29	J	mg/kg	0.57	0.094	5
Benzo(a)anthracene	ND		mg/kg	0.57	0.11	5
Chrysene	0.18	J	mg/kg	0.57	0.099	5
Benzo(b)fluoranthene	ND		mg/kg	0.57	0.16	5
Benzo(a)pyrene	ND		mg/kg	0.76	0.23	5
Benzo(ghi)perylene	ND		mg/kg	0.76	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	240	Q	23-120
2-Fluorobiphenyl	100		30-120
4-Terphenyl-d14	109		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-18  
 Client ID: 301-V02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 21:57  
 Analyst: EK  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.36		mg/kg	0.19	0.023	1
Fluorene	0.27		mg/kg	0.19	0.018	1
Phenanthrene	0.45		mg/kg	0.11	0.023	1
Anthracene	0.074	J	mg/kg	0.11	0.037	1
Pyrene	0.12		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.028	J	mg/kg	0.11	0.021	1
Chrysene	0.095	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.040	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.030	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	80		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-20  
 Client ID: 301-U03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:30  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 22:21  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.044	J	mg/kg	0.20	0.025	1
Fluorene	0.024	J	mg/kg	0.20	0.020	1
Phenanthrene	0.067	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.10	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.073	J	mg/kg	0.12	0.023	1
Chrysene	0.10	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.10	J	mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-22  
 Client ID: 301-U03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:40  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 22:44  
 Analyst: EK  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.14	J	mg/kg	0.17	0.021	1
Fluorene	0.13	J	mg/kg	0.17	0.017	1
Phenanthrene	0.27		mg/kg	0.10	0.021	1
Anthracene	0.080	J	mg/kg	0.10	0.034	1
Pyrene	0.43		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.11		mg/kg	0.10	0.020	1
Chrysene	0.21		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.11		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.11	J	mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	146	Q	23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-24  
 Client ID: 301-U03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:50  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 23:08  
 Analyst: EK  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.061	J	mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.054	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.083	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.050	J	mg/kg	0.10	0.020	1
Chrysene	0.056	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.068	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.056	J	mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.046	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	83		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-26  
 Client ID: 301-U03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 12:13  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.26		mg/kg	0.19	0.023	1
Fluorene	0.13	J	mg/kg	0.19	0.018	1
Phenanthrene	0.30		mg/kg	0.11	0.023	1
Anthracene	0.045	J	mg/kg	0.11	0.037	1
Pyrene	0.16		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.074	J	mg/kg	0.11	0.021	1
Chrysene	0.11		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.087	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.095	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	105		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-28 D  
 Client ID: 301-U03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 12:36  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.5		mg/kg	0.92	0.11	5
Fluorene	3.2		mg/kg	0.92	0.090	5
Phenanthrene	7.4		mg/kg	0.55	0.11	5
Anthracene	0.66		mg/kg	0.55	0.18	5
Pyrene	1.2		mg/kg	0.55	0.092	5
Benzo(a)anthracene	0.47	J	mg/kg	0.55	0.10	5
Chrysene	0.87		mg/kg	0.55	0.096	5
Benzo(b)fluoranthene	ND		mg/kg	0.55	0.16	5
Benzo(a)pyrene	ND		mg/kg	0.74	0.22	5
Benzo(ghi)perylene	0.27	J	mg/kg	0.74	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	167	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/12/22 10:55  
 Analyst: IM

Extraction Method: EPA 3546  
 Extraction Date: 08/06/22 19:36

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1672129-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	90		25-120
Phenol-d6	90		10-120
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	100		30-120
2,4,6-Tribromophenol	107		10-136
4-Terphenyl-d14	110		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1672129-2 WG1672129-3								
Naphthalene	95		98		40-140	3		50
Fluorene	98		104		40-140	6		50
Phenanthrene	98		102		40-140	4		50
Anthracene	100		105		40-140	5		50
Pyrene	104		110		35-142	6		50
Benzo(a)anthracene	94		99		40-140	5		50
Chrysene	98		102		40-140	4		50
Benzo(b)fluoranthene	108		112		40-140	4		50
Benzo(a)pyrene	111		116		40-140	4		50
Benzo(ghi)perylene	105		111		40-140	6		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	99		105		25-120
Phenol-d6	100		106		10-120
Nitrobenzene-d5	107		112		23-120
2-Fluorobiphenyl	107		111		30-120
2,4,6-Tribromophenol	124		129		10-136
4-Terphenyl-d14	109		115		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-02

Date Collected: 08/05/22 10:00

Client ID: 301-V01-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	110		mg/kg	2.03	0.109	1	08/08/22 20:45	08/11/22 23:26	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-04

Date Collected: 08/05/22 10:10

Client ID: 301-V01-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	54.6		mg/kg	2.25	0.120	1	08/08/22 20:45	08/11/22 23:05	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-06

Date Collected: 08/05/22 10:20

Client ID: 301-V01-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	0.522	J	mg/kg	2.26	0.121	1	08/08/22 20:45	08/11/22 23:19	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-08

Date Collected: 08/05/22 10:30

Client ID: 301-V01-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.8		mg/kg	2.38	0.128	1	08/08/22 20:45	08/11/22 23:23	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-10

Date Collected: 08/05/22 10:40

Client ID: 301-V02-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.8		mg/kg	2.25	0.120	1	08/08/22 20:45	08/11/22 23:51	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-12

Date Collected: 08/05/22 10:50

Client ID: 301-V02-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	31.0		mg/kg	2.34	0.126	1	08/08/22 20:45	08/11/22 23:55	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-14

Date Collected: 08/05/22 11:00

Client ID: 301-V02-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	61.8		mg/kg	2.19	0.117	1	08/08/22 20:45	08/11/22 23:58	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-16  
 Client ID: 301-V02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	51.4		mg/kg	2.22	0.119	1	08/08/22 20:45	08/12/22 00:02	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-18  
 Client ID: 301-V02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 11:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	116		mg/kg	2.30	0.123	1	08/08/22 20:45	08/12/22 00:05	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-20

Date Collected: 08/05/22 11:30

Client ID: 301-U03-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	60.2		mg/kg	2.39	0.128	1	08/08/22 20:45	08/12/22 00:09	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-22

Date Collected: 08/05/22 11:40

Client ID: 301-U03-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.3		mg/kg	2.09	0.112	1	08/08/22 20:45	08/12/22 00:12	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-24

Date Collected: 08/05/22 11:50

Client ID: 301-U03-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.31		mg/kg	2.04	0.110	1	08/08/22 20:45	08/12/22 00:16	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-26  
 Client ID: 301-U03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:00  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	19.4		mg/kg	2.26	0.121	1	08/08/22 20:45	08/12/22 00:19	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-28  
 Client ID: 301-U03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 12:10  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	32.5		mg/kg	2.28	0.122	1	08/08/22 20:45	08/12/22 00:23	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1672516-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/08/22 20:45	08/11/22 22:58	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1672516-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128			-

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28    QC Batch ID: WG1672516-3    QC Sample: L2242392-02 Client ID: 301-V01-C1-COMP												
Lead, Total	110	42.1	123	31	Q	-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2242392

Report Date: 08/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1672516-4 QC Sample: L2242392-02 Client ID: 301-V01-C1-COMP						
Lead, Total	110	176	mg/kg	46	Q	20

# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-01

Date Collected: 08/05/22 10:00

Client ID: 301-V01-C1-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.5		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-02

Date Collected: 08/05/22 10:00

Client ID: 301-V01-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	98.0		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-03

Date Collected: 08/05/22 10:10

Client ID: 301-V01-C2-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-04

Date Collected: 08/05/22 10:10

Client ID: 301-V01-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-05

Date Collected: 08/05/22 10:20

Client ID: 301-V01-C3-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.2		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242392  
**Report Date:** 08/15/22

**SAMPLE RESULTS**

Lab ID: L2242392-06  
 Client ID: 301-V01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/05/22 10:20  
 Date Received: 08/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.4		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-07

Date Collected: 08/05/22 10:30

Client ID: 301-V01-C4-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-08

Date Collected: 08/05/22 10:30

Client ID: 301-V01-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-09

Date Collected: 08/05/22 10:40

Client ID: 301-V02-C1-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-10

Date Collected: 08/05/22 10:40

Client ID: 301-V02-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.2		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-11

Date Collected: 08/05/22 10:50

Client ID: 301-V02-C2-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.4		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-12

Date Collected: 08/05/22 10:50

Client ID: 301-V02-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-13

Date Collected: 08/05/22 11:00

Client ID: 301-V02-C3-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-14

Date Collected: 08/05/22 11:00

Client ID: 301-V02-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.8		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-15

Date Collected: 08/05/22 11:10

Client ID: 301-V02-C4-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.2		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-16

Date Collected: 08/05/22 11:10

Client ID: 301-V02-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-17

Date Collected: 08/05/22 11:20

Client ID: 301-V02-C5-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.0		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-18

Date Collected: 08/05/22 11:20

Client ID: 301-V02-C5-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-19

Date Collected: 08/05/22 11:30

Client ID: 301-U03-C1-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-20

Date Collected: 08/05/22 11:30

Client ID: 301-U03-C1-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	08/06/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-21

Date Collected: 08/05/22 11:40

Client ID: 301-U03-C2-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.4		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-22

Date Collected: 08/05/22 11:40

Client ID: 301-U03-C2-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.3		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-23

Date Collected: 08/05/22 11:50

Client ID: 301-U03-C3-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-24

Date Collected: 08/05/22 11:50

Client ID: 301-U03-C3-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.9		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-25

Date Collected: 08/05/22 12:00

Client ID: 301-U03-C4-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-26

Date Collected: 08/05/22 12:00

Client ID: 301-U03-C4-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.3		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**SAMPLE RESULTS**

Lab ID: L2242392-27

Date Collected: 08/05/22 12:10

Client ID: 301-U03-C5-VOC

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.7		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242392

Project Number: 200.00135.006

Report Date: 08/15/22

## SAMPLE RESULTS

Lab ID: L2242392-28

Date Collected: 08/05/22 12:10

Client ID: 301-U03-C5-COMP

Date Received: 08/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.4		%	0.100	NA	1	-	08/06/22 13:30	121,2540G	RI



### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2242392

**Report Date:** 08/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1672016-1 QC Sample: L2242392-01 Client ID: 301-V01-C1-VOC						
Solids, Total	92.5	93.9	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 21-28 QC Batch ID: WG1672017-1 QC Sample: L2242452-03 Client ID: DUP Sample						
Solids, Total	89.4	89.4	%	0		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242392**Project Number:** 200.00135.006**Report Date:** 08/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242392-01A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-01B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-01C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-01D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-02A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-02B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-03A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-03B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-03C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-03D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-04A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-04B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-05A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-05B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-05C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-05D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-06A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-06B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-07A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-07B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-07C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-07D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)

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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242392-08A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-08B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-09A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-09B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-09C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-09D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-10A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-10B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-11A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-11B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-11C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-11D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-12A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-12B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-13A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-13B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-13C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-13D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-14A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-14B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-15A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-15B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-15C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-15D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-16A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-16B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-17A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-17B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242392-17C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-17D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-18A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-18B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-19A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2242392-19B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260H(14),PA-8260HLW(14)
L2242392-19C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260H(14),PA-8260HLW(14)
L2242392-19D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-20A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-20B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-21A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-21B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-21C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-21D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-22A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-22B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-23A	Vial MeOH preserved	A	NA		3.9	Y	Absent		PA-8260HLW(14)
L2242392-23B	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-23C	Vial water preserved	A	NA		3.9	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-23D	Plastic 120ml unpreserved	A	NA		3.9	Y	Absent		TS(7)
L2242392-24A	Glass 60mL/2oz unpreserved	A	NA		3.9	Y	Absent		PB-TI(180)
L2242392-24B	Glass 120ml/4oz unpreserved	A	NA		3.9	Y	Absent		TS(7),PA-PAH(14)
L2242392-25A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242392-25B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-25C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-25D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242392-26A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242392-26B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)



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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242392-27A	Vial MeOH preserved	B	NA		4.5	Y	Absent		PA-8260HLW(14)
L2242392-27B	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-27C	Vial water preserved	B	NA		4.5	Y	Absent	06-AUG-22 05:14	PA-8260HLW(14)
L2242392-27D	Plastic 120ml unpreserved	B	NA		4.5	Y	Absent		TS(7)
L2242392-28A	Glass 60mL/2oz unpreserved	B	NA		4.5	Y	Absent		PB-TI(180)
L2242392-28B	Glass 120ml/4oz unpreserved	B	NA		4.5	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



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## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242392

**Project Number:** 200.00135.006

**Report Date:** 08/15/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY PAGE 1 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18589~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/16/22

ALPHA Job #: L2242392

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

## ANALYSIS

Sample ID	VOCs (\$260)	SVOCs (\$270)	Lead															
301-V01-C1-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C1-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C2-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C2-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C3-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C3-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C4-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V01-C4-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V02-C1-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
301-V02-C1-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42392-01	301-V01-C1-VOC	8/5/22	1000	S	CS
02	301-V01-C1-COMP		1000		
03	301-V01-C2-VOC		1010		
04	301-V01-C2-COMP		1010		
05	301-V01-C3-VOC		1020		
06	301-V01-C3-COMP		1020		
07	301-V01-C4-VOC		1030		
08	301-V01-C4-COMP		1030		
09	301-V02-C1-VOC		1040		
10	301-V02-C1-COMP	✓	1040	✓	✓

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: <i>[Signature]</i>	Date/Time: 8/5/22	Received By: <i>[Signature]</i>	Date/Time: 8/3/22 1530
<i>[Signature]</i>	8/5/22/18	<i>[Signature]</i>	8-3-22 1900
<i>[Signature]</i>	8-5-22 10	<i>[Signature]</i>	8-5-22 2100
<i>[Signature]</i>	8-5-22 10	<i>[Signature]</i>	8-5-22 2245

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 3

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-8300  
 FAX: 508-898-9193 FAX: 508-822-3286

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax: \_\_\_\_\_  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42397-11	301-V02-C2-VOC	8/5/22	1050	S	A
12	301-V02-C2-COMP		1050		
13	301-V02-C3-VOL		1100		
14	301-V02-C3-COMP		1100		
15	301-V02-C4-VOL		1110		
16	301-V02-C4-COMP		1110		
17	301-V02-C5-VOL		1120		
18	301-V02-C5-COMP		1120		
19	301-U03-C1-VOL		1130		
20	301-U03-C1-COMP		1130		

Container Type: \_\_\_\_\_  
 Preservative: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: 8/5/22  
 Received By: \_\_\_\_\_ Date/Time: 8/5/22

### Project Information

Project Name: Philadelphia Refinery  
 Project Location: Philadelphia, PA  
 Project #: 200.00135.006  
 Project Manager: William Schmidt

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)  
 Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

ALPHA Quote #: ~~48599~~ 18559

Date Rec'd in Lab: 8/6/22

ALPHA Job #: L2242392

### Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client info PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program: \_\_\_\_\_ Criteria: \_\_\_\_\_

### ANALYSIS

Sample ID	VOLs (8260)	SVOCs (8270)	Lead																
301-V02-C2-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-V02-C2-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-V02-C3-VOL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-V02-C3-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-V02-C4-VOL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-V02-C4-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-V02-C5-VOL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-V02-C5-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-U03-C1-VOL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-U03-C1-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

Please print clearly, legibly and completely. Samples can not be logged in and returned until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY PAGE 3 OF 3

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3268

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  Standard     Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42397-21	301-U03-C2-VOC	8/5/22	1140	S	cer
22	301-U03-C2-COMP		1140		
23	301-U03-C3-VOC		1150		
24	301-U03-C3-COMP		1150		
25	301-U03-C4-VOC		1200		
26	301-U03-C4-COMP		1200		
27	301-U03-C5-VOC		1210		
28	301-U03-C5-COMP		1210		

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~48598~~ 18559

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Date Rec'd in Lab: 8/16/22

ALPHA Job #: L2242392

### Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

### Billing Information

Same as Client Info    PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program    Criteria

### ANALYSIS

Sample ID	VOCs (8260)	SVOCs (8270)	Lead																
301-U03-C2-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-U03-C2-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-U03-C3-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-U03-C3-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-U03-C4-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-U03-C4-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																
301-U03-C5-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																
301-U03-C5-COMP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

Container Type

Preservative

Relinquished By:

Date/Time 8/5/22

Received By:

Date/Time 8/5/22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

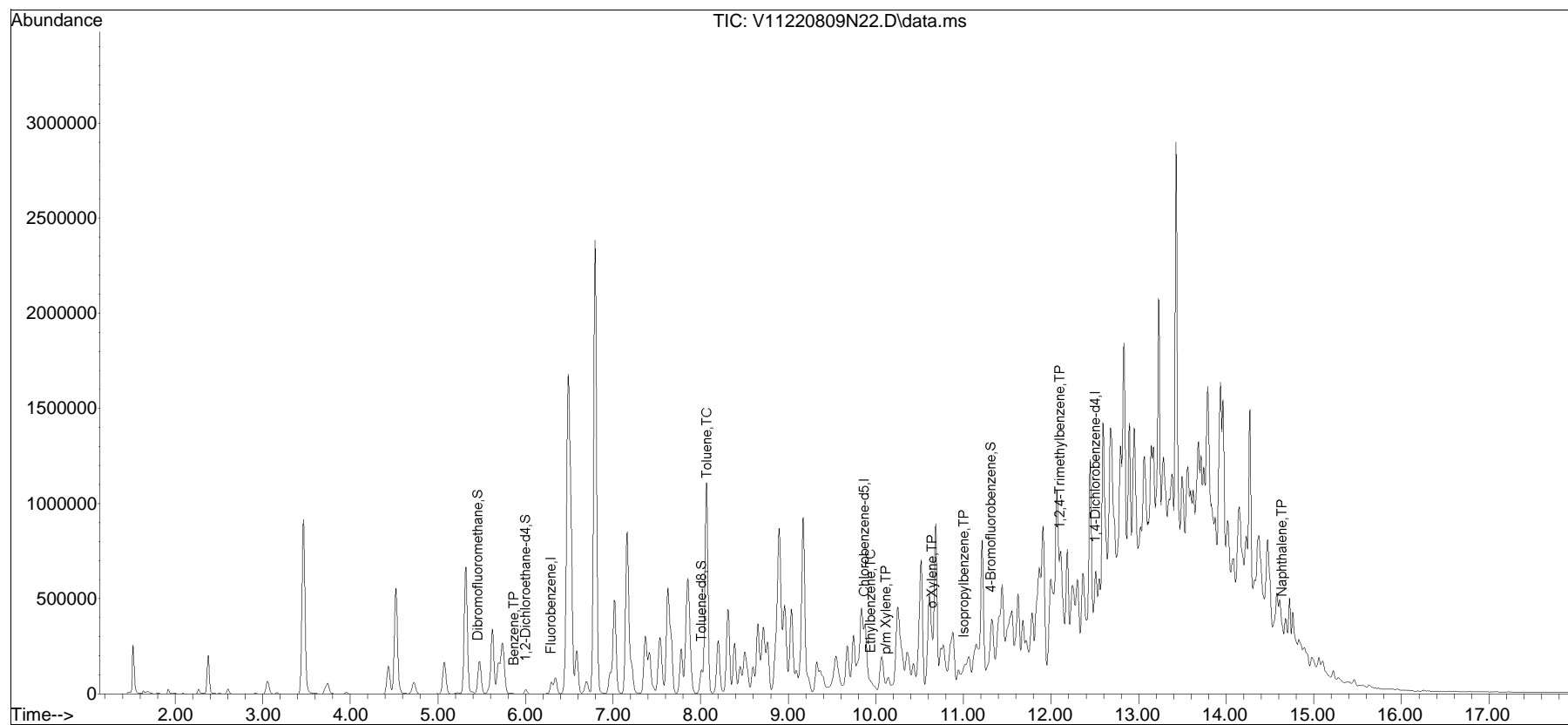
*[Handwritten signatures and dates]*  
 8/5/22 15:35  
 8/5/22 15:00  
 8/5/22 12:00  
 8-5-22  
 8-5-22 21:00  
 8-5-22 21:00

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220809N\  
Data File : V11220809N22.D  
Acq On : 10 Aug 2022 12:45 am  
Operator : VOA111:MKS  
Sample : L2242392-05,31,5.49,5,,B  
Misc : WG1673608,ICAL19072  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 10 11:22:26 2022  
Quant Method : I:\VOLATILES\VOA111\2022\220809N\V111\_220608A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jun 09 10:30:20 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V11220809N01.D•

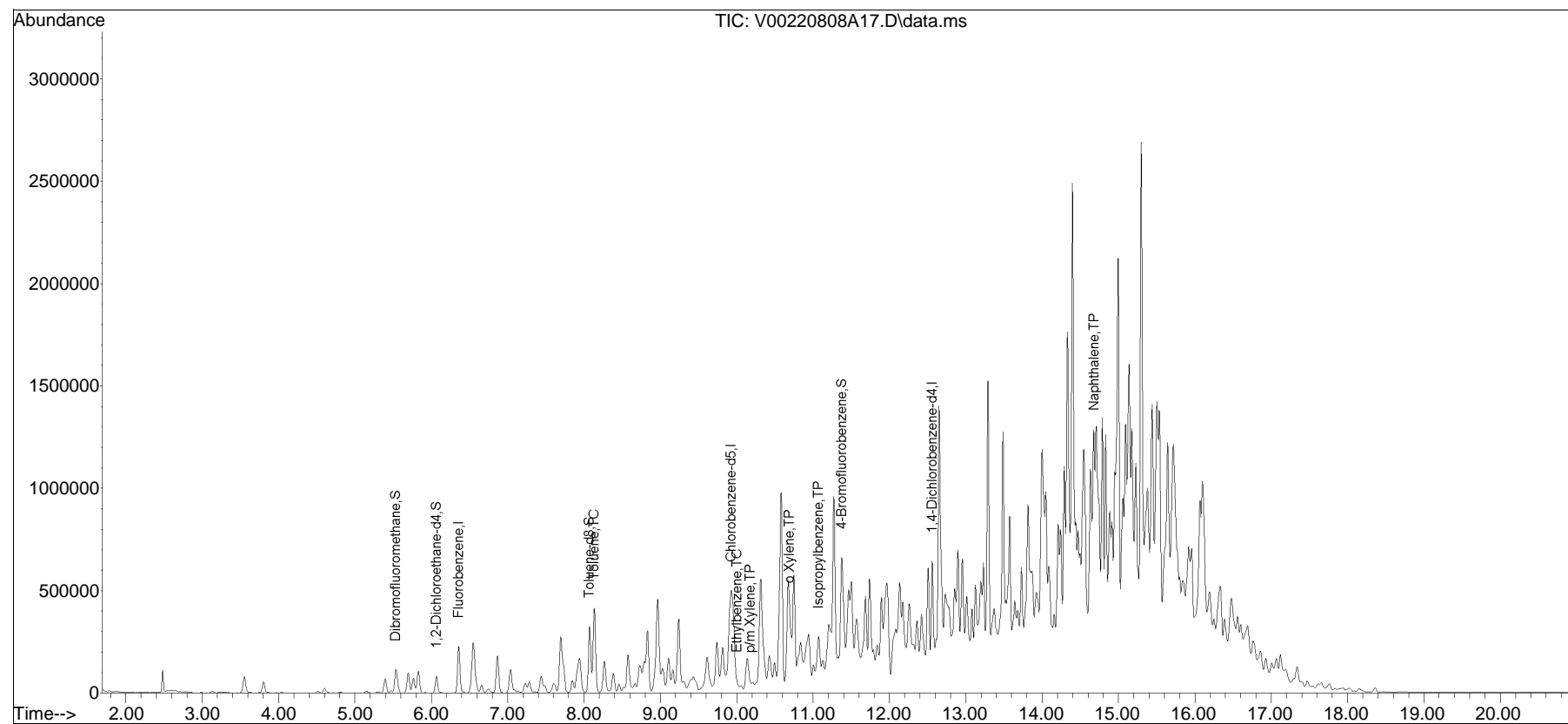


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220808A\  
Data File : V00220808A17.D  
Acq On : 8 Aug 2022 6:42 pm  
Operator : VOA100:NLK  
Sample : 12242392-07,31h,5.97,5,0.100,,a  
Misc : WG1673658,ICAL19219  
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 09 13:38:27 2022  
Quant Method : I:\VOLATILES\VOA100\2022\220808A\V100\_220802N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Aug 03 07:08:57 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V00220808A01.D•

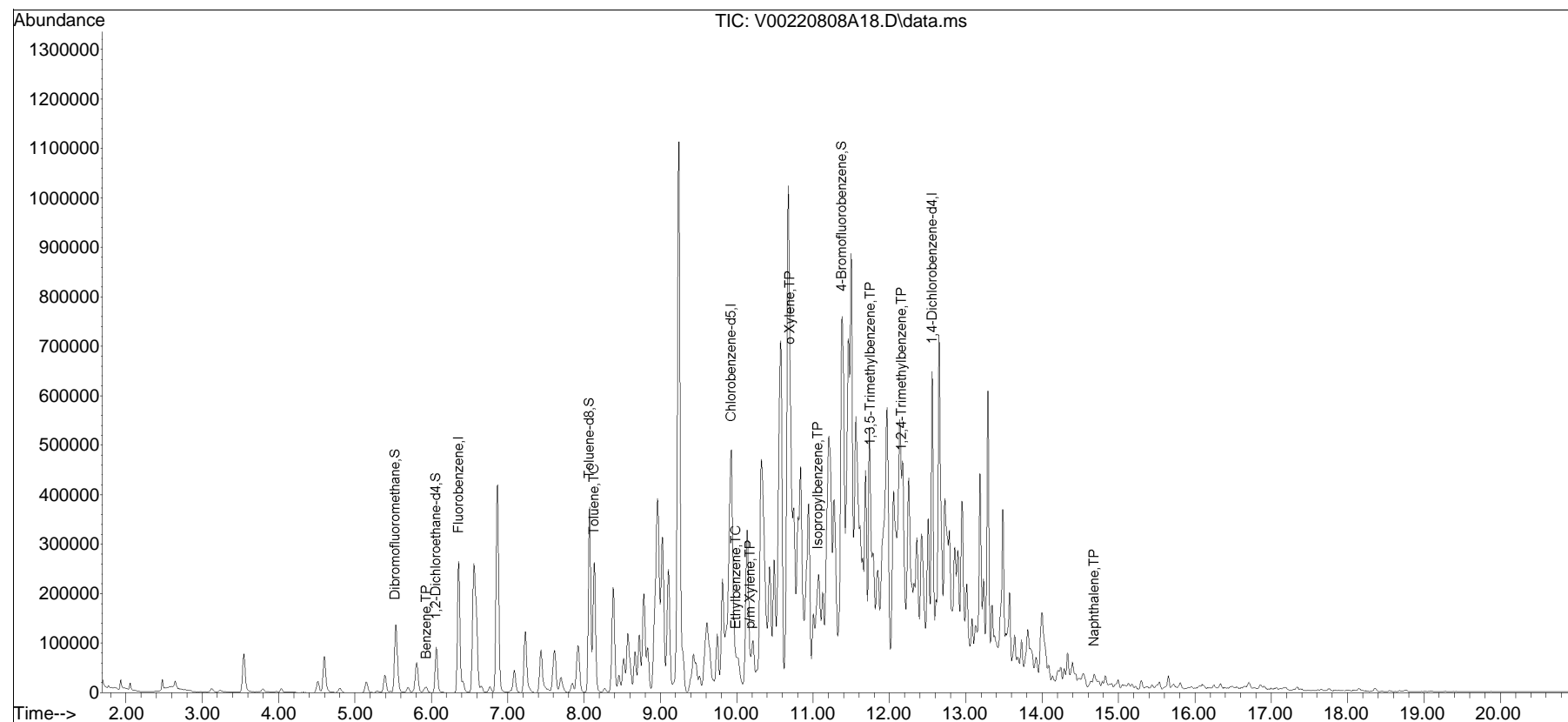


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220808A\  
Data File : V00220808A18.D  
Acq On : 8 Aug 2022 7:08 pm  
Operator : VOA100:NLK  
Sample : 12242392-09,31h,4.84,5,0.100,,a  
Misc : WG1673658,ICAL19219  
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 09 13:27:50 2022  
Quant Method : I:\VOLATILES\VOA100\2022\220808A\V100\_220802N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Aug 03 07:08:57 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V00220808A01.D•

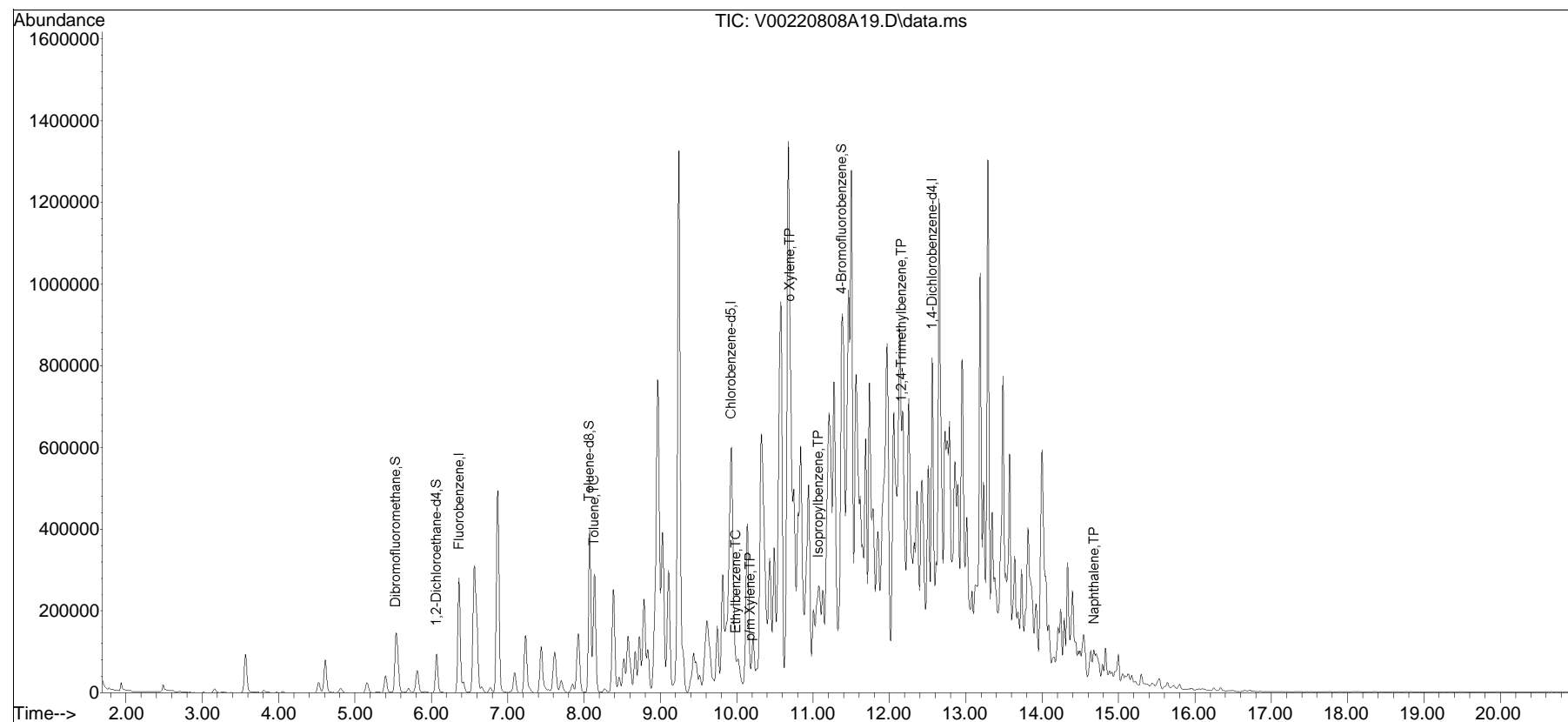


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220808A\  
Data File : V00220808A19.D  
Acq On : 8 Aug 2022 7:35 pm  
Operator : VOA100:NLK  
Sample : 12242392-11D,31h,4.84,5,0.020,,a  
Misc : WG1673658,ICAL19219  
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 09 13:27:54 2022  
Quant Method : I:\VOLATILES\VOA100\2022\220808A\V100\_220802N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Aug 03 07:08:57 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V00220808A01.D•

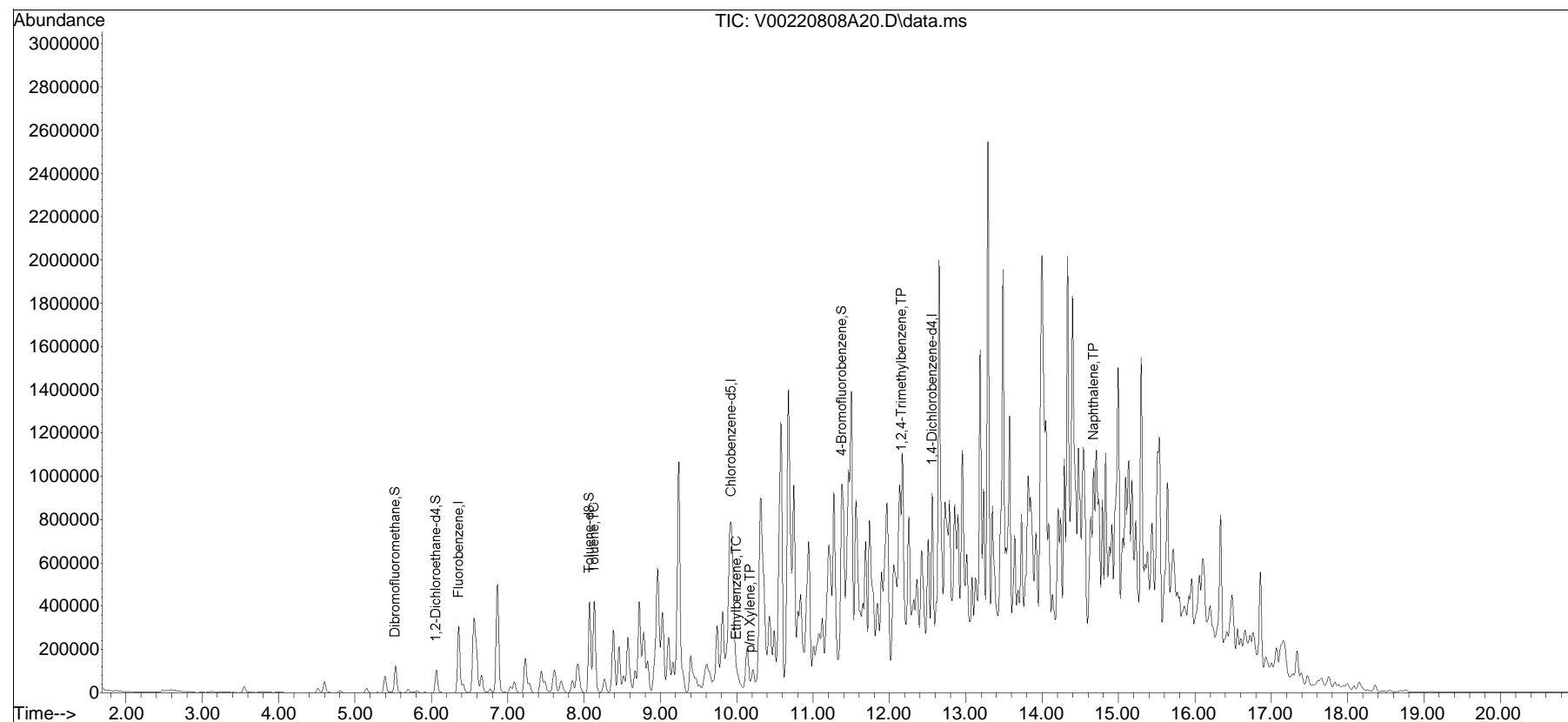


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220808A\  
Data File : V00220808A20.D  
Acq On : 8 Aug 2022 8:01 pm  
Operator : VOA100:NLK  
Sample : 12242392-13,31h,6.39,5,0.100,,a  
Misc : WG1673658,ICAL19219  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 09 13:27:58 2022  
Quant Method : I:\VOLATILES\VOA100\2022\220808A\V100\_220802N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Aug 03 07:08:57 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V00220808A01.D•

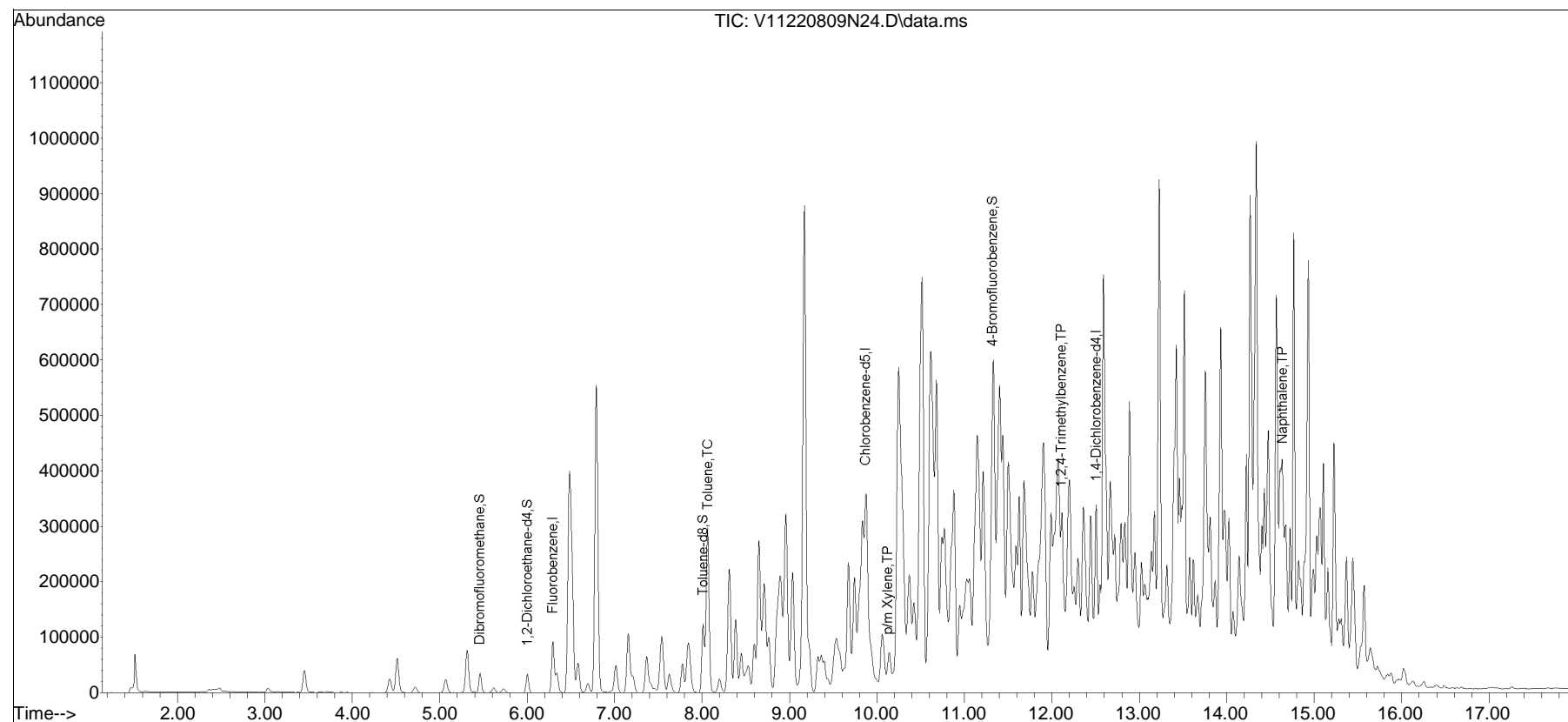


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220809N\  
Data File : V11220809N24.D  
Acq On : 10 Aug 2022 01:38 am  
Operator : VOA111:MKS  
Sample : L2242392-15,31H,5.89,5,0.100,,A  
Misc : WG1673609,ICAL19072  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Aug 10 11:23:21 2022  
Quant Method : I:\VOLATILES\VOA111\2022\220809N\V111\_220608A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jun 09 10:30:20 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V11220809N01.D•

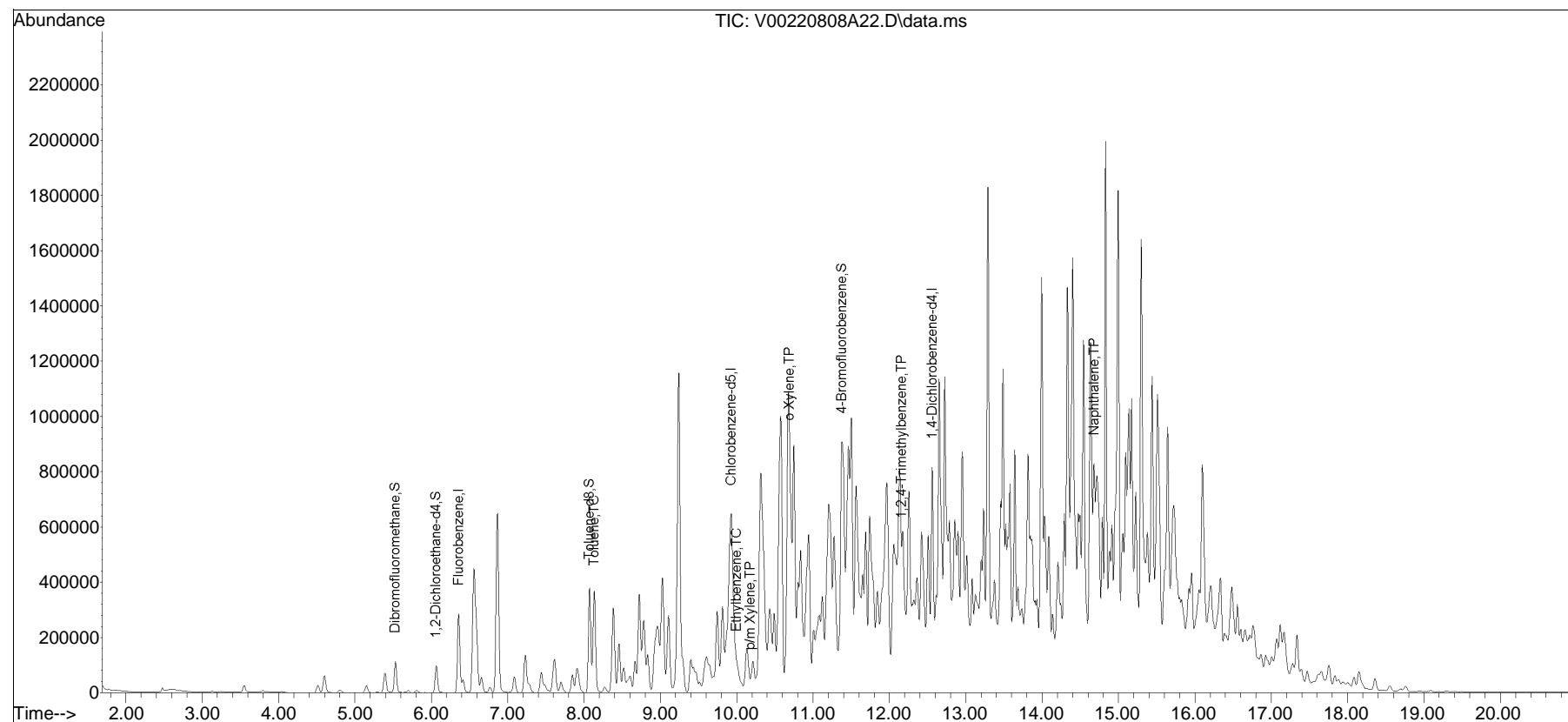


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220808A\  
Data File : V00220808A22.D  
Acq On : 8 Aug 2022 8:54 pm  
Operator : VOA100:NLK  
Sample : 12242392-17,31h,6.34,5,0.100,,a  
Misc : WG1673658,ICAL19219  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 09 13:28:06 2022  
Quant Method : I:\VOLATILES\VOA100\2022\220808A\V100\_220802N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Aug 03 07:08:57 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list08A\V00220808A01.D•



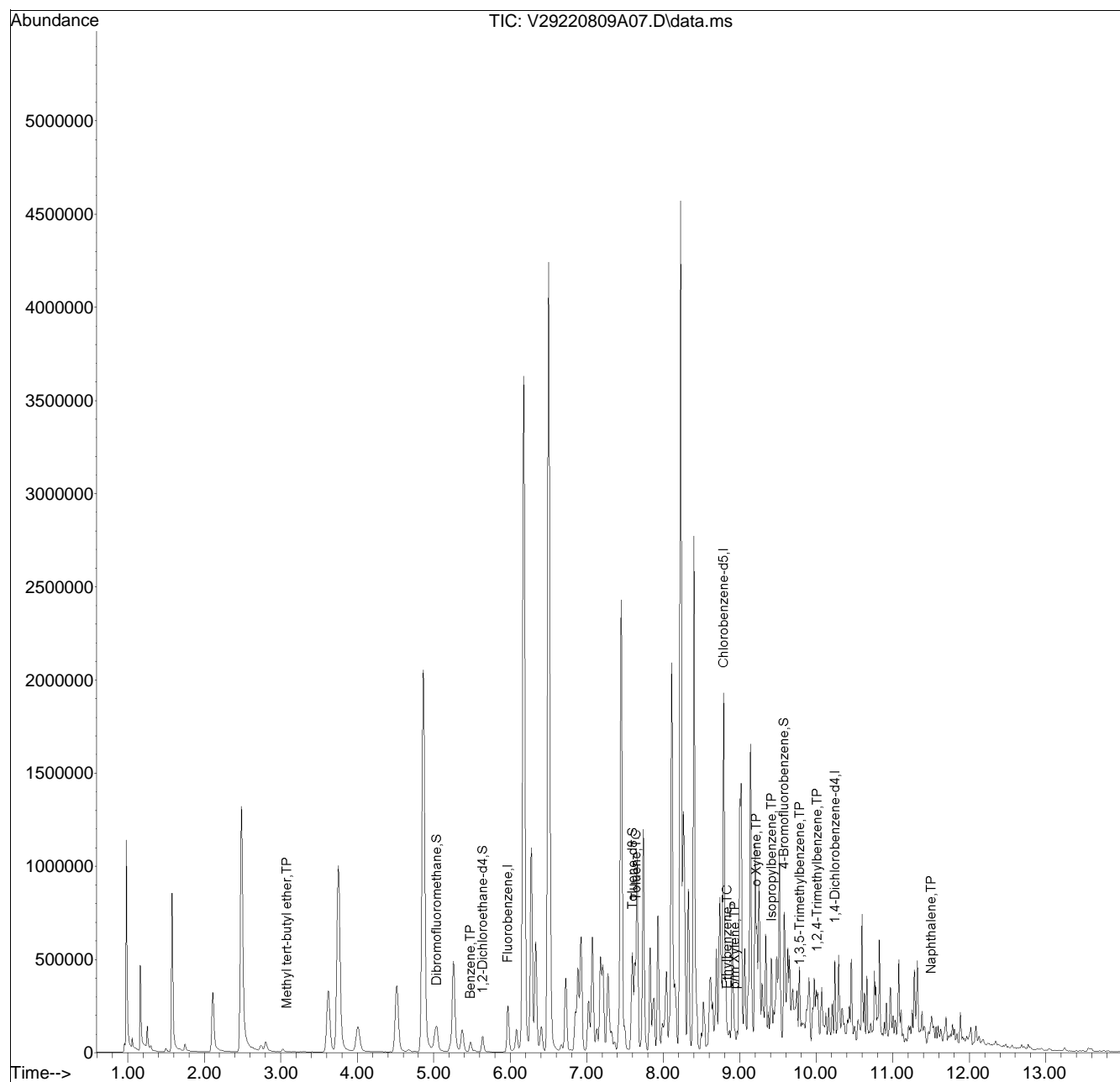


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220809A\  
 Data File : V29220809A07.D  
 Acq On : 09 Aug 2022 09:27 am  
 Operator : VOA129:AJK  
 Sample : 12242392-21,31,3.11,5,,b  
 Misc : WG1673642,ICAL19173  
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 09 16:15:11 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220809A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09A\V29220809A01.D•

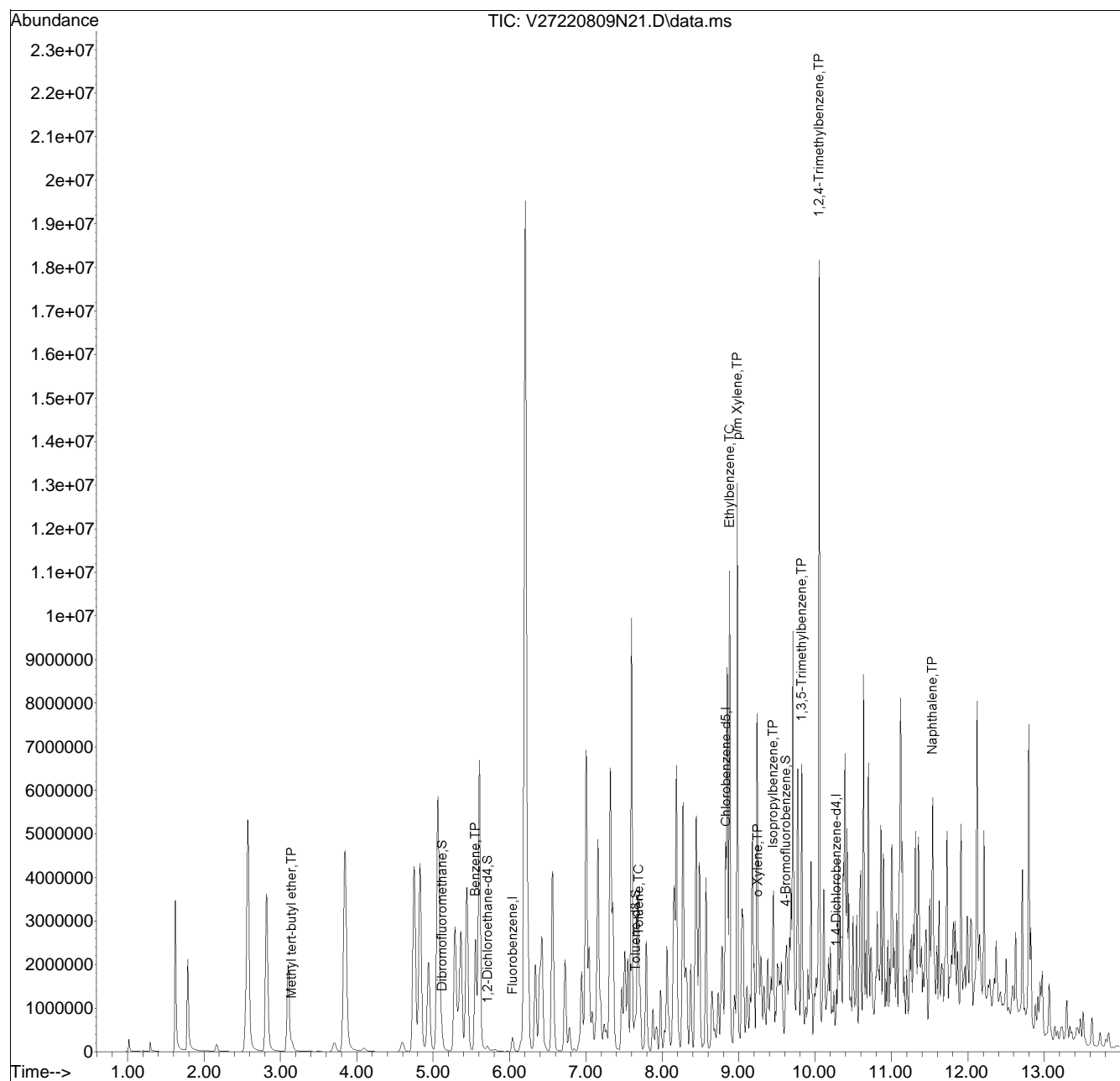


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220809N\  
Data File : V27220809N21.D  
Acq On : 10 Aug 2022 12:26 am  
Operator : VOA127:MKS  
Sample : L2242392-23D2,31H,5.97,5,0.05,,A  
Misc : WG1673619,ICAL19153  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 10 12:26:25 2022  
Quant Method : I:\VOLATILES\VOA127\2022\220809N\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V27220809N01.D•

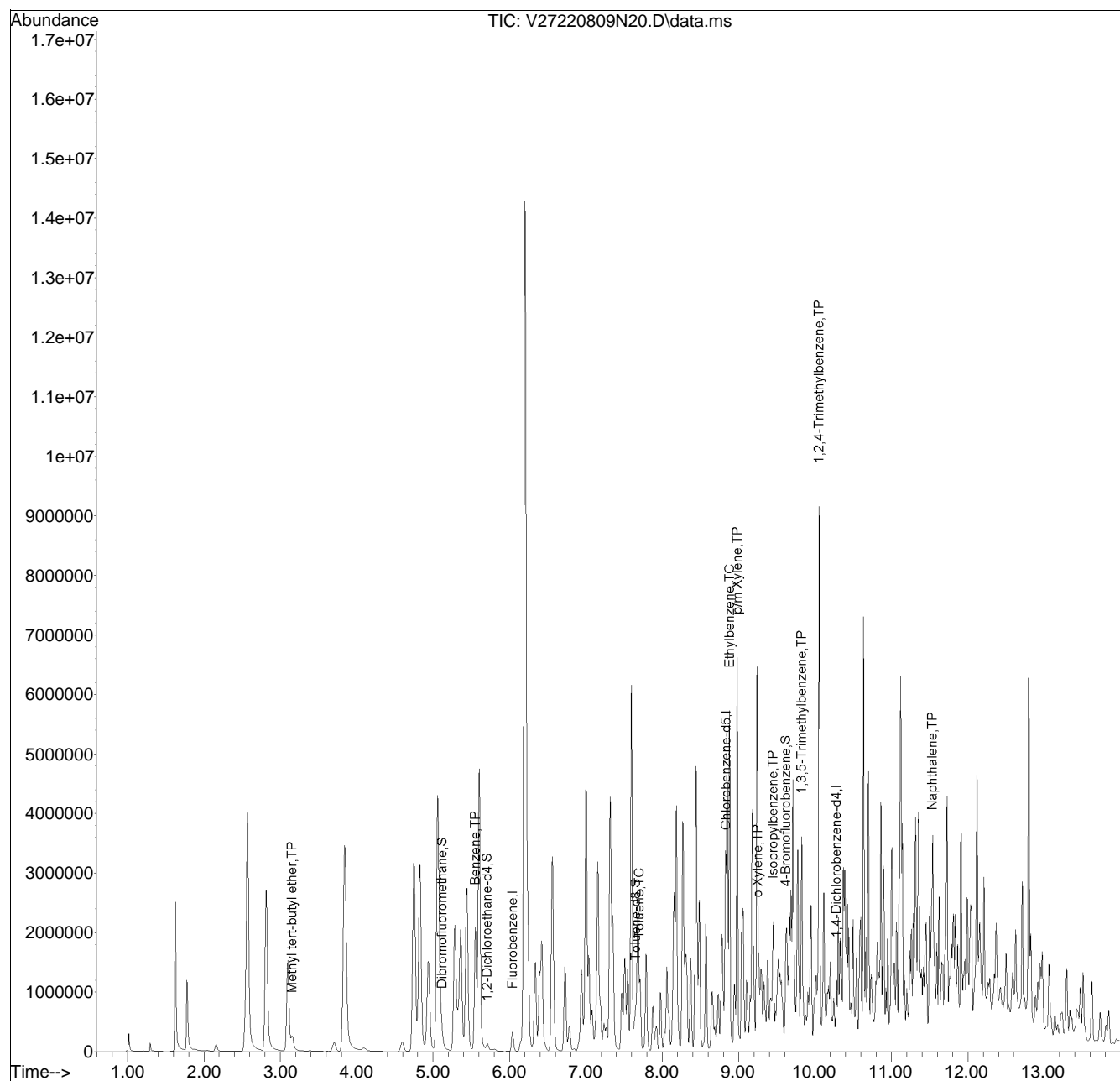


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220809N\  
 Data File : V27220809N20.D  
 Acq On : 10 Aug 2022 12:07 am  
 Operator : VOA127:MKS  
 Sample : L2242392-25,31H,6.65,5,0.100,,A  
 Misc : WG1673619,ICAL19153  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 10 12:26:37 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220809N\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V27220809N01.D•

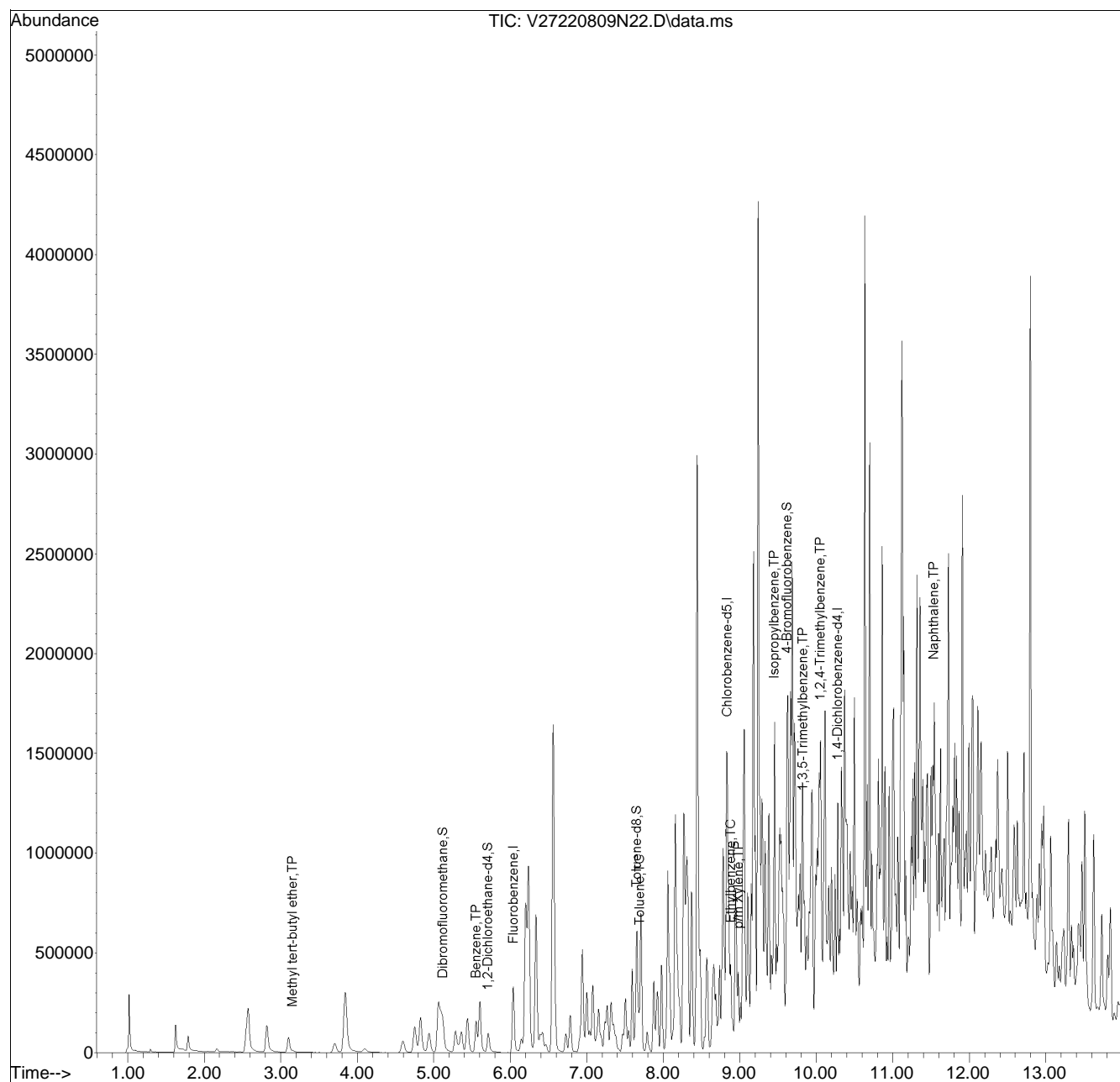


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220809N\  
 Data File : V27220809N22.D  
 Acq On : 10 Aug 2022 12:46 am  
 Operator : VOA127:MKS  
 Sample : L2242392-27D,31H,6.09,5,0.05,,A  
 Misc : WG1673619,ICAL19153  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 10 12:26:55 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220809N\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list09N\V27220809N01.D•





## ANALYTICAL REPORT

Lab Number:	L2242653
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/16/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2242653

Report Date: 08/16/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2242653-01	301-AA03-C1-VOC	SOIL	PHILADELPHIA, PA	08/08/22 12:00	08/09/22
L2242653-02	301-AA03-C1-COMP	SOIL	PHILADELPHIA, PA	08/08/22 12:00	08/09/22
L2242653-03	301-AA03-C2-VOC	SOIL	PHILADELPHIA, PA	08/08/22 12:15	08/09/22
L2242653-04	301-AA03-C2-COMP	SOIL	PHILADELPHIA, PA	08/08/22 12:15	08/09/22
L2242653-05	301-AA03-C3-VOC	SOIL	PHILADELPHIA, PA	08/08/22 12:30	08/09/22
L2242653-06	301-AA03-C3-COMP	SOIL	PHILADELPHIA, PA	08/08/22 12:30	08/09/22
L2242653-07	301-AA03-C4-VOC	SOIL	PHILADELPHIA, PA	08/08/22 12:45	08/09/22
L2242653-08	301-AA03-C4-COMP	SOIL	PHILADELPHIA, PA	08/08/22 12:45	08/09/22
L2242653-09	301-AA04-C1-VOC	SOIL	PHILADELPHIA, PA	08/08/22 13:30	08/09/22
L2242653-10	301-AA04-C1-COMP	SOIL	PHILADELPHIA, PA	08/08/22 13:30	08/09/22
L2242653-11	301-AA04-C2-VOC	SOIL	PHILADELPHIA, PA	08/08/22 13:40	08/09/22
L2242653-12	301-AA04-C2-COMP	SOIL	PHILADELPHIA, PA	08/08/22 13:40	08/09/22
L2242653-13	301-AA04-C3-VOC	SOIL	PHILADELPHIA, PA	08/08/22 13:50	08/09/22
L2242653-14	301-AA04-C3-COMP	SOIL	PHILADELPHIA, PA	08/08/22 13:50	08/09/22
L2242653-15	301-AA04-C4-VOC	SOIL	PHILADELPHIA, PA	08/08/22 14:10	08/09/22
L2242653-16	301-AA04-C4-COMP	SOIL	PHILADELPHIA, PA	08/08/22 14:10	08/09/22
L2242653-17	301-AA04-C5-VOC	SOIL	PHILADELPHIA, PA	08/08/22 14:20	08/09/22
L2242653-18	301-AA04-C5-COMP	SOIL	PHILADELPHIA, PA	08/08/22 14:20	08/09/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

The analyses performed were specified by the client.

#### Volatile Organics

L2242653-17: The surrogate recovery is outside the acceptance criteria for toluene-d8 (137%) and 4-bromofluorobenzene (436%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2242653-10D: The sample has elevated detection limits due to the dilution required by the sample matrix.  
L2242653-16: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

#### Total Metals

L2242653-08 and 12: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 08/16/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-01  
 Client ID: 301-AA03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 21:15  
 Analyst: MKS  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-03  
 Client ID: 301-AA03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:15  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 00:14  
 Analyst: NLK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00032	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	83		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-05  
 Client ID: 301-AA03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 19:31  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-07  
 Client ID: 301-AA03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:45  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 20:54  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0041	0.00041	1
Benzene	ND		mg/kg	0.0010	0.00034	1
1,2-Dichloroethane	ND		mg/kg	0.0020	0.00053	1
Toluene	ND		mg/kg	0.0020	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00060	1
Ethylbenzene	ND		mg/kg	0.0020	0.00029	1
p/m-Xylene	ND		mg/kg	0.0041	0.0011	1
o-Xylene	ND		mg/kg	0.0020	0.00060	1
Xylenes, Total	ND		mg/kg	0.0020	0.00060	1
Isopropylbenzene	ND		mg/kg	0.0020	0.00022	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0041	0.00040	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0041	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	83		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-09  
 Client ID: 301-AA04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 20:33  
 Analyst: MKS  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-11  
 Client ID: 301-AA04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:40  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 00:35  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.00041	J	mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	82		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-13  
 Client ID: 301-AA04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:50  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 19:52  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-15  
 Client ID: 301-AA04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 14:10  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/10/22 20:13  
 Analyst: MKS  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00016	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	0.00014	J	mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.00050	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	191	Q	70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-17  
 Client ID: 301-AA04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 14:20  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 00:55  
 Analyst: NLK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	0.0024		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	0.0024		mg/kg	0.00098	0.00028	1
Isopropylbenzene	0.0010		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	137	Q	70-130
4-Bromofluorobenzene	436	Q	70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/10/22 17:06  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05,07,09,13,15 Batch: WG1674173-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/11/22 17:40  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,11,17 Batch: WG1674573-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05,07,09,13,15 Batch: WG1674173-3 WG1674173-4								
Methyl tert butyl ether	76		78		66-130	3		30
Benzene	85		84		70-130	1		30
1,2-Dichloroethane	72		74		70-130	3		30
Toluene	86		83		70-130	4		30
1,2-Dibromoethane	85		86		70-130	1		30
Ethylbenzene	87		85		70-130	2		30
p/m-Xylene	89		86		70-130	3		30
o-Xylene	88		86		70-130	2		30
Isopropylbenzene	88		84		70-130	5		30
1,3,5-Trimethylbenzene	91		87		70-130	4		30
1,2,4-Trimethylbenzene	90		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		85		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	86		87		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,11,17 Batch: WG1674573-3 WG1674573-4								
Methyl tert butyl ether	78		77		66-130	1		30
Benzene	94		85		70-130	10		30
1,2-Dichloroethane	78		74		70-130	5		30
Toluene	93		83		70-130	11		30
1,2-Dibromoethane	88		85		70-130	3		30
Ethylbenzene	95		84		70-130	12		30
p/m-Xylene	97		87		70-130	11		30
o-Xylene	96		87		70-130	10		30
Isopropylbenzene	97		85		70-130	13		30
1,3,5-Trimethylbenzene	98		86		70-130	13		30
1,2,4-Trimethylbenzene	98		88		70-130	11		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		84		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	95		93		70-130
Dibromofluoromethane	88		87		70-130



# SEMIVOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-02  
 Client ID: 301-AA03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 13:23  
 Analyst: EK  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	98		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-04  
 Client ID: 301-AA03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:15  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 13:46  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.062	J	mg/kg	0.20	0.025	1
Fluorene	0.020	J	mg/kg	0.20	0.020	1
Phenanthrene	0.17		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.21		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.093	J	mg/kg	0.12	0.023	1
Chrysene	0.10	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.10	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.056	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	105		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-06  
 Client ID: 301-AA03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 14:10  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.058	J	mg/kg	0.20	0.019	1
Phenanthrene	0.39		mg/kg	0.12	0.024	1
Anthracene	0.11	J	mg/kg	0.12	0.038	1
Pyrene	0.31		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.18		mg/kg	0.12	0.022	1
Chrysene	0.16		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.18		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.15	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.066	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	98		30-120
4-Terphenyl-d14	121	Q	18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-08  
 Client ID: 301-AA03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:45  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 14:56  
 Analyst: EK  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	116		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-10 D  
 Client ID: 301-AA04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 17:16  
 Analyst: JG  
 Percent Solids: 96%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	1.7	0.21	10
Fluorene	ND		mg/kg	1.7	0.17	10
Phenanthrene	0.22	J	mg/kg	1.0	0.21	10
Anthracene	ND		mg/kg	1.0	0.33	10
Pyrene	0.25	J	mg/kg	1.0	0.17	10
Benzo(a)anthracene	0.19	J	mg/kg	1.0	0.19	10
Chrysene	0.22	J	mg/kg	1.0	0.18	10
Benzo(b)fluoranthene	ND		mg/kg	1.0	0.29	10
Benzo(a)pyrene	ND		mg/kg	1.4	0.42	10
Benzo(ghi)perylene	0.21	J	mg/kg	1.4	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-12  
 Client ID: 301-AA04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:40  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 17:40  
 Analyst: EK  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.078	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.16		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.14		mg/kg	0.11	0.021	1
Chrysene	0.20		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.17		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.15		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	117		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-14  
 Client ID: 301-AA04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:50  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 18:03  
 Analyst: EK  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.19		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.14		mg/kg	0.11	0.021	1
Chrysene	0.26		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.13		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.18		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	116		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-16  
 Client ID: 301-AA04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 14:10  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 18:26  
 Analyst: EK  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.56	0.068	1
Fluorene	ND		mg/kg	0.56	0.054	1
Phenanthrene	0.10	J	mg/kg	0.34	0.068	1
Anthracene	ND		mg/kg	0.34	0.11	1
Pyrene	0.21	J	mg/kg	0.34	0.056	1
Benzo(a)anthracene	0.17	J	mg/kg	0.34	0.063	1
Chrysene	0.18	J	mg/kg	0.34	0.058	1
Benzo(b)fluoranthene	0.20	J	mg/kg	0.34	0.094	1
Benzo(a)pyrene	0.20	J	mg/kg	0.45	0.14	1
Benzo(ghi)perylene	0.16	J	mg/kg	0.45	0.066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	89		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-18  
 Client ID: 301-AA04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 14:20  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 18:50  
 Analyst: EK  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 22:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.50		mg/kg	0.19	0.023	1
Fluorene	0.060	J	mg/kg	0.19	0.018	1
Phenanthrene	0.97		mg/kg	0.11	0.023	1
Anthracene	0.22		mg/kg	0.11	0.037	1
Pyrene	0.98		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.67		mg/kg	0.11	0.022	1
Chrysene	1.1		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	1.4		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.80		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.70		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/15/22 11:03  
Analyst: EK

Extraction Method: EPA 3546  
Extraction Date: 08/11/22 22:39

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1674323-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	102		30-120
4-Terphenyl-d14	<b>127</b>	Q	18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1674323-2 WG1674323-3								
Naphthalene	87		79		40-140	10		50
Fluorene	95		89		40-140	7		50
Phenanthrene	90		84		40-140	7		50
Anthracene	92		88		40-140	4		50
Pyrene	98		92		35-142	6		50
Benzo(a)anthracene	89		83		40-140	7		50
Chrysene	90		84		40-140	7		50
Benzo(b)fluoranthene	98		88		40-140	11		50
Benzo(a)pyrene	99		90		40-140	10		50
Benzo(ghi)perylene	97		91		40-140	6		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	113		100		23-120
2-Fluorobiphenyl	101		95		30-120
4-Terphenyl-d14	118		108		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-02  
 Client ID: 301-AA03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.98		mg/kg	2.24	0.120	1	08/10/22 16:20	08/14/22 14:02	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242653

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-04

Date Collected: 08/08/22 12:15

Client ID: 301-AA03-C2-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	35.2		mg/kg	2.31	0.124	1	08/10/22 16:20	08/14/22 14:07	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242653

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-06

Date Collected: 08/08/22 12:30

Client ID: 301-AA03-C3-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	343		mg/kg	2.30	0.123	1	08/10/22 16:20	08/14/22 14:12	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-08  
 Client ID: 301-AA03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 12:45  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	48.4		mg/kg	22.1	1.18	10	08/10/22 16:20	08/15/22 08:30	EPA 3050B	1,6010D	ZK





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-10  
 Client ID: 301-AA04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.9		mg/kg	1.97	0.106	1	08/10/22 16:20	08/14/22 14:22	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-12  
 Client ID: 301-AA04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 13:40  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	21.3		mg/kg	4.31	0.231	2	08/10/22 16:20	08/15/22 07:27	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242653

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-14

Date Collected: 08/08/22 13:50

Client ID: 301-AA04-C3-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	57.9		mg/kg	2.15	0.115	1	08/10/22 16:20	08/14/22 14:50	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-16  
 Client ID: 301-AA04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 14:10  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	23.2		mg/kg	2.24	0.120	1	08/10/22 16:20	08/14/22 14:54	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-18  
 Client ID: 301-AA04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/08/22 14:20  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.9		mg/kg	2.21	0.118	1	08/10/22 16:20	08/14/22 14:59	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1673580-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/10/22 16:20	08/14/22 12:04	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242653

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1673580-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1673580-3    QC Sample: L2226723-11    Client ID: MS Sample												
Lead, Total	767	46.6	544	0	Q	-	-		75-125	-		20





**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2242653

**Report Date:** 08/16/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1673580-4 QC Sample: L2226723-11 Client ID: DUP Sample						
Lead, Total	767	801	mg/kg	4		20



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Serial Dilution  
 Analysis  
 Batch Quality Control**

**Lab Number:** L2242653  
**Report Date:** 08/16/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1673580-6 QC Sample: L2226723-11 Client ID: DUP Sample						
Lead, Total	767	1080	mg/kg	41	Q	20



# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-01

Date Collected: 08/08/22 12:00

Client ID: 301-AA03-C1-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-02

Date Collected: 08/08/22 12:00

Client ID: 301-AA03-C1-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.1		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

## SAMPLE RESULTS

Lab ID: L2242653-03

Date Collected: 08/08/22 12:15

Client ID: 301-AA03-C2-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.9		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

## SAMPLE RESULTS

Lab ID: L2242653-04

Date Collected: 08/08/22 12:15

Client ID: 301-AA03-C2-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-05

Date Collected: 08/08/22 12:30

Client ID: 301-AA03-C3-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-06

Date Collected: 08/08/22 12:30

Client ID: 301-AA03-C3-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-07

Date Collected: 08/08/22 12:45

Client ID: 301-AA03-C4-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.3		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

## SAMPLE RESULTS

Lab ID: L2242653-08

Date Collected: 08/08/22 12:45

Client ID: 301-AA03-C4-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-09

Date Collected: 08/08/22 13:30

Client ID: 301-AA04-C1-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

## SAMPLE RESULTS

Lab ID: L2242653-10

Date Collected: 08/08/22 13:30

Client ID: 301-AA04-C1-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.9		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-11

Date Collected: 08/08/22 13:40

Client ID: 301-AA04-C2-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-12

Date Collected: 08/08/22 13:40

Client ID: 301-AA04-C2-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.9		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-13

Date Collected: 08/08/22 13:50

Client ID: 301-AA04-C3-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-14

Date Collected: 08/08/22 13:50

Client ID: 301-AA04-C3-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.1		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-15

Date Collected: 08/08/22 14:10

Client ID: 301-AA04-C4-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.5		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2242653

Project Number: 200.00135.006

Report Date: 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242653-16

Date Collected: 08/08/22 14:10

Client ID: 301-AA04-C4-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-17

Date Collected: 08/08/22 14:20

Client ID: 301-AA04-C5-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.8		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242653-18

Date Collected: 08/08/22 14:20

Client ID: 301-AA04-C5-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	08/10/22 10:12	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2242653

**Report Date:** 08/16/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1673376-1 QC Sample: L2242653-01 Client ID: 301-AA03-C1-VOC						
Solids, Total	87.0	87.8	%	1		20

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08162215:26  
**Lab Number:** L2242653  
**Report Date:** 08/16/22

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2242653-01A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-01B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-01C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-01D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-02B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-03A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-03B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-03C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-03D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-04B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-05A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-05B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-05C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-05D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-06B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-07A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-07B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-07C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-07D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2242653**Project Number:** 200.00135.006**Report Date:** 08/16/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242653-08B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-09A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-09B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-09C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-09D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-10B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-11A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-11B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-11C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-11D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-12B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-13A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-13B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-13C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-13D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-14B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-15A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-15B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-15C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-15D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-16B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2242653-17A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2242653-17B	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)
L2242653-17C	Vial water preserved	A	NA		3.8	Y	Absent	10-AUG-22 05:34	PA-8260HLW(14)



**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

Serial\_No:08162215:26

**Lab Number:** L2242653

**Report Date:** 08/16/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242653-17D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2242653-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2242653-18B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2242653  
**Report Date:** 08/16/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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**Report Date:** 08/16/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2242653

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

Project Name: Philadelphia Refinery

## Client Information

Client: Ransom Consulting, LLC

Project Location: Philadelphia, PA

Address: 2127 Hamilton Avenue

Project Manager: William Schmidt

Trenton, NJ 08619

ALPHA Quote #: 18589 18559

Phone: 215-901-4974

## Turn-Around Time

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Due Date: Time:

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrafase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/10/22

ALPHA Job #: L2242653

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

### SAMPLE HANDLING

- Filtration
  - Done
  - Not Needed
- Preservation
  - Lab to do
  - Lab to do (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

Handwritten: VOCs (8260), SVOCs (8270), LEAD

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Analytes																	
		Date	Time			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
42653-b1	301-AA03-C1-VOC	8/8	1200	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-02	301-AA03-C1-COMP		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-03	301-AA03-C2-VOC		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-04	301-AA03-C2-COMP		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-05	301-AA03-C3-VOC		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-06	301-AA03-C3-COMP		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-07	301-AA03-C4-VOC		1245			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-08	301-AA03-C4-COMP		1245			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-09	301-AA04-C1-VOC		1330			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	301-AA04-C1-COMP		1330			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/8	<i>[Signature]</i>	8/9/22 11:25
<i>[Signature]</i>	8/9/22 1800	<i>[Signature]</i>	8/10/22 1800
<i>[Signature]</i>	8/9/22 2100	<i>[Signature]</i>	8-9-22 2100
<i>[Signature]</i>	8-9-22	<i>[Signature]</i>	8/10/22 0025

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 2 OF 2



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 08/10/22

ALPHA Job #: 2242653

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

VOCs (8260)  
 SVOCs (8270)  
 LEAD

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	LEAD	Other Analytes										Sample Specific Comments			
		Date	Time						1	2	3	4	5	6	7	8	9	10		11	12	
42653-11	301-AA04-C2-VOC	8/8	1340	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-12	301-AA04-C2-COMP		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-13	301-AA04-C3-VOC		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-14	301-AA04-C3-COMP		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-15	301-AA04-C4-VOC		1410			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-16	301-AA04-C4-COMP		1410			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-17	301-AA04-C5-VOC		1470			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-18	301-AA04-C5-COMP		1470			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Container Type	-	-	G	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/8	<i>[Signature]</i>	8/9/22 11:25
<i>[Signature]</i>	8/9/22 18:00	<i>[Signature]</i>	8/9/22 19:00
<i>[Signature]</i>	8/9/22 2:00	<i>[Signature]</i>	8/9/22 2:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Handwritten notes and signatures at the bottom of the page, including dates like 8/8, 8/9/22, and 8/10/22.



**PADEP Short List Analytical Suites per Table III-5:**

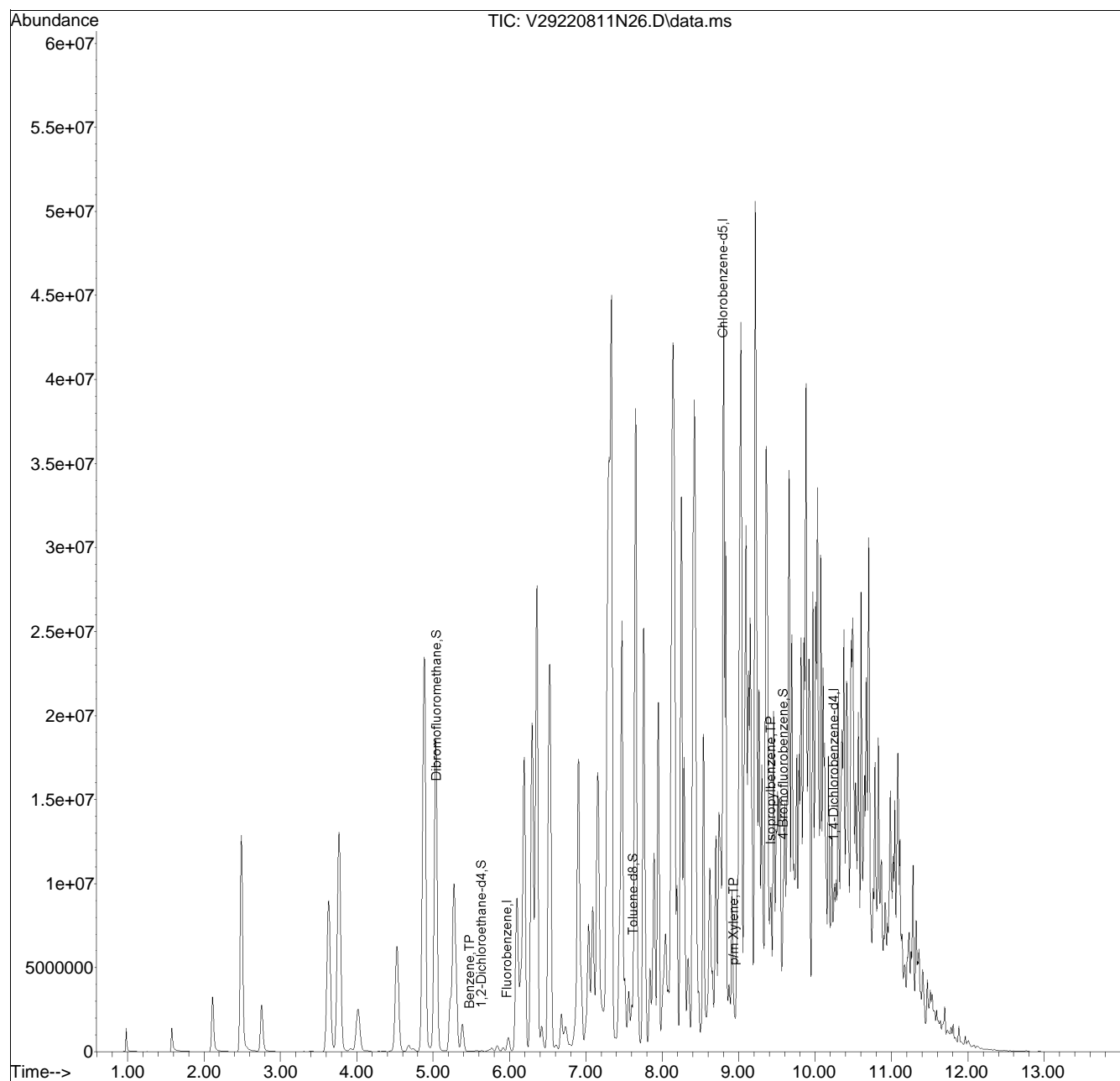
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220811N\  
Data File : V29220811N26.D  
Acq On : 12 Aug 2022 12:55 am  
Operator : VOA129:NLK  
Sample : 12242653-17,31,5.68,5,,b  
Misc : WG1674573,ICAL19173  
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Aug 12 10:18:59 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220811N\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list11N\V29220811N01.D•





## ANALYTICAL REPORT

Lab Number:	L2242832
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY PHASE 1B
Project Number:	200.00135.006
Report Date:	08/16/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2242832-01	301-Z02-C1-VOC	SOIL	PHILADELPHIA, PA	08/09/22 09:00	08/09/22
L2242832-02	301-Z02-C1-COMP	SOIL	PHILADELPHIA, PA	08/09/22 09:00	08/09/22
L2242832-03	301-Z02-C2-VOC	SOIL	PHILADELPHIA, PA	08/09/22 09:15	08/09/22
L2242832-04	301-Z02-C2-COMP	SOIL	PHILADELPHIA, PA	08/09/22 09:15	08/09/22
L2242832-05	301-Z02-C3-VOC	SOIL	PHILADELPHIA, PA	08/09/22 09:30	08/09/22
L2242832-06	301-Z02-C3-COMP	SOIL	PHILADELPHIA, PA	08/09/22 09:30	08/09/22
L2242832-07	301-Z02-C4-VOC	SOIL	PHILADELPHIA, PA	08/09/22 09:45	08/09/22
L2242832-08	301-Z02-C4-COMP	SOIL	PHILADELPHIA, PA	08/09/22 09:45	08/09/22
L2242832-09	301-Z02-C5-VOC	SOIL	PHILADELPHIA, PA	08/09/22 10:00	08/09/22
L2242832-10	301-Z02-C5-COMP	SOIL	PHILADELPHIA, PA	08/09/22 10:00	08/09/22

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2242832-09: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2242832-09: The surrogate recoveries are outside the acceptance criteria for 1,2-dichloroethane-d4 (60%) and 4-bromofluorobenzene (270%); however, low-level re-analysis was not performed due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. A high-level analysis was performed, and those results are also reported.

#### Total Metals

L2242832-06, -08 and -10: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 08/16/22

# ORGANICS

# VOLATILES



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-01  
 Client ID: 301-Z02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 11:09  
 Analyst: MKS  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	ND		mg/kg	0.00098	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-03  
 Client ID: 301-Z02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:15  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 11:30  
 Analyst: MKS  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-05  
 Client ID: 301-Z02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 11:50  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-07  
 Client ID: 301-Z02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:45  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 12:11  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-09  
 Client ID: 301-Z02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 10:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/12/22 22:01  
 Analyst: MV  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0097	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	ND		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.0083	J	mg/kg	0.059	0.0083	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.059	0.017	1
Xylenes, Total	ND		mg/kg	0.059	0.017	1
Isopropylbenzene	0.12		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	0.26		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	0.35		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	128		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-09  
 Client ID: 301-Z02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 10:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 15:29  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.00018	J	mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00080	0.00020	1
Toluene	0.0011		mg/kg	0.00080	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00023	1
Ethylbenzene	0.00042	J	mg/kg	0.00080	0.00011	1
p/m-Xylene	0.0017		mg/kg	0.0016	0.00045	1
o-Xylene	0.00098		mg/kg	0.00080	0.00023	1
Xylenes, Total	0.0027		mg/kg	0.00080	0.00023	1
Isopropylbenzene	0.014		mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	0.028		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.036		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	60	Q	70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	270	Q	70-130
Dibromofluoromethane	76		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/12/22 10:45  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07 Batch: WG1674685-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

### Method Blank Analysis Batch Quality Control

Analytical Method: 1,8260C  
Analytical Date: 08/16/22 08:34  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09 Batch: WG1675933-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	103		70-130



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/12/22 16:46  
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1675937-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07 Batch: WG1674685-3 WG1674685-4								
Methyl tert butyl ether	70		73		66-130	4		30
Benzene	85		88		70-130	3		30
1,2-Dichloroethane	72		74		70-130	3		30
Toluene	89		90		70-130	1		30
1,2-Dibromoethane	86		87		70-130	1		30
Ethylbenzene	90		90		70-130	0		30
p/m-Xylene	90		93		70-130	3		30
o-Xylene	91		93		70-130	2		30
Isopropylbenzene	88		89		70-130	1		30
1,3,5-Trimethylbenzene	91		91		70-130	0		30
1,2,4-Trimethylbenzene	92		92		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	80		79		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	94		93		70-130
Dibromofluoromethane	87		85		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Lab Number:** L2242832

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09 Batch: WG1675933-3 WG1675933-4								
Methyl tert butyl ether	75		78		66-130	4		30
Benzene	86		88		70-130	2		30
1,2-Dichloroethane	74		77		70-130	4		30
Toluene	85		88		70-130	3		30
1,2-Dibromoethane	85		88		70-130	3		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	87		90		70-130	3		30
o-Xylene	88		92		70-130	4		30
Isopropylbenzene	79		82		70-130	4		30
1,3,5-Trimethylbenzene	82		86		70-130	5		30
1,2,4-Trimethylbenzene	84		88		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	80		79		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	93		92		70-130
Dibromofluoromethane	89		91		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1675937-3 WG1675937-4								
Methyl tert butyl ether	97		98		66-130	1		30
Benzene	98		100		70-130	2		30
1,2-Dichloroethane	102		104		70-130	2		30
Toluene	89		90		70-130	1		30
1,2-Dibromoethane	98		101		70-130	3		30
Ethylbenzene	93		96		70-130	3		30
p/m-Xylene	94		97		70-130	3		30
o-Xylene	95		97		70-130	2		30
Isopropylbenzene	91		92		70-130	1		30
1,3,5-Trimethylbenzene	94		96		70-130	2		30
1,2,4-Trimethylbenzene	93		93		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		107		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	94		92		70-130
Dibromofluoromethane	105		101		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-02  
 Client ID: 301-Z02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 00:59  
 Analyst: IM  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-04  
 Client ID: 301-Z02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:15  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 01:23  
 Analyst: IM  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.22		mg/kg	0.18	0.022	1
Fluorene	0.13	J	mg/kg	0.18	0.018	1
Phenanthrene	1.8		mg/kg	0.11	0.022	1
Anthracene	0.61		mg/kg	0.11	0.036	1
Pyrene	3.4		mg/kg	0.11	0.018	1
Benzo(a)anthracene	2.7		mg/kg	0.11	0.021	1
Chrysene	2.5		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	3.9		mg/kg	0.11	0.031	1
Benzo(a)pyrene	3.5		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	1.6		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	123	Q	30-120
4-Terphenyl-d14	109		18-120

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-06  
 Client ID: 301-Z02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 01:46  
 Analyst: IM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	111		30-120
4-Terphenyl-d14	86		18-120



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-08  
 Client ID: 301-Z02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:45  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 02:10  
 Analyst: IM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.039	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.031	J	mg/kg	0.12	0.023	1
Chrysene	0.032	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.048	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	107		30-120
4-Terphenyl-d14	100		18-120

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-10  
 Client ID: 301-Z02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 10:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/15/22 02:33  
 Analyst: IM  
 Percent Solids: 72%

Extraction Method: EPA 3546  
 Extraction Date: 08/11/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.88		mg/kg	0.23	0.028	1
Fluorene	1.2		mg/kg	0.23	0.022	1
Phenanthrene	1.9		mg/kg	0.14	0.028	1
Anthracene	0.18		mg/kg	0.14	0.044	1
Pyrene	0.32		mg/kg	0.14	0.022	1
Benzo(a)anthracene	0.078	J	mg/kg	0.14	0.025	1
Chrysene	0.094	J	mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	0.13	J	mg/kg	0.14	0.038	1
Benzo(a)pyrene	0.11	J	mg/kg	0.18	0.055	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	115		30-120
4-Terphenyl-d14	101		18-120

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/14/22 21:50  
Analyst: ALS

Extraction Method: EPA 3546  
Extraction Date: 08/10/22 18:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1673779-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		25-120
Phenol-d6	76		10-120
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	73		30-120
2,4,6-Tribromophenol	82		10-136
4-Terphenyl-d14	81		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1673779-2 WG1673779-3								
Naphthalene	86		84		40-140	2		50
Fluorene	88		82		40-140	7		50
Phenanthrene	82		79		40-140	4		50
Anthracene	84		81		40-140	4		50
Pyrene	81		77		35-142	5		50
Benzo(a)anthracene	85		81		40-140	5		50
Chrysene	87		83		40-140	5		50
Benzo(b)fluoranthene	82		77		40-140	6		50
Benzo(a)pyrene	86		84		40-140	2		50
Benzo(ghi)perylene	82		78		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	86		84		25-120
Phenol-d6	94		87		10-120
Nitrobenzene-d5	103		98		23-120
2-Fluorobiphenyl	83		81		30-120
2,4,6-Tribromophenol	82		79		10-136
4-Terphenyl-d14	78		75		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Lab Number:** L2242832

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-02

Date Collected: 08/09/22 09:00

Client ID: 301-Z02-C1-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	0.456	J	mg/kg	2.38	0.127	1	08/10/22 16:20	08/14/22 15:04	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Lab Number:** L2242832

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-04

Date Collected: 08/09/22 09:15

Client ID: 301-Z02-C2-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.2		mg/kg	2.12	0.114	1	08/10/22 16:20	08/14/22 15:08	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Lab Number:** L2242832

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-06

Date Collected: 08/09/22 09:30

Client ID: 301-Z02-C3-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.41	J	mg/kg	23.9	1.28	10	08/10/22 16:20	08/15/22 08:35	EPA 3050B	1,6010D	ZK





**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-08  
 Client ID: 301-Z02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:45  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	115		mg/kg	4.63	0.248	2	08/10/22 16:20	08/15/22 07:37	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-10  
 Client ID: 301-Z02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 10:00  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.68		mg/kg	5.29	0.284	2	08/10/22 16:20	08/15/22 07:41	EPA 3050B	1,6010D	ZK



Project Name: PHILADELPHIA REFINERY PHASE 1B

Lab Number: L2242832

Project Number: 200.00135.006

Report Date: 08/16/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1673580-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/10/22 16:20	08/14/22 12:04	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Lab Number:** L2242832

**Project Number:** 200.00135.006

**Report Date:** 08/16/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1673580-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10    QC Batch ID: WG1673580-3    QC Sample: L2226723-11    Client ID: MS Sample												
Lead, Total	767	46.6	544	0	Q	-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Project Number:** 200.00135.006

**Lab Number:** L2242832

**Report Date:** 08/16/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1673580-4 QC Sample: L2226723-11 Client ID: DUP Sample						
Lead, Total	767	801	mg/kg	4		20

Project Name: PHILADELPHIA REFINERY PHASE 1B

Project Number: 200.00135.006

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

Lab Number: L2242832

Report Date: 08/16/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1673580-6 QC Sample: L2226723-11 Client ID: DUP Sample						
Lead, Total	767	1080	mg/kg	41	Q	20

# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

**Lab ID:** L2242832-01  
**Client ID:** 301-Z02-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/09/22 09:00  
**Date Received:** 08/09/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.6		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

**Lab ID:** L2242832-02  
**Client ID:** 301-Z02-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/09/22 09:00  
**Date Received:** 08/09/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.5		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

**Lab ID:** L2242832-03  
**Client ID:** 301-Z02-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/09/22 09:15  
**Date Received:** 08/09/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.5		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

**Lab ID:** L2242832-04  
**Client ID:** 301-Z02-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/09/22 09:15  
**Date Received:** 08/09/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.6		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-05  
 Client ID: 301-Z02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

Lab ID: L2242832-06  
 Client ID: 301-Z02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/09/22 09:30  
 Date Received: 08/09/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.0		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

**Lab ID:** L2242832-07  
**Client ID:** 301-Z02-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/09/22 09:45  
**Date Received:** 08/09/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B**Lab Number:** L2242832**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242832-08

Date Collected: 08/09/22 09:45

Client ID: 301-Z02-C4-COMP

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.5		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY PHASE 1B**Lab Number:** L2242832**Project Number:** 200.00135.006**Report Date:** 08/16/22**SAMPLE RESULTS**

Lab ID: L2242832-09

Date Collected: 08/09/22 10:00

Client ID: 301-Z02-C5-VOC

Date Received: 08/09/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

**SAMPLE RESULTS**

**Lab ID:** L2242832-10  
**Client ID:** 301-Z02-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/09/22 10:00  
**Date Received:** 08/09/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.2		%	0.100	NA	1	-	08/10/22 08:49	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Project Number:** 200.00135.006

**Lab Number:** L2242832

**Report Date:** 08/16/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1673354-1 QC Sample: L2242832-01 Client ID: 301-Z02-C1-VOC						
Solids, Total	94.6	94.6	%	0		20

**Project Name:** PHILADELPHIA REFINERY PHASE 1B**Lab Number:** L2242832**Project Number:** 200.00135.006**Report Date:** 08/16/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242832-01A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2242832-01B	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-01C	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-01D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2242832-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2242832-02B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2242832-03A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2242832-03B	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-03C	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-03D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2242832-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2242832-04B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2242832-05A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2242832-05B	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-05C	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-05D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2242832-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2242832-06B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2242832-07A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260HLW(14)
L2242832-07B	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-07C	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260HLW(14)
L2242832-07D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2242832-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY PHASE 1B

**Project Number:** 200.00135.006

Serial\_No:08162217:02

**Lab Number:** L2242832

**Report Date:** 08/16/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2242832-08B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)
L2242832-09A	Vial MeOH preserved	A	NA		2.9	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2242832-09B	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260H(14),PA-8260HLW(14)
L2242832-09C	Vial water preserved	A	NA		2.9	Y	Absent	10-AUG-22 06:23	PA-8260H(14),PA-8260HLW(14)
L2242832-09D	Plastic 120ml unpreserved	A	NA		2.9	Y	Absent		TS(7)
L2242832-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.9	Y	Absent		PB-TI(180)
L2242832-10B	Glass 120ml/4oz unpreserved	A	NA		2.9	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)



**Project Name:** PHILADELPHIA REFINERY PHASE 1B  
**Project Number:** 200.00135.006

**Lab Number:** L2242832  
**Report Date:** 08/16/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 1



## Project Information

Project Name: Philadelphia Refinery  
**PHASE 1B**

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
TEL: 508-898-9220 TEL: 508-822-9300  
FAX: 508-898-9193 FAX: 508-822-3268

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/10/22

ALPHA Job #: L 2242832

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8210)	SVOCs (8270)	LEAD										
42832-01	301-202-C1-VOC	8/9	0900	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-02	301-202-C1-Comp		0900			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-03	301-202-C2-VOC		0915			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-04	301-202-C2-Comp		0915			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-05	301-202-C3-VOC		0930			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-06	301-202-C3-Comp		0930			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-07	301-202-C4-VOC		0945			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-08	301-202-C4-Comp		0945			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-09	301-202-C5-VOC		1000			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	301-202-C5-Comp		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
42832-01	301-202-C1-VOC	8/9	0900	S	TS
-02	301-202-C1-Comp		0900		
-03	301-202-C2-VOC		0915		
-04	301-202-C2-Comp		0915		
-05	301-202-C3-VOC		0930		
-06	301-202-C3-Comp		0930		
-07	301-202-C4-VOC		0945		
-08	301-202-C4-Comp		0945		
-09	301-202-C5-VOC		1000		
-10	301-202-C5-Comp		1000		

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/9 1500	STONES AAL	8-9-22/1500
STONES AAL	8/9 1800	<i>[Signature]</i>	8/9/22 1800
<i>[Signature]</i>	8/9/22 2100	<i>[Signature]</i>	8/9/22 2100
<i>[Signature]</i>	8/9/22	ELANZ	8/10/22 0025

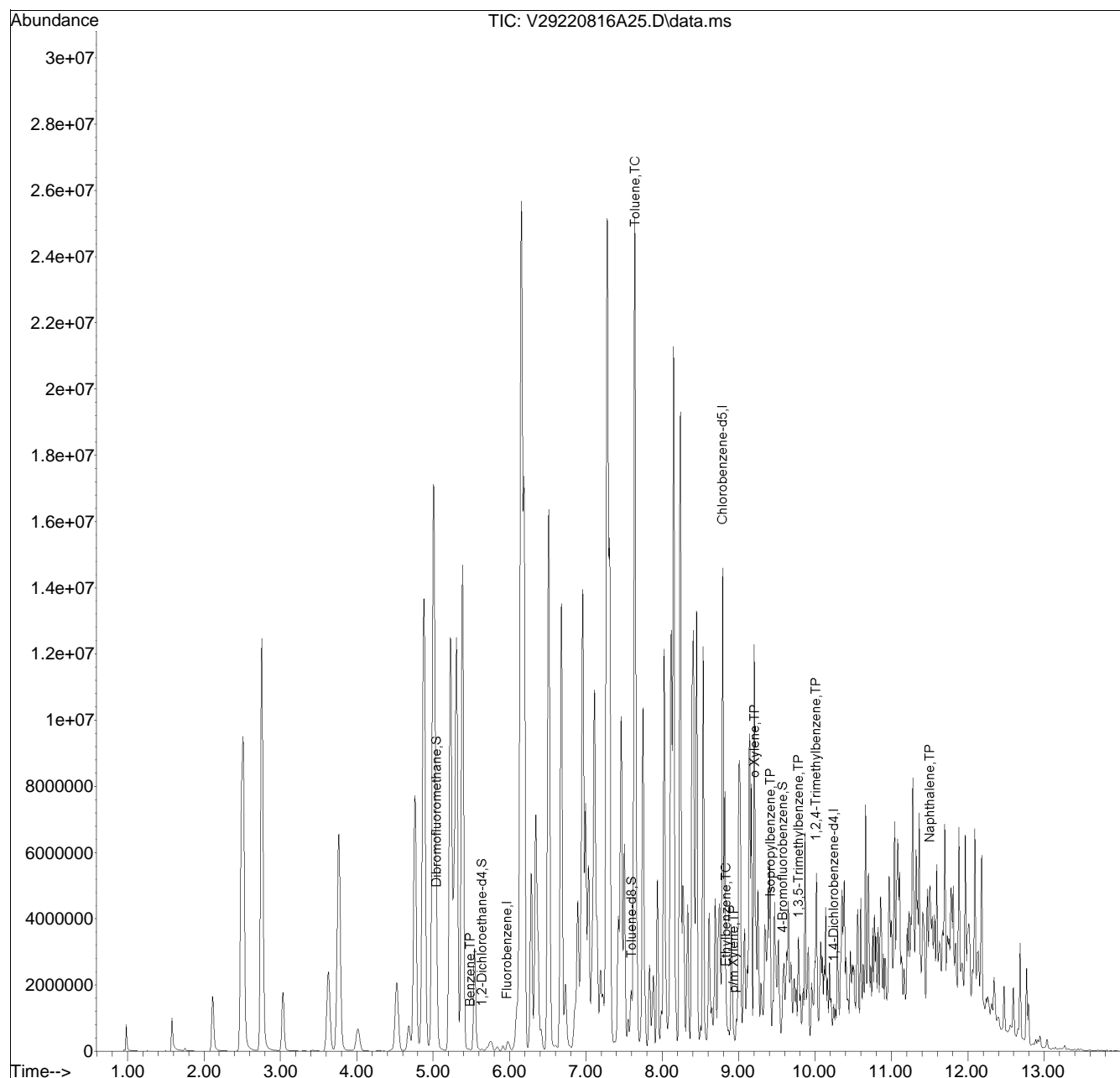
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220816A\  
Data File : V29220816A25.D  
Acq On : 16 Aug 2022 03:29 pm  
Operator : VOA129:AJK  
Sample : 12242832-09,31,7.36,5,,c  
Misc : WG1675933,ICAL19173  
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Aug 16 16:18:12 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220816A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list16A\V29220816A01.D•





## ANALYTICAL REPORT

Lab Number:	L2243091
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/26/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243091-01	301-Z03-C1-VOC	SOIL	PHILADELPHIA, PA	08/10/22 10:00	08/10/22
L2243091-02	301-Z03-C1-COMP	SOIL	PHILADELPHIA, PA	08/10/22 10:00	08/10/22
L2243091-03	301-Z03-C2-VOC	SOIL	PHILADELPHIA, PA	08/10/22 10:20	08/10/22
L2243091-04	301-Z03-C2-COMP	SOIL	PHILADELPHIA, PA	08/10/22 10:20	08/10/22
L2243091-05	301-Z03-C3-VOC	SOIL	PHILADELPHIA, PA	08/10/22 10:30	08/10/22
L2243091-06	301-Z03-C3-COMP	SOIL	PHILADELPHIA, PA	08/10/22 10:30	08/10/22
L2243091-07	301-Z03-C4-VOC	SOIL	PHILADELPHIA, PA	08/10/22 10:40	08/10/22
L2243091-08	301-Z03-C4-COMP	SOIL	PHILADELPHIA, PA	08/10/22 10:40	08/10/22
L2243091-09	301-AA05-C1-VOC	SOIL	PHILADELPHIA, PA	08/10/22 11:50	08/10/22
L2243091-10	301-AA05-C1-COMP	SOIL	PHILADELPHIA, PA	08/10/22 11:50	08/10/22
L2243091-11	301-AA05-C2-VOC	SOIL	PHILADELPHIA, PA	08/11/22 14:30	08/11/22
L2243091-12	301-AA05-C2-COMP	SOIL	PHILADELPHIA, PA	08/10/22 12:00	08/10/22
L2243091-13	301-AA05-C3-VOC	SOIL	PHILADELPHIA, PA	08/10/22 12:10	08/10/22
L2243091-14	301-AA05-C3-COMP	SOIL	PHILADELPHIA, PA	08/10/22 12:10	08/10/22
L2243091-15	301-AA05-C4-VOC	SOIL	PHILADELPHIA, PA	08/10/22 12:20	08/10/22
L2243091-16	301-AA05-C4-COMP	SOIL	PHILADELPHIA, PA	08/10/22 12:20	08/10/22
L2243091-17	301-AA05-C5-VOC	SOIL	PHILADELPHIA, PA	08/10/22 12:30	08/10/22
L2243091-18	301-AA05-C5-COMP	SOIL	PHILADELPHIA, PA	08/10/22 12:30	08/10/22
L2243091-19	301-AB05-C1-VOC	SOIL	PHILADELPHIA, PA	08/10/22 13:10	08/10/22
L2243091-20	301-AB05-C1-COMP	SOIL	PHILADELPHIA, PA	08/10/22 13:10	08/10/22
L2243091-21	301-AB05-C2-VOC	SOIL	PHILADELPHIA, PA	08/10/22 13:20	08/10/22
L2243091-22	301-AB05-C2-COMP	SOIL	PHILADELPHIA, PA	08/10/22 13:20	08/10/22
L2243091-23	301-AB05-C3-VOC	SOIL	PHILADELPHIA, PA	08/10/22 13:30	08/10/22
L2243091-24	301-AB05-C3-COMP	SOIL	PHILADELPHIA, PA	08/10/22 13:30	08/10/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2243091-25	301-AB05-C4-VOC	SOIL	PHILADELPHIA, PA	08/10/22 13:40	08/10/22
L2243091-26	301-AB05-C4-COMP	SOIL	PHILADELPHIA, PA	08/10/22 13:40	08/10/22
L2243091-27	301-AB05-C5-VOC	SOIL	PHILADELPHIA, PA	08/10/22 13:50	08/10/22
L2243091-28	301-AB05-C5-COMP	SOIL	PHILADELPHIA, PA	08/10/22 13:50	08/10/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

### Case Narrative (continued)

#### Report Revision

August 26, 2022: The Client ID for L2243091-26 has been corrected.

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2243091-07: The internal standard (IS) responses for fluorobenzene (35%) and chlorobenzene-d5 (49%) and the surrogate recovery for 1,2-dichloroethane-d4 (142%) were outside the acceptance criteria. A second low-level vial was analyzed, but yielded no internal standard recoveries. Since the IS response was below method criteria, all associated compounds and surrogate recoveries are considered to have a potentially high bias. A high-level analysis was performed, and those results are also reported.

L2243091-21, -25, and -27: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2243091-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (163%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243091-25: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243091-27: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2243091-02D: The sample has elevated detection limits due to the dilution required by the sample matrix.

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22


**Case Narrative (continued)**

Total Metals

L2243091-06, -10, -12, -14, -18 and -24: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/26/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-01  
 Client ID: 301-Z03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:00  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 09:59  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0045	0.00045	1
Benzene	ND		mg/kg	0.0011	0.00037	1
1,2-Dichloroethane	ND		mg/kg	0.0022	0.00058	1
Toluene	ND		mg/kg	0.0022	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00066	1
Ethylbenzene	ND		mg/kg	0.0022	0.00032	1
p/m-Xylene	ND		mg/kg	0.0045	0.0013	1
o-Xylene	ND		mg/kg	0.0022	0.00066	1
Xylenes, Total	ND		mg/kg	0.0022	0.00066	1
Isopropylbenzene	ND		mg/kg	0.0022	0.00024	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0045	0.00043	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0045	0.00075	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-03  
 Client ID: 301-Z03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 10:25  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0070	0.00070	1
Benzene	ND		mg/kg	0.0017	0.00058	1
1,2-Dichloroethane	ND		mg/kg	0.0035	0.00090	1
Toluene	ND		mg/kg	0.0035	0.0019	1
1,2-Dibromoethane	ND		mg/kg	0.0017	0.0010	1
Ethylbenzene	ND		mg/kg	0.0035	0.00049	1
p/m-Xylene	ND		mg/kg	0.0070	0.0020	1
o-Xylene	ND		mg/kg	0.0035	0.0010	1
Xylenes, Total	ND		mg/kg	0.0035	0.0010	1
Isopropylbenzene	ND		mg/kg	0.0035	0.00038	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0070	0.00067	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0070	0.0012	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-05  
 Client ID: 301-Z03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:30  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 10:51  
 Analyst: NLK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-07  
 Client ID: 301-Z03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:40  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 11:18  
 Analyst: NLK  
 Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	142	Q	70-130
Toluene-d8	87		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	130		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-07  
 Client ID: 301-Z03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:40  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 09:04  
 Analyst: NLK  
 Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	ND		mg/kg	0.035	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.070	0.018	1
Toluene	ND		mg/kg	0.070	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.035	0.021	1
Ethylbenzene	ND		mg/kg	0.070	0.0099	1
p/m-Xylene	ND		mg/kg	0.14	0.039	1
o-Xylene	ND		mg/kg	0.070	0.020	1
Xylenes, Total	ND		mg/kg	0.070	0.020	1
Isopropylbenzene	ND		mg/kg	0.070	0.0077	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-09  
 Client ID: 301-AA05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 11:50  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 11:44  
 Analyst: NLK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00035	1
Toluene	ND		mg/kg	0.0013	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	110		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-11  
 Client ID: 301-AA05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 14:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 12:10  
 Analyst: NLK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00051	J	mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	0.00085	J	mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	0.00046	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	0.00089	J	mg/kg	0.0024	0.00068	1
o-Xylene	0.00038	J	mg/kg	0.0012	0.00035	1
Xylenes, Total	0.0013	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00021	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00034	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00043	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-13  
 Client ID: 301-AA05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:10  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 02:16  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-15  
 Client ID: 301-AA05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 02:42  
 Analyst: NLK  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.00054	J	mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-17  
 Client ID: 301-AA05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:30  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 13:28  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00088	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00045	1
Toluene	ND		mg/kg	0.0018	0.00096	1
1,2-Dibromoethane	ND		mg/kg	0.00088	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0018	0.00051	1
Xylenes, Total	ND		mg/kg	0.0018	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	88		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	111		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-19  
 Client ID: 301-AB05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:10  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 03:09  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-21  
 Client ID: 301-AB05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 14:21  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.012	J	mg/kg	0.030	0.0099	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	ND		mg/kg	0.060	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	ND		mg/kg	0.060	0.0084	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.060	0.017	1
Xylenes, Total	ND		mg/kg	0.060	0.017	1
Isopropylbenzene	0.010	J	mg/kg	0.060	0.0065	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	<b>163</b>	Q	70-130
Dibromofluoromethane	79		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-23  
 Client ID: 301-AB05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:30  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 15:39  
 Analyst: NLK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-25  
 Client ID: 301-AB05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:40  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 14:47  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.028	0.0093	1
1,2-Dichloroethane	ND		mg/kg	0.056	0.014	1
Toluene	0.037	J	mg/kg	0.056	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	ND		mg/kg	0.056	0.0079	1
p/m-Xylene	ND		mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.056	0.016	1
Xylenes, Total	ND		mg/kg	0.056	0.016	1
Isopropylbenzene	ND		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-27  
 Client ID: 301-AB05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:50  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/15/22 15:13  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0096	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	ND		mg/kg	0.058	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	ND		mg/kg	0.058	0.0082	1
p/m-Xylene	ND		mg/kg	0.12	0.032	1
o-Xylene	ND		mg/kg	0.058	0.017	1
Xylenes, Total	ND		mg/kg	0.058	0.017	1
Isopropylbenzene	ND		mg/kg	0.058	0.0063	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/15/22 08:41  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 21,25,27 Batch: WG1675856-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/15/22 08:41  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,17,23 Batch: WG1675952-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/16/22 21:28  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 13,15,19 Batch: WG1676227-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 08:38  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07 Batch: WG1676312-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	88		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 21,25,27 Batch: WG1675856-3 WG1675856-4								
Methyl tert butyl ether	96		102		66-130	6		30
Benzene	94		93		70-130	1		30
1,2-Dichloroethane	76		76		70-130	0		30
Toluene	87		88		70-130	1		30
1,2-Dibromoethane	78		78		70-130	0		30
Ethylbenzene	86		83		70-130	4		30
p/m-Xylene	92		90		70-130	2		30
o-Xylene	87		87		70-130	0		30
Isopropylbenzene	97		96		70-130	1		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	87		88		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	95		94		70-130
4-Bromofluorobenzene	102		99		70-130
Dibromofluoromethane	86		84		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,17,23 Batch: WG1675952-3 WG1675952-4								
Methyl tert butyl ether	96		102		66-130	6		30
Benzene	94		93		70-130	1		30
1,2-Dichloroethane	76		76		70-130	0		30
Toluene	87		88		70-130	1		30
1,2-Dibromoethane	78		78		70-130	0		30
Ethylbenzene	86		83		70-130	4		30
p/m-Xylene	92		90		70-130	2		30
o-Xylene	87		87		70-130	0		30
Isopropylbenzene	97		96		70-130	1		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	87		88		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	95		94		70-130
4-Bromofluorobenzene	102		99		70-130
Dibromofluoromethane	86		84		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 13,15,19 Batch: WG1676227-3 WG1676227-4								
Methyl tert butyl ether	90		88		66-130	2		30
Benzene	91		82		70-130	10		30
1,2-Dichloroethane	74		71		70-130	4		30
Toluene	89		82		70-130	8		30
1,2-Dibromoethane	77		77		70-130	0		30
Ethylbenzene	86		80		70-130	7		30
p/m-Xylene	92		85		70-130	8		30
o-Xylene	88		85		70-130	3		30
Isopropylbenzene	99		89		70-130	11		30
1,3,5-Trimethylbenzene	91		84		70-130	8		30
1,2,4-Trimethylbenzene	89		82		70-130	8		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	77		77		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	84		84		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07 Batch: WG1676312-3 WG1676312-4								
Methyl tert butyl ether	97		101		66-130	4		30
Benzene	95		99		70-130	4		30
1,2-Dichloroethane	100		103		70-130	3		30
Toluene	98		101		70-130	3		30
1,2-Dibromoethane	93		96		70-130	3		30
Ethylbenzene	98		101		70-130	3		30
p/m-Xylene	94		97		70-130	3		30
o-Xylene	93		96		70-130	3		30
Isopropylbenzene	101		105		70-130	4		30
1,3,5-Trimethylbenzene	103		107		70-130	4		30
1,2,4-Trimethylbenzene	102		106		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	104		105		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	117		118		70-130
Dibromofluoromethane	87		88		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-02 D  
 Client ID: 301-Z03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:00  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 09:33  
 Analyst: ALS  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.54	J	mg/kg	0.96	0.12	5
Fluorene	1.9		mg/kg	0.96	0.094	5
Phenanthrene	3.0		mg/kg	0.58	0.12	5
Anthracene	0.66		mg/kg	0.58	0.19	5
Pyrene	1.2		mg/kg	0.58	0.096	5
Benzo(a)anthracene	0.36	J	mg/kg	0.58	0.11	5
Chrysene	0.58		mg/kg	0.58	0.10	5
Benzo(b)fluoranthene	ND		mg/kg	0.58	0.16	5
Benzo(a)pyrene	ND		mg/kg	0.77	0.24	5
Benzo(ghi)perylene	ND		mg/kg	0.77	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	287	Q	23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-04  
 Client ID: 301-Z03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 09:56  
 Analyst: ALS  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.055	J	mg/kg	0.20	0.024	1
Fluorene	0.32		mg/kg	0.20	0.019	1
Phenanthrene	0.48		mg/kg	0.12	0.024	1
Anthracene	0.050	J	mg/kg	0.12	0.038	1
Pyrene	0.10	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	176	Q	23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-06  
 Client ID: 301-Z03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:30  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 10:20  
 Analyst: ALS  
 Percent Solids: 70%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.24	0.029	1
Fluorene	0.16	J	mg/kg	0.24	0.023	1
Phenanthrene	0.26		mg/kg	0.14	0.029	1
Anthracene	ND		mg/kg	0.14	0.046	1
Pyrene	0.076	J	mg/kg	0.14	0.024	1
Benzo(a)anthracene	0.031	J	mg/kg	0.14	0.027	1
Chrysene	0.060	J	mg/kg	0.14	0.025	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.040	1
Benzo(a)pyrene	ND		mg/kg	0.19	0.058	1
Benzo(ghi)perylene	ND		mg/kg	0.19	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-08  
 Client ID: 301-Z03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:40  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 10:43  
 Analyst: ALS  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.080	J	mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	0.093	J	mg/kg	0.13	0.021	1
Benzo(a)anthracene	0.065	J	mg/kg	0.13	0.024	1
Chrysene	0.062	J	mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.069	J	mg/kg	0.13	0.036	1
Benzo(a)pyrene	0.064	J	mg/kg	0.17	0.051	1
Benzo(ghi)perylene	0.046	J	mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	49		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-10  
 Client ID: 301-AA05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 11:50  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 11:07  
 Analyst: ALS  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.093	J	mg/kg	0.18	0.022	1
Fluorene	0.021	J	mg/kg	0.18	0.018	1
Phenanthrene	0.16		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.16		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.10	J	mg/kg	0.11	0.020	1
Chrysene	0.15		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.15		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.12	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.15		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	81		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-12  
 Client ID: 301-AA05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:00  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 11:30  
 Analyst: ALS  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.037	J	mg/kg	0.19	0.024	1
Fluorene	0.026	J	mg/kg	0.19	0.019	1
Phenanthrene	0.11	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.15		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.094	J	mg/kg	0.12	0.022	1
Chrysene	0.19		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.089	J	mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.067	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	131	Q	23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-14  
 Client ID: 301-AA05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:10  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 11:53  
 Analyst: ALS  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.046	J	mg/kg	0.18	0.022	1
Fluorene	0.058	J	mg/kg	0.18	0.017	1
Phenanthrene	0.11		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-16  
 Client ID: 301-AA05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 15:00  
 Analyst: ALS  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.047	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.13		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.15		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.22		mg/kg	0.12	0.022	1
Chrysene	0.34		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.26		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.34		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.38		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	92		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-18  
 Client ID: 301-AA05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:30  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 15:24  
 Analyst: ALS  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.12		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.080	J	mg/kg	0.11	0.021	1
Chrysene	0.047	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-20  
 Client ID: 301-AB05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:10  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 15:47  
 Analyst: ALS  
 Percent Solids: 68%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.034	J	mg/kg	0.24	0.030	1
Fluorene	ND		mg/kg	0.24	0.024	1
Phenanthrene	0.20		mg/kg	0.15	0.030	1
Anthracene	ND		mg/kg	0.15	0.048	1
Pyrene	0.42		mg/kg	0.15	0.024	1
Benzo(a)anthracene	0.25		mg/kg	0.15	0.027	1
Chrysene	0.32		mg/kg	0.15	0.025	1
Benzo(b)fluoranthene	0.40		mg/kg	0.15	0.041	1
Benzo(a)pyrene	0.25		mg/kg	0.20	0.060	1
Benzo(ghi)perylene	0.20		mg/kg	0.20	0.029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-22  
 Client ID: 301-AB05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 18:35  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.020	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-24  
 Client ID: 301-AB05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:30  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 16:41  
 Analyst: ALS  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.021	J	mg/kg	0.20	0.019	1
Phenanthrene	0.16		mg/kg	0.12	0.024	1
Anthracene	0.039	J	mg/kg	0.12	0.039	1
Pyrene	0.14		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.087	J	mg/kg	0.12	0.022	1
Chrysene	0.084	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.080	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.074	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.047	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	77		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-26  
 Client ID: 301-AB05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:40  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 17:04  
 Analyst: ALS  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.032	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.026	J	mg/kg	0.11	0.021	1
Chrysene	0.025	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-28  
 Client ID: 301-AB05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 13:50  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 17:28  
 Analyst: ALS  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/13/22 02:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.067	J	mg/kg	0.20	0.024	1
Fluorene	0.40		mg/kg	0.20	0.019	1
Phenanthrene	0.73		mg/kg	0.12	0.024	1
Anthracene	0.069	J	mg/kg	0.12	0.039	1
Pyrene	0.12		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.034	J	mg/kg	0.12	0.022	1
Chrysene	0.097	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	179	Q	23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	110		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/17/22 08:23  
Analyst: ALS

Extraction Method: EPA 3546  
Extraction Date: 08/13/22 01:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,24,26,28 Batch: WG1674810-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	97		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/17/22 14:24  
Analyst: JG

Extraction Method: EPA 3546  
Extraction Date: 08/15/22 07:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 22 Batch: WG1675263-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	89		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,24,26,28 Batch: WG1674810-2 WG1674810-3								
Naphthalene	76		71		40-140	7		50
Fluorene	81		78		40-140	4		50
Phenanthrene	78		76		40-140	3		50
Anthracene	79		77		40-140	3		50
Pyrene	82		80		35-142	2		50
Benzo(a)anthracene	76		74		40-140	3		50
Chrysene	75		73		40-140	3		50
Benzo(b)fluoranthene	74		73		40-140	1		50
Benzo(a)pyrene	76		74		40-140	3		50
Benzo(ghi)perylene	78		75		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	118		110		23-120
2-Fluorobiphenyl	89		84		30-120
4-Terphenyl-d14	94		89		18-120



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 22 Batch: WG1675263-2 WG1675263-3								
Naphthalene	83		78		40-140	6		50
Fluorene	84		82		40-140	2		50
Phenanthrene	86		82		40-140	5		50
Anthracene	86		84		40-140	2		50
Pyrene	86		84		35-142	2		50
Benzo(a)anthracene	82		79		40-140	4		50
Chrysene	84		82		40-140	2		50
Benzo(b)fluoranthene	87		97		40-140	11		50
Benzo(a)pyrene	89		88		40-140	1		50
Benzo(ghi)perylene	90		87		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	86		81		23-120
2-Fluorobiphenyl	86		82		30-120
4-Terphenyl-d14	89		87		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-02

Date Collected: 08/10/22 10:00

Client ID: 301-Z03-C1-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.7		mg/kg	2.24	0.120	1	08/11/22 21:40	08/15/22 11:27	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-04  
 Client ID: 301-Z03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:20  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	31.4		mg/kg	2.33	0.125	1	08/11/22 21:40	08/15/22 12:16	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-06

Date Collected: 08/10/22 10:30

Client ID: 301-Z03-C3-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.7		mg/kg	5.52	0.296	2	08/11/22 21:40	08/15/22 15:40	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-08  
 Client ID: 301-Z03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 10:40  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	107		mg/kg	2.47	0.132	1	08/11/22 21:40	08/15/22 12:25	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-10  
 Client ID: 301-AA05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 11:50  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	68.1		mg/kg	10.5	0.563	5	08/11/22 21:40	08/15/22 15:45	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-12

Date Collected: 08/10/22 12:00

Client ID: 301-AA05-C2-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	68.6		mg/kg	11.4	0.612	5	08/11/22 21:40	08/15/22 15:49	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-14  
 Client ID: 301-AA05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:10  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.93	J	mg/kg	10.3	0.555	5	08/11/22 21:40	08/15/22 15:54	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-16

Date Collected: 08/10/22 12:20

Client ID: 301-AA05-C4-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.16		mg/kg	2.33	0.125	1	08/11/22 21:40	08/15/22 12:45	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-18

Date Collected: 08/10/22 12:30

Client ID: 301-AA05-C5-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.62		mg/kg	4.31	0.231	2	08/11/22 21:40	08/15/22 15:59	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-20

Date Collected: 08/10/22 13:10

Client ID: 301-AB05-C1-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	102		mg/kg	2.78	0.149	1	08/11/22 21:40	08/15/22 12:54	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-22

Date Collected: 08/10/22 13:20

Client ID: 301-AB05-C2-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	65.3		mg/kg	2.20	0.118	1	08/11/22 21:40	08/15/22 12:59	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-24

Date Collected: 08/10/22 13:30

Client ID: 301-AB05-C3-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.2		mg/kg	4.69	0.251	2	08/11/22 21:40	08/15/22 16:10	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-26

Date Collected: 08/10/22 13:40

Client ID: 301-AB05-C4-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.6		mg/kg	2.13	0.114	1	08/11/22 21:40	08/15/22 15:17	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-28

Date Collected: 08/10/22 13:50

Client ID: 301-AB05-C5-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.3		mg/kg	2.36	0.127	1	08/11/22 21:40	08/15/22 15:22	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1674148-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/11/22 21:40	08/15/22 08:35	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1674148-2 SRM Lot Number: D113-540								
Lead, Total	83		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28    QC Batch ID: WG1674148-3    QC Sample: L2243090-05 Client ID: MS Sample												
Lead, Total	446	45.3	516	154	Q	-	-		75-125	-		20





## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1674148-4 QC Sample: L2243090-05 Client ID: DUP Sample						
Lead, Total	446	708	mg/kg	45	Q	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-01

Date Collected: 08/10/22 10:00

Client ID: 301-Z03-C1-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.7		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-02  
**Client ID:** 301-Z03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 10:00  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-03

Date Collected: 08/10/22 10:20

Client ID: 301-Z03-C2-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-04

Date Collected: 08/10/22 10:20

Client ID: 301-Z03-C2-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-05

Date Collected: 08/10/22 10:30

Client ID: 301-Z03-C3-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.3		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-06  
**Client ID:** 301-Z03-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 10:30  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	69.6		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-07

Date Collected: 08/10/22 10:40

Client ID: 301-Z03-C4-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.5		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-08

Date Collected: 08/10/22 10:40

Client ID: 301-Z03-C4-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.7		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-09  
 Client ID: 301-AA05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 11:50  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-10  
**Client ID:** 301-AA05-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 11:50  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.6		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-11

Date Collected: 08/11/22 14:30

Client ID: 301-AA05-C2-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.5		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-12

Date Collected: 08/10/22 12:00

Client ID: 301-AA05-C2-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2243091-13  
 Client ID: 301-AA05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/10/22 12:10  
 Date Received: 08/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.7		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-14

Date Collected: 08/10/22 12:10

Client ID: 301-AA05-C3-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.0		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-15  
**Client ID:** 301-AA05-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 12:20  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.7		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-16  
**Client ID:** 301-AA05-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 12:20  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-17

Date Collected: 08/10/22 12:30

Client ID: 301-AA05-C5-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-18

Date Collected: 08/10/22 12:30

Client ID: 301-AA05-C5-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.2		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-19

Date Collected: 08/10/22 13:10

Client ID: 301-AB05-C1-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-20  
**Client ID:** 301-AB05-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 13:10  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	67.8		%	0.100	NA	1	-	08/11/22 11:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-21

Date Collected: 08/10/22 13:20

Client ID: 301-AB05-C2-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	08/11/22 08:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-22

Date Collected: 08/10/22 13:20

Client ID: 301-AB05-C2-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.5		%	0.100	NA	1	-	08/11/22 08:18	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-23

Date Collected: 08/10/22 13:30

Client ID: 301-AB05-C3-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.2		%	0.100	NA	1	-	08/11/22 12:21	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2243091-24  
**Client ID:** 301-AB05-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/10/22 13:30  
**Date Received:** 08/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	08/11/22 12:21	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-25

Date Collected: 08/10/22 13:40

Client ID: 301-AB05-C4-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.7		%	0.100	NA	1	-	08/11/22 12:21	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2243091-26

Date Collected: 08/10/22 13:40

Client ID: 301-AB05-C4-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	08/11/22 12:21	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-27

Date Collected: 08/10/22 13:50

Client ID: 301-AB05-C5-VOC

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.7		%	0.100	NA	1	-	08/11/22 12:21	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2243091-28

Date Collected: 08/10/22 13:50

Client ID: 301-AB05-C5-COMP

Date Received: 08/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.7		%	0.100	NA	1	-	08/11/22 12:21	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2243091

Report Date: 08/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1673974-1 QC Sample: L2243091-01 Client ID: 301-Z03-C1-VOC						
Solids, Total	87.7	86.8	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1673980-1 QC Sample: L2243208-01 Client ID: DUP Sample						
Solids, Total	88.2	88.1	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 23-28 QC Batch ID: WG1674036-1 QC Sample: L2243091-23 Client ID: 301-AB05-C3-VOC						
Solids, Total	96.2	94.9	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243091**Project Number:** 200.00135.006**Report Date:** 08/26/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent
B1	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243091-01A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2243091-01B	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-01C	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-01D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2243091-02A	Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2243091-02B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2243091-03A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2243091-03B	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-03C	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-03D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2243091-04A	Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2243091-04B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2243091-05A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2243091-05B	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-05C	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-05D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2243091-06A	Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2243091-06B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2243091-07A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2243091-07B	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260H(14),PA-8260HLW(14)
L2243091-07C	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260H(14),PA-8260HLW(14)



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243091

Project Number: 200.00135.006

Report Date: 08/26/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243091-07D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2243091-08A	Glass 60mL/2oz unpreserved	A	NA		4.7	Y	Absent		PB-TI(180)
L2243091-08B	Glass 120ml/4oz unpreserved	A	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2243091-09A	Vial MeOH preserved	A	NA		4.7	Y	Absent		PA-8260HLW(14)
L2243091-09B	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-09C	Vial water preserved	A	NA		4.7	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-09D	Plastic 120ml unpreserved	A	NA		4.7	Y	Absent		TS(7)
L2243091-10A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-10B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-11A	Vial MeOH preserved	B	NA		4.6	Y	Absent		HOLD-8260HLW(14)
L2243091-11B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	HOLD-8260HLW(14)
L2243091-11C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	HOLD-8260HLW(14)
L2243091-11D	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-11E	Vial MeOH preserved	B1	NA		3.8	Y	Absent		PA-8260HLW(14)
L2243091-11F	Vial water preserved	B1	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243091-11G	Vial water preserved	B1	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243091-11H	Glass 120ml/4oz unpreserved	B1	NA		3.8	Y	Absent		TS(7)
L2243091-12A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-12B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-13A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-13B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-13C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-13D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-14A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-14B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-15A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-15B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-15C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08262212:17  
**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243091-15D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-16A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-16B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-17A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-17B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-17C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-17D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-18A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-18B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-19A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-19B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-19C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-19D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-20A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-20B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-21A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-21B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-21C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-21D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-22A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-22B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-23A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-23B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-23C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-23D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-24A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-24B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-25A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08262212:17  
**Lab Number:** L2243091  
**Report Date:** 08/26/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243091-25B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-25C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-25D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-26A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-26B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2243091-27A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2243091-27B	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-27C	Vial water preserved	B	NA		4.6	Y	Absent	11-AUG-22 07:30	PA-8260HLW(14)
L2243091-27D	Plastic 120ml unpreserved	B	NA		4.6	Y	Absent		TS(7)
L2243091-28A	Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2243091-28B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243091  
**Report Date:** 08/26/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243091

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18589 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/11/22

ALPHA Job #: L2243091

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	LEAD											
43091-01	301-263-01-VOL	8/10	1000	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
02	301-263-C1-Comp		1000			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
03	301-263-C2-VOL		1020			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
04	301-263-C2-Comp		1030			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
05	301-263-C3-VOL		1030			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
06	301-263-C3-Comp		1040			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
07	301-263-C4-VOL		1040			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
08	301-263-C4-Comp		1150			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
09	301-AA05-C1-VOL		1150			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
10	301-AA05-C1-Comp					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 2 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/11/22

ALPHA Job #: L2248091

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	LEAD											
U3091-11	301-AA05-C2-VOC	8/10	1200	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	301-AA05-C2-COMP		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	301-AA05-C3-VOC		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	301-AA05-C3-COMP		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	301-AA05-C4-VOC		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	301-AA05-C4-COMP		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	301-AA05-C5-VOC		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	301-AA05-C5-COMP		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	301-AB05-C1-VOC		1310			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	301-AB05-C1-COMP		1310			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



**PADEP Short List Analytical Suites per Table III-5:**

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

# CHAIN OF CUSTODY

PAGE 3 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18554

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/12/22

ALPHA Job #: ~~L2243425~~

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

VOCS (8260)  
SVOCs (8270)  
LEAD

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
<del>43425-21</del>	301-Y01-C3-VOC	8/11	1350	S	TS
<del>22</del>	301-Y01-C3-comp		1350		
<del>23</del>	301-Y01-C1-VOC		1400		
<del>24</del>	301-Y01-C1-comp		1400		
43091-11-25 (CEG 8/16)	301-AD05-C2-VOC		1430		

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sample Specific Comments

REFER TO L2243091

\* ADDITIONAL VOLUME FOR SAMPLE  
Collected on 8/10/2022

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/11/22 1523	TOM CALMAN	8/11/22 1523
<i>[Signature]</i>	8/11/22 1800	<i>[Signature]</i>	8/11/22 1800
<i>[Signature]</i>	8/11/22 2100	<i>[Signature]</i>	8/11/22 2100
<i>[Signature]</i>	8/11/22	<i>[Signature]</i>	8/11/22 2350

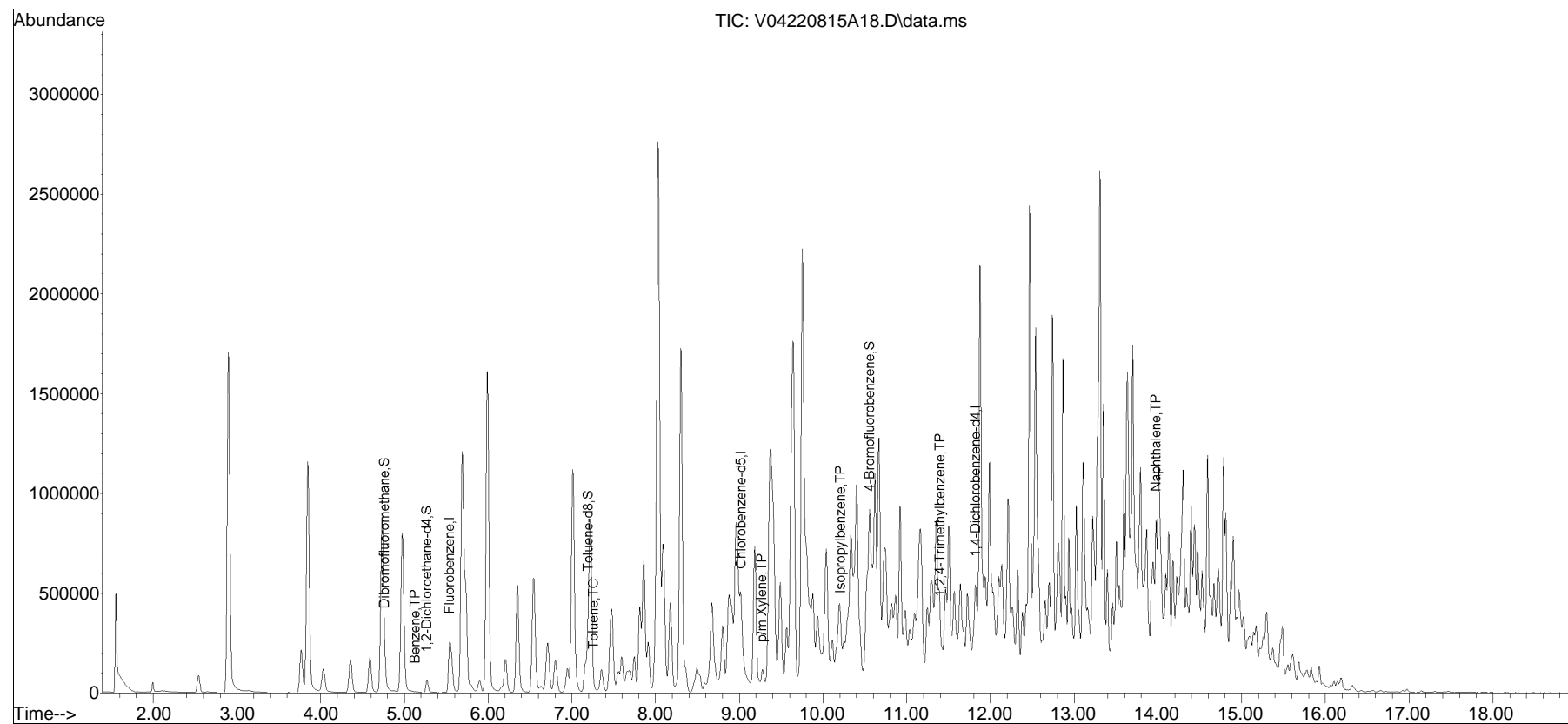
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220815A\  
Data File : V04220815A18.D  
Acq On : 15 Aug 2022 2:21 pm  
Operator : VOA104:NLK  
Sample : L2243091-21,31H,6.07,5,0.100,,A  
Misc : WG1675856,ICAL19119  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 16 16:36:50 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220815A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list15A\V04220815A01.D•

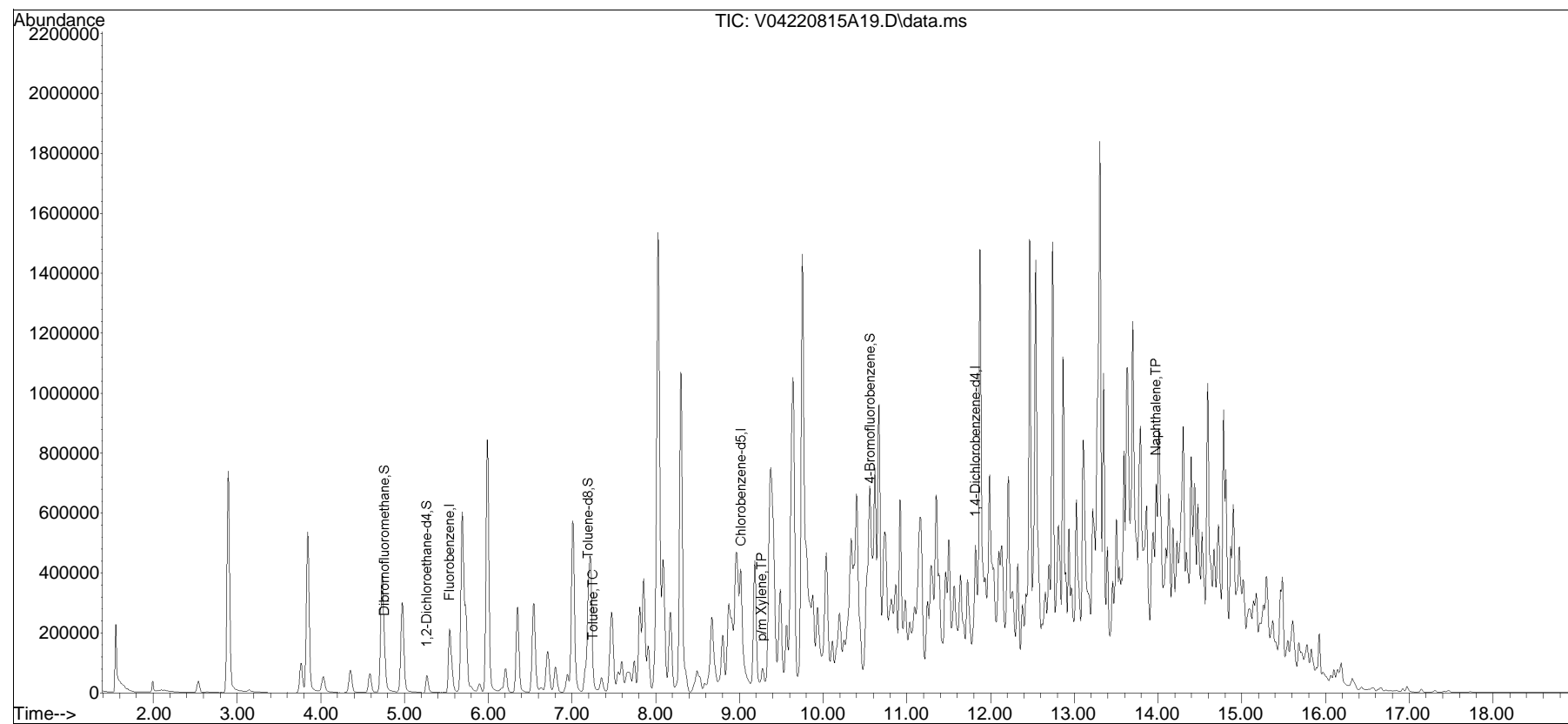


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220815A\  
Data File : V04220815A19.D  
Acq On : 15 Aug 2022 2:47 pm  
Operator : VOA104:NLK  
Sample : L2243091-25,31H,5.69,5,0.100,,A  
Misc : WG1675856,ICAL19119  
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 16 16:37:17 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220815A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list15A\V04220815A01.D•

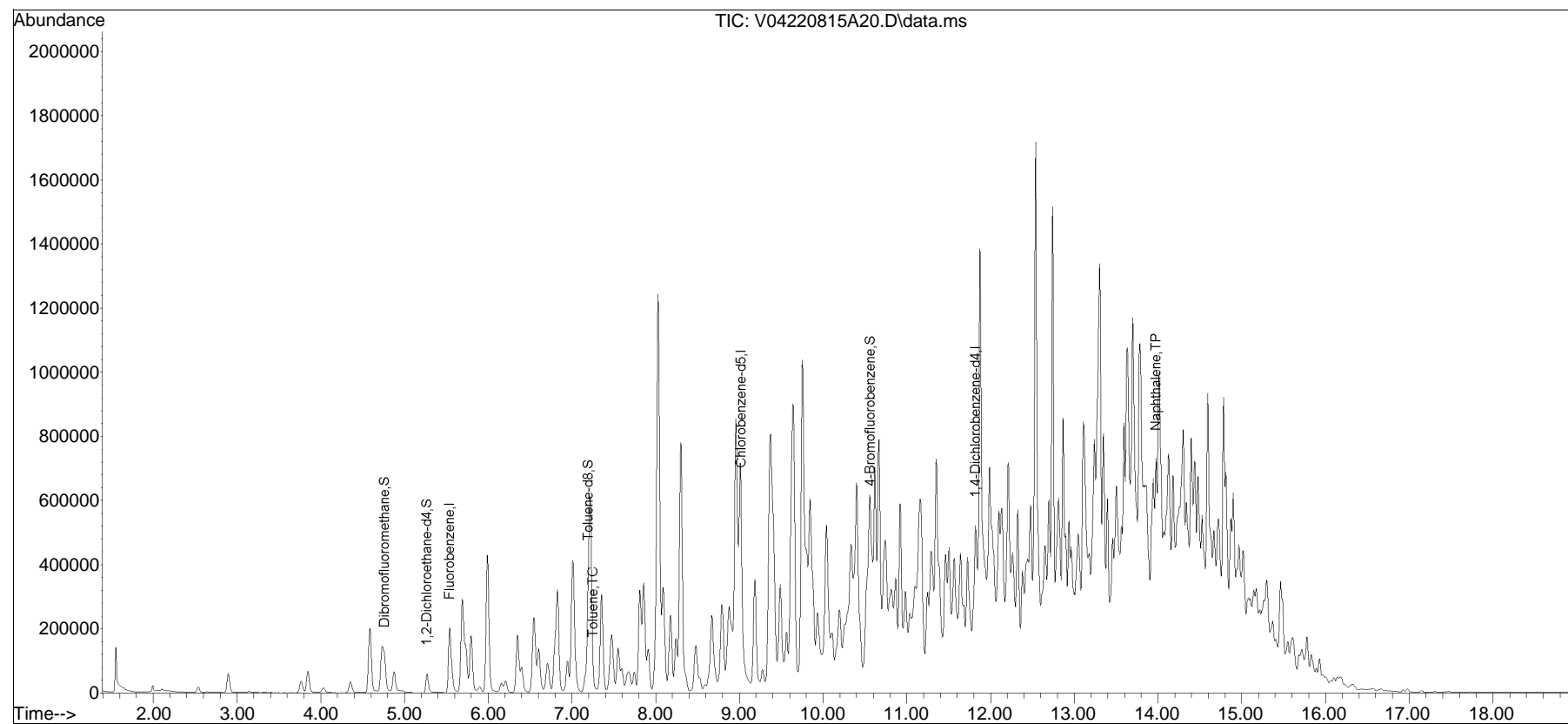


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220815A\  
Data File : V04220815A20.D  
Acq On : 15 Aug 2022 3:13 pm  
Operator : VOA104:NLK  
Sample : L2243091-27,31H,5.58,5,0.100,,A  
Misc : WG1675856,ICAL19119  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 16 16:37:33 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220815A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list15A\V04220815A01.D•







## ANALYTICAL REPORT

Lab Number:	L2243425
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/18/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2243425

Report Date: 08/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243425-01	301-W01-C1-VOC	SOIL	PHILADELPHIA, PA	08/11/22 11:00	08/11/22
L2243425-02	301-W01-C1-COMP	SOIL	PHILADELPHIA, PA	08/11/22 11:00	08/11/22
L2243425-03	301-W01-C2-VOC	SOIL	PHILADELPHIA, PA	08/11/22 11:10	08/11/22
L2243425-04	301-W01-C2-COMP	SOIL	PHILADELPHIA, PA	08/11/22 11:10	08/11/22
L2243425-05	301-W01-C3-VOC	SOIL	PHILADELPHIA, PA	08/11/22 11:20	08/11/22
L2243425-06	301-W01-C3-COMP	SOIL	PHILADELPHIA, PA	08/11/22 11:20	08/11/22
L2243425-07	301-W01-C4-VOC	SOIL	PHILADELPHIA, PA	08/11/22 11:30	08/11/22
L2243425-08	301-W01-C4-COMP	SOIL	PHILADELPHIA, PA	08/11/22 11:30	08/11/22
L2243425-09	301-X01-C1-VOC	SOIL	PHILADELPHIA, PA	08/11/22 12:10	08/11/22
L2243425-10	301-X01-C1-COMP	SOIL	PHILADELPHIA, PA	08/11/22 12:10	08/11/22
L2243425-11	301-X01-C2-VOC	SOIL	PHILADELPHIA, PA	08/11/22 12:20	08/11/22
L2243425-12	301-X01-C2-COMP	SOIL	PHILADELPHIA, PA	08/11/22 12:20	08/11/22
L2243425-13	301-X01-C3-VOC	SOIL	PHILADELPHIA, PA	08/11/22 12:30	08/11/22
L2243425-14	301-X01-C3-COMP	SOIL	PHILADELPHIA, PA	08/11/22 12:30	08/11/22
L2243425-15	301-X01-C4-VOC	SOIL	PHILADELPHIA, PA	08/11/22 12:40	08/11/22
L2243425-16	301-X01-C4-COMP	SOIL	PHILADELPHIA, PA	08/11/22 12:40	08/11/22
L2243425-17	301-Y01-C1-VOC	SOIL	PHILADELPHIA, PA	08/11/22 13:30	08/11/22
L2243425-18	301-Y01-C1-COMP	SOIL	PHILADELPHIA, PA	08/11/22 13:30	08/11/22
L2243425-19	301-Y01-C2-VOC	SOIL	PHILADELPHIA, PA	08/11/22 13:40	08/11/22
L2243425-20	301-Y01-C2-COMP	SOIL	PHILADELPHIA, PA	08/11/22 13:40	08/11/22
L2243425-21	301-Y01-C3-VOC	SOIL	PHILADELPHIA, PA	08/11/22 13:50	08/11/22
L2243425-22	301-Y01-C3-COMP	SOIL	PHILADELPHIA, PA	08/11/22 13:50	08/11/22
L2243425-23	301-Y01-C4-VOC	SOIL	PHILADELPHIA, PA	08/11/22 14:00	08/11/22
L2243425-24	301-Y01-C4-COMP	SOIL	PHILADELPHIA, PA	08/11/22 14:00	08/11/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2243425-01: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2243425-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (176%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243425-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (165%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243425-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (182%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243425-11: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (158%) and 4-bromofluorobenzene (160%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 08/18/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-01  
 Client ID: 301-W01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:00  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 13:45  
 Analyst: MKS  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.18	0.018	1
Benzene	0.040	J	mg/kg	0.046	0.015	1
1,2-Dichloroethane	ND		mg/kg	0.092	0.024	1
Toluene	0.18		mg/kg	0.092	0.050	1
1,2-Dibromoethane	ND		mg/kg	0.046	0.027	1
Ethylbenzene	0.14		mg/kg	0.092	0.013	1
p/m-Xylene	1.2		mg/kg	0.18	0.051	1
o-Xylene	0.22		mg/kg	0.092	0.027	1
Xylenes, Total	1.4		mg/kg	0.092	0.027	1
Isopropylbenzene	0.36		mg/kg	0.092	0.010	1
1,3,5-Trimethylbenzene	0.12	J	mg/kg	0.18	0.018	1
1,2,4-Trimethylbenzene	0.70		mg/kg	0.18	0.030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	176	Q	70-130
Dibromofluoromethane	78		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-03  
 Client ID: 301-W01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:10  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 13:04  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0027		mg/kg	0.0020	0.00057	1
o-Xylene	0.00065	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0034	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.010		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.00042	J	mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	165	Q	70-130
Dibromofluoromethane	78		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-05  
 Client ID: 301-W01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:20  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 08:55  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.00060	J	mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-07  
 Client ID: 301-W01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 09:16  
 Analyst: MKS  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-09  
 Client ID: 301-X01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:10  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 13:25  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0033	0.00033	1
Benzene	ND		mg/kg	0.00082	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00042	1
Toluene	ND		mg/kg	0.0016	0.00089	1
1,2-Dibromoethane	ND		mg/kg	0.00082	0.00048	1
Ethylbenzene	ND		mg/kg	0.0016	0.00023	1
p/m-Xylene	ND		mg/kg	0.0033	0.00091	1
o-Xylene	ND		mg/kg	0.0016	0.00048	1
Xylenes, Total	ND		mg/kg	0.0016	0.00048	1
Isopropylbenzene	0.0023		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	0.0024	J	mg/kg	0.0033	0.00032	1
1,2,4-Trimethylbenzene	0.0054		mg/kg	0.0033	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	70		70-130
Toluene-d8	122		70-130
4-Bromofluorobenzene	182	Q	70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-11  
 Client ID: 301-X01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:20  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 22:56  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	0.00029	J	mg/kg	0.00096	0.00028	1
Xylenes, Total	0.00029	J	mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.0034		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.0049		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.0068		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	158	Q	70-130
4-Bromofluorobenzene	160	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-13  
 Client ID: 301-X01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 09:58  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.00041	J	mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	85		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-15  
 Client ID: 301-X01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:40  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 10:18  
 Analyst: MKS  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-17  
 Client ID: 301-Y01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 11:41  
 Analyst: MKS  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	0.00017	J	mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.00044	J	mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-19  
 Client ID: 301-Y01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:40  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 12:02  
 Analyst: MKS  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.00044	J	mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	177	Q	70-130
Dibromofluoromethane	82		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-21  
 Client ID: 301-Y01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:50  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 12:23  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.00017	J	mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	70		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	210	Q	70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-23  
 Client ID: 301-Y01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 14:00  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/16/22 12:43  
 Analyst: MKS  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/16/22 08:34  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1675818-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/16/22 08:34  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05,07,09,13,15,17,19,21,23 Batch: WG1675933-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 18:00  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11 Batch: WG1676724-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1675818-3 WG1675818-4								
Methyl tert butyl ether	75		78		66-130	4		30
Benzene	86		88		70-130	2		30
1,2-Dichloroethane	74		77		70-130	4		30
Toluene	85		88		70-130	3		30
1,2-Dibromoethane	85		88		70-130	3		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	87		90		70-130	3		30
o-Xylene	88		92		70-130	4		30
Isopropylbenzene	79		82		70-130	4		30
1,3,5-Trimethylbenzene	82		86		70-130	5		30
1,2,4-Trimethylbenzene	84		88		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	80		79		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	93		92		70-130
Dibromofluoromethane	89		91		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05,07,09,13,15,17,19,21,23 Batch: WG1675933-3 WG1675933-4								
Methyl tert butyl ether	75		78		66-130	4		30
Benzene	86		88		70-130	2		30
1,2-Dichloroethane	74		77		70-130	4		30
Toluene	85		88		70-130	3		30
1,2-Dibromoethane	85		88		70-130	3		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	87		90		70-130	3		30
o-Xylene	88		92		70-130	4		30
Isopropylbenzene	79		82		70-130	4		30
1,3,5-Trimethylbenzene	82		86		70-130	5		30
1,2,4-Trimethylbenzene	84		88		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	80		79		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	93		92		70-130
Dibromofluoromethane	89		91		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11 Batch: WG1676724-3 WG1676724-4								
Methyl tert butyl ether	95		97		66-130	2		30
Benzene	94		94		70-130	0		30
1,2-Dichloroethane	92		94		70-130	2		30
Toluene	88		86		70-130	2		30
1,2-Dibromoethane	91		92		70-130	1		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	95		93		70-130	2		30
o-Xylene	96		94		70-130	2		30
Isopropylbenzene	97		94		70-130	3		30
1,3,5-Trimethylbenzene	97		94		70-130	3		30
1,2,4-Trimethylbenzene	95		92		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		101		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	98		99		70-130





# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-02  
 Client ID: 301-W01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:00  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 01:42  
 Analyst: WR  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.11	J	mg/kg	0.18	0.022	1
Fluorene	0.064	J	mg/kg	0.18	0.018	1
Phenanthrene	0.17		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.23		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.021	1
Chrysene	0.29		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.17		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.15		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	42		30-120
4-Terphenyl-d14	47		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-04  
 Client ID: 301-W01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:10  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 01:18  
 Analyst: WR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-06  
 Client ID: 301-W01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:20  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 00:55  
 Analyst: WR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	56		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-08  
 Client ID: 301-W01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 00:32  
 Analyst: WR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.031	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.023	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-10  
 Client ID: 301-X01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:10  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 00:08  
 Analyst: WR  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	0.031	J	mg/kg	0.21	0.020	1
Phenanthrene	0.064	J	mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	0.053	J	mg/kg	0.13	0.021	1
Benzo(a)anthracene	0.036	J	mg/kg	0.13	0.024	1
Chrysene	0.038	J	mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.038	J	mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	0.026	J	mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-12  
 Client ID: 301-X01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:20  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 23:45  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.21		mg/kg	0.20	0.024	1
Fluorene	0.43		mg/kg	0.20	0.019	1
Phenanthrene	0.85		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.14		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.056	J	mg/kg	0.12	0.022	1
Chrysene	0.12		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.046	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.023	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	129	Q	23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-14  
 Client ID: 301-X01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 23:21  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	62		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-16  
 Client ID: 301-X01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:40  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 22:58  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.024	J	mg/kg	0.20	0.019	1
Phenanthrene	0.24		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.20		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.088	J	mg/kg	0.12	0.022	1
Chrysene	0.095	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.11	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.098	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.059	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-18  
 Client ID: 301-Y01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 22:35  
 Analyst: WR  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.18	J	mg/kg	0.21	0.025	1
Fluorene	0.055	J	mg/kg	0.21	0.020	1
Phenanthrene	0.86		mg/kg	0.12	0.025	1
Anthracene	0.12		mg/kg	0.12	0.040	1
Pyrene	0.87		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.42		mg/kg	0.12	0.023	1
Chrysene	0.95		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.27		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.38		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	0.24		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	41		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-20  
 Client ID: 301-Y01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:40  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 21:24  
 Analyst: WR  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.058	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.10	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.065	J	mg/kg	0.11	0.021	1
Chrysene	0.064	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.085	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.072	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.054	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-22  
 Client ID: 301-Y01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:50  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 21:48  
 Analyst: WR  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.027	1
Fluorene	0.026	J	mg/kg	0.22	0.022	1
Phenanthrene	ND		mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	0.030	J	mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.025	1
Chrysene	0.039	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.054	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	124	Q	23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	86		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-24  
 Client ID: 301-Y01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 14:00  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 22:11  
 Analyst: WR  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.050	J	mg/kg	0.21	0.025	1
Fluorene	0.12	J	mg/kg	0.21	0.020	1
Phenanthrene	0.23		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.054	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.035	J	mg/kg	0.12	0.023	1
Chrysene	0.055	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	138	Q	23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/15/22 08:27  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 08/14/22 19:53

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 20,22,24 Batch: WG1675169-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		25-120
Phenol-d6	61		10-120
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	55		30-120
2,4,6-Tribromophenol	62		10-136
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/17/22 14:24  
 Analyst: JG

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 07:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1675263-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	89		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2243425

Project Number: 200.00135.006

Report Date: 08/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 20,22,24 Batch: WG1675169-2 WG1675169-3								
Naphthalene	73		80		40-140	9		50
Fluorene	75		81		40-140	8		50
Phenanthrene	72		77		40-140	7		50
Anthracene	74		80		40-140	8		50
Pyrene	73		80		35-142	9		50
Benzo(a)anthracene	72		77		40-140	7		50
Chrysene	73		79		40-140	8		50
Benzo(b)fluoranthene	78		84		40-140	7		50
Benzo(a)pyrene	80		85		40-140	6		50
Benzo(ghi)perylene	76		82		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	79		89		25-120
Phenol-d6	80		92		10-120
Nitrobenzene-d5	78		89		23-120
2-Fluorobiphenyl	78		87		30-120
2,4,6-Tribromophenol	92		105		10-136
4-Terphenyl-d14	78		86		18-120



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1675263-2 WG1675263-3								
Naphthalene	83		78		40-140	6		50
Fluorene	84		82		40-140	2		50
Phenanthrene	86		82		40-140	5		50
Anthracene	86		84		40-140	2		50
Pyrene	86		84		35-142	2		50
Benzo(a)anthracene	82		79		40-140	4		50
Chrysene	84		82		40-140	2		50
Benzo(b)fluoranthene	87		97		40-140	11		50
Benzo(a)pyrene	89		88		40-140	1		50
Benzo(ghi)perylene	90		87		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	86		81		23-120
2-Fluorobiphenyl	86		82		30-120
4-Terphenyl-d14	89		87		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-02

Date Collected: 08/11/22 11:00

Client ID: 301-W01-C1-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	30.2		mg/kg	2.20	0.118	1	08/12/22 23:01	08/16/22 20:51	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-04

Date Collected: 08/11/22 11:10

Client ID: 301-W01-C2-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.09		mg/kg	2.49	0.133	1	08/12/22 23:01	08/16/22 20:54	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-06

Date Collected: 08/11/22 11:20

Client ID: 301-W01-C3-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.96		mg/kg	2.47	0.132	1	08/12/22 23:01	08/16/22 21:44	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-08

Date Collected: 08/11/22 11:30

Client ID: 301-W01-C4-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	267		mg/kg	2.32	0.124	1	08/12/22 23:01	08/16/22 21:57	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-10  
 Client ID: 301-X01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 12:10  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	49.0		mg/kg	2.58	0.138	1	08/12/22 23:01	08/16/22 22:01	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-12

Date Collected: 08/11/22 12:20

Client ID: 301-X01-C2-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.78		mg/kg	2.40	0.128	1	08/12/22 23:01	08/16/22 22:21	EPA 3050B	1,6010D	JF





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-14

Date Collected: 08/11/22 12:30

Client ID: 301-X01-C3-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.42		mg/kg	2.37	0.127	1	08/12/22 23:01	08/16/22 22:25	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-16

Date Collected: 08/11/22 12:40

Client ID: 301-X01-C4-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	31.4		mg/kg	2.27	0.122	1	08/12/22 23:01	08/16/22 22:29	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-18  
 Client ID: 301-Y01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.18		mg/kg	2.52	0.135	1	08/12/22 23:01	08/16/22 22:32	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-20  
 Client ID: 301-Y01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:40  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.82		mg/kg	2.16	0.116	1	08/12/22 23:01	08/16/22 22:36	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-22  
 Client ID: 301-Y01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:50  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.1		mg/kg	2.68	0.143	1	08/12/22 23:01	08/16/22 22:39	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-24

Date Collected: 08/11/22 14:00

Client ID: 301-Y01-C4-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	46.0		mg/kg	2.41	0.129	1	08/12/22 23:01	08/16/22 22:43	EPA 3050B	1,6010D	JF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243425

Project Number: 200.00135.006

Report Date: 08/18/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24						Batch: WG1674698-1			
Lead, Total	ND	mg/kg	2.00	0.107	1	08/12/22 23:01	08/16/22 21:23	1,6010D	JF

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1674698-2 SRM Lot Number: D113-540								
Lead, Total	91		-		72-128			-





**Matrix Spike Analysis**  
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2243425

Project Number: 200.00135.006

Report Date: 08/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24    QC Batch ID: WG1674698-3    QC Sample: L2243294-01    Client ID: MS Sample												
Lead, Total	42.0	50.7	91.6	98		-	-		75-125	-		20

**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2243425

**Report Date:** 08/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1674698-4 QC Sample: L2243294-01 Client ID: DUP Sample						
Lead, Total	42.0	48.9	mg/kg	15		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-01

Date Collected: 08/11/22 11:00

Client ID: 301-W01-C1-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.7		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

**Lab ID:** L2243425-02  
**Client ID:** 301-W01-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/11/22 11:00  
**Date Received:** 08/11/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.4		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-03

Date Collected: 08/11/22 11:10

Client ID: 301-W01-C2-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-04

Date Collected: 08/11/22 11:10

Client ID: 301-W01-C2-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.1		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-05  
 Client ID: 301-W01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 11:20  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-06

Date Collected: 08/11/22 11:20

Client ID: 301-W01-C3-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.1		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-07

Date Collected: 08/11/22 11:30

Client ID: 301-W01-C4-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.6		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-08

Date Collected: 08/11/22 11:30

Client ID: 301-W01-C4-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-09

Date Collected: 08/11/22 12:10

Client ID: 301-X01-C1-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.6		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-10

Date Collected: 08/11/22 12:10

Client ID: 301-X01-C1-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	76.5		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-11

Date Collected: 08/11/22 12:20

Client ID: 301-X01-C2-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.4		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243425

Project Number: 200.00135.006

Report Date: 08/18/22

## SAMPLE RESULTS

Lab ID: L2243425-12

Date Collected: 08/11/22 12:20

Client ID: 301-X01-C2-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-13

Date Collected: 08/11/22 12:30

Client ID: 301-X01-C3-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-14

Date Collected: 08/11/22 12:30

Client ID: 301-X01-C3-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.1		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-15

Date Collected: 08/11/22 12:40

Client ID: 301-X01-C4-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.8		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-16

Date Collected: 08/11/22 12:40

Client ID: 301-X01-C4-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-17  
 Client ID: 301-Y01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 13:30  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.0		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-18

Date Collected: 08/11/22 13:30

Client ID: 301-Y01-C1-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.5		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-19

Date Collected: 08/11/22 13:40

Client ID: 301-Y01-C2-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-20

Date Collected: 08/11/22 13:40

Client ID: 301-Y01-C2-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.9		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-21

Date Collected: 08/11/22 13:50

Client ID: 301-Y01-C3-VOC

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.7		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-22

Date Collected: 08/11/22 13:50

Client ID: 301-Y01-C3-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.3		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

**SAMPLE RESULTS**

Lab ID: L2243425-23  
 Client ID: 301-Y01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/11/22 14:00  
 Date Received: 08/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.9		%	0.100	NA	1	-	08/12/22 12:16	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**SAMPLE RESULTS**

Lab ID: L2243425-24

Date Collected: 08/11/22 14:00

Client ID: 301-Y01-C4-COMP

Date Received: 08/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.1		%	0.100	NA	1	-	08/12/22 12:45	121,2540G	RI



### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21,23 QC Batch ID: WG1674503-1 QC Sample: L2243125-01 Client ID: DUP Sample						
Solids, Total	88.1	86.8	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1674583-1 QC Sample: L2243425-02 Client ID: 301-W01-C1-COMP						
Solids, Total	88.4	89.1	%	1		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243425-01A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-01B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-01C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-01D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-02B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-03A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-03B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-03C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-03D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-04B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-05A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-05B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-05C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-05D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-06B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-07A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-07B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-07C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-07D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243425**Project Number:** 200.00135.006**Report Date:** 08/18/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243425-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-08B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-09A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-09B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-09C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-09D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-10B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-11A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-11B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-11C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-11D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-12B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-13A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2243425-13B	Vial water preserved	B	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-13C	Vial water preserved	B	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-13D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2243425-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2243425-14B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2243425-15A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2243425-15B	Vial water preserved	B	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-15C	Vial water preserved	B	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-15D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2243425-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2243425-16B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2243425-17A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-17B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08182216:13  
**Lab Number:** L2243425  
**Report Date:** 08/18/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243425-17C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-17D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-18B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-19A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-19B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-19C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-19D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-20B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-21A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2243425-21B	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-21C	Vial water preserved	A	NA		4.3	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-21D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2243425-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2243425-22B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2243425-23A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2243425-23B	Vial water preserved	B	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-23C	Vial water preserved	B	NA		3.8	Y	Absent	12-AUG-22 08:21	PA-8260HLW(14)
L2243425-23D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2243425-24A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2243425-24B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243425  
**Report Date:** 08/18/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243425

**Project Number:** 200.00135.006

**Report Date:** 08/18/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 2 of 3

Westborough, MA  
TEL: 508-896-9220  
FAX: 508-896-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC  
Address: 2127 Hamilton Avenue  
Trenton, NJ 08619  
Phone: 215-901-4974

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18699 **18559**

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/12/22

ALPHA Job #: 62243425

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	5 VOCs (8270)	LEAD												
43425-11	8/11	1220	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		1240			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16		1240			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
43425	301-X01-C2-VOC	8/11	1220	S	TS
	301-X01-C2-COMP		1220		
	301-X01-C3-VOC		1230		
	301-X01-C3-COMP		1230		
	301-X01-C4-VOC		1240		
	301-X01-C4-COMP		1240		
	301-Y01-C1-VOC		1330		
	301-Y01-C1-COMP		1330		
	301-Y01-C2-VOC		1340		
	301-Y01-C2-COMP		1340		

Container Type: G  
Preservative:

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/11/22 1523	Tom Clat	8-11-22 1523
Tom Clat	8-11-22 1820	<i>[Signature]</i>	8/11/22 1820
<i>[Signature]</i>	8/11/22 2350	<i>[Signature]</i>	8-11-22 2350

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms

# CHAIN OF CUSTODY

PAGE 3 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 19599 18554

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/12/22

ALPHA Job #: L2243425

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEX  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	LEAD											
43425-21	301-Y01-C3-VOC	8/11	1350	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	301-Y01-C3-comp		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	301-Y01-C4-VOC		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	301-Y01-C4-comp		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43091-11-25	301-ANOS-C2-VOC		1430			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

REFER TO L2243091

\*ADDITIONAL VOLUME FOR SAMPLE COLLECTED ON 8/10/2022

Container Type - - G - - - - -  
 Preservative - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/11 1523	Tom Calan...	8/11 1523
<i>[Signature]</i>	8-11 1800	<i>[Signature]</i>	8/10/22 1800
<i>[Signature]</i>	8/11/22 2:00	<i>[Signature]</i>	8/11/22 2:00
<i>[Signature]</i>	8/11/22	<i>[Signature]</i>	8/11/22 2350

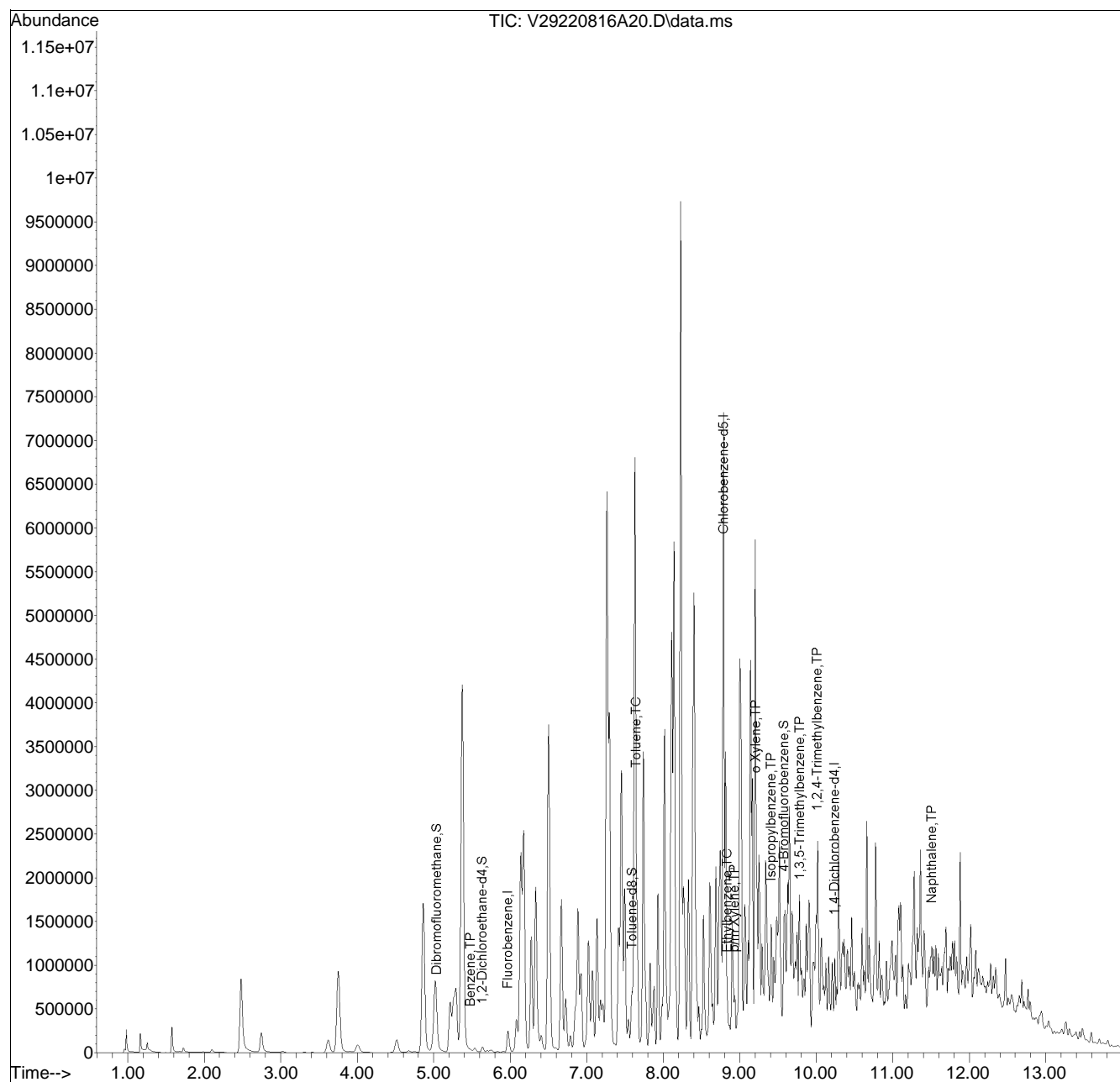
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220816A\  
 Data File : V29220816A20.D  
 Acq On : 16 Aug 2022 01:45 pm  
 Operator : VOA129:MKS  
 Sample : 12243425-01,31h,3.31,5,0.100,,a  
 Misc : WG1675818,ICAL19173  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 17 10:26:42 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220816A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list16A\V29220816A01.D•



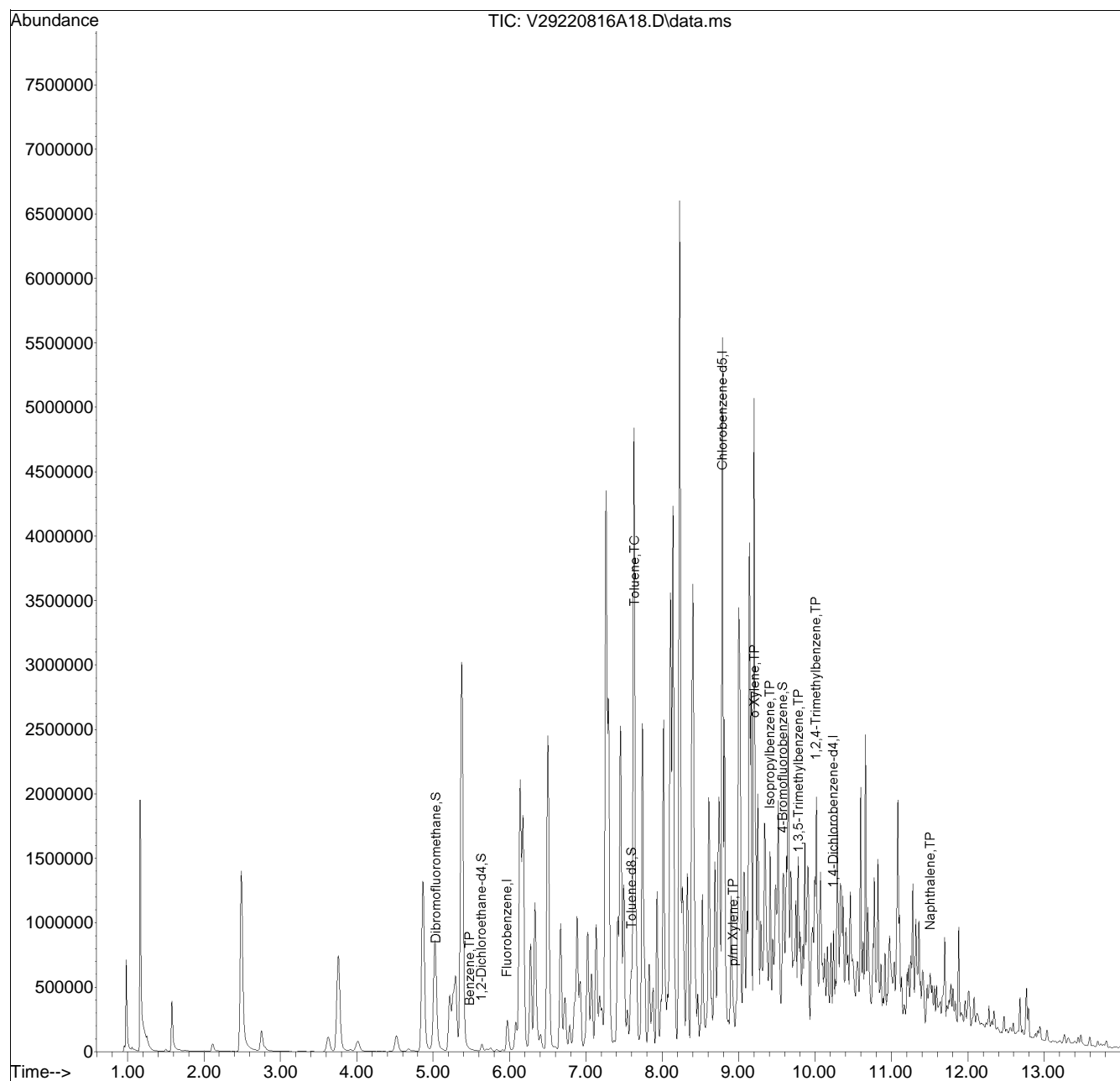


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220816A\  
Data File : V29220816A18.D  
Acq On : 16 Aug 2022 01:04 pm  
Operator : VOA129:MKS  
Sample : 12243425-03,31,5.77,5,,b  
Misc : WG1675933,ICAL19173  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 17 10:26:10 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220816A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list16A\V29220816A01.D•

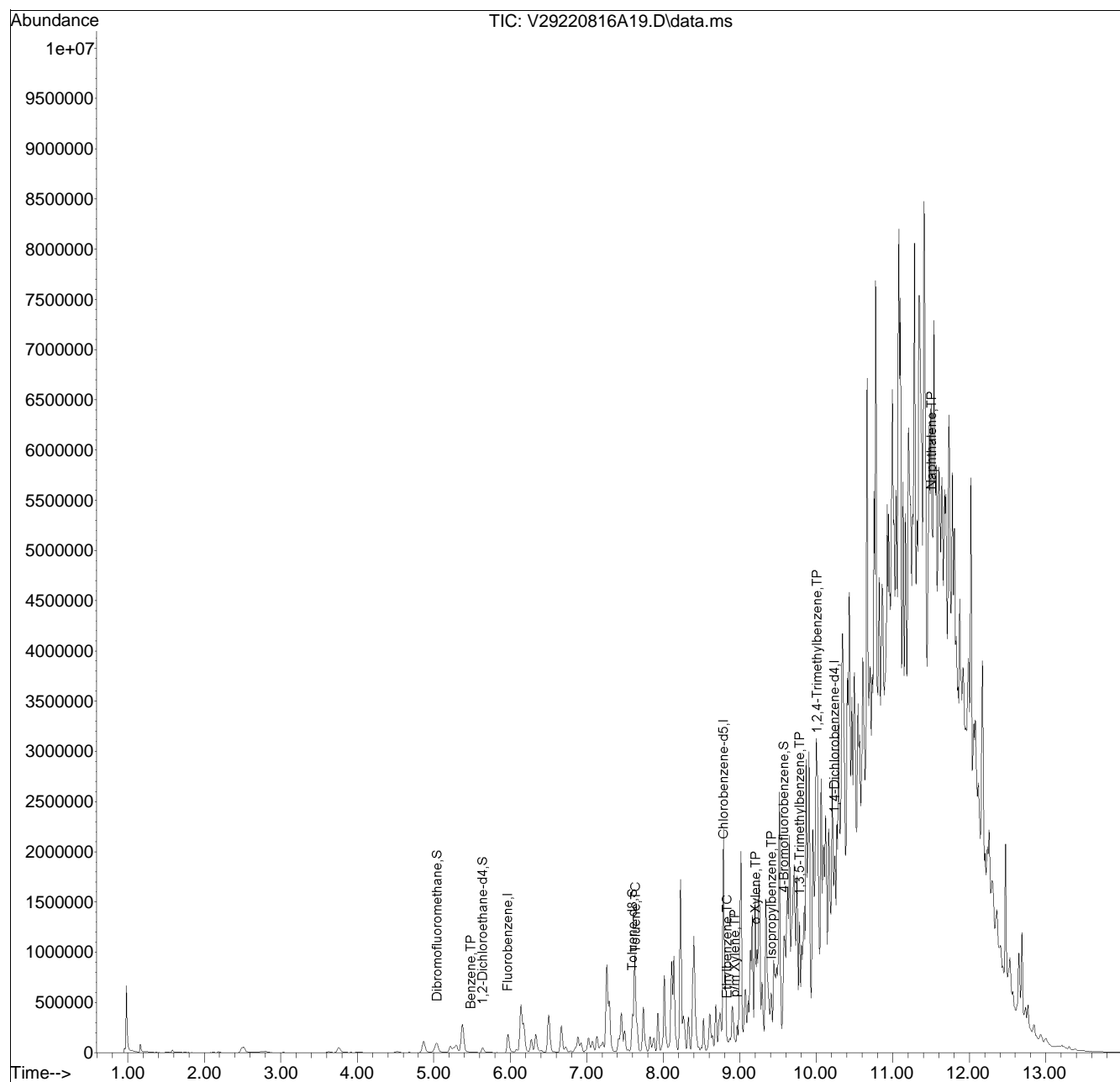


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220816A\  
 Data File : V29220816A19.D  
 Acq On : 16 Aug 2022 01:25 pm  
 Operator : VOA129:MKS  
 Sample : 12243425-09,31,3.62,5,,b  
 Misc : WG1675933,ICAL19173  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 16 16:05:50 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220816A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list16A\V29220816A01.D•

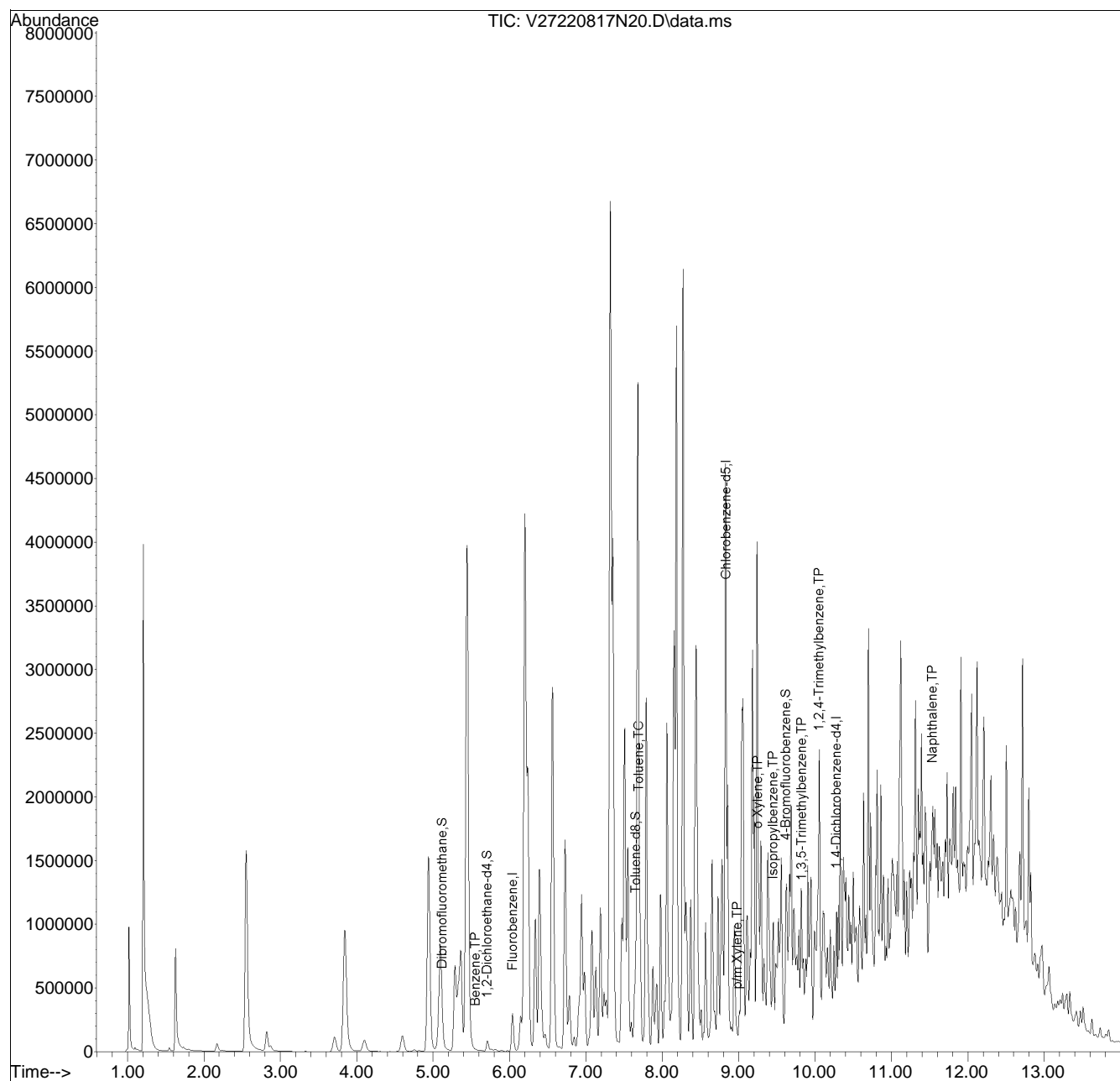


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220817N\  
Data File : V27220817N20.D  
Acq On : 17 Aug 2022 10:56 pm  
Operator : VOA127:NLK  
Sample : L2243425-11,31,5.88,5,,B  
Misc : WG1676724,ICAL19153  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 18 07:00:15 2022  
Quant Method : I:\VOLATILES\VOA127\2022\220817N\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17N\V27220817N02.D•





## ANALYTICAL REPORT

Lab Number:	L2243661
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/19/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2243661

Report Date: 08/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2243661-01	301-W02-C1-VOC	SOIL	PHILADELPHIA, PA	08/12/22 09:30	08/12/22
L2243661-02	301-W02-C1-COMP	SOIL	PHILADELPHIA, PA	08/12/22 09:30	08/12/22
L2243661-03	301-W02-C2-VOC	SOIL	PHILADELPHIA, PA	08/12/22 09:40	08/12/22
L2243661-04	301-W02-C2-COMP	SOIL	PHILADELPHIA, PA	08/12/22 09:40	08/12/22
L2243661-05	301-W02-C3-VOC	SOIL	PHILADELPHIA, PA	08/12/22 09:50	08/12/22
L2243661-06	301-W02-C3-COMP	SOIL	PHILADELPHIA, PA	08/12/22 09:50	08/12/22
L2243661-07	301-W02-C4-VOC	SOIL	PHILADELPHIA, PA	08/12/22 10:00	08/12/22
L2243661-08	301-W02-C4-COMP	SOIL	PHILADELPHIA, PA	08/12/22 10:00	08/12/22
L2243661-09	301-W02-C5-VOC	SOIL	PHILADELPHIA, PA	08/12/22 10:10	08/12/22
L2243661-10	301-W02-C5-COMP	SOIL	PHILADELPHIA, PA	08/12/22 10:10	08/12/22
L2243661-11	301-X02-C1-VOC	SOIL	PHILADELPHIA, PA	08/12/22 11:00	08/12/22
L2243661-12	301-X02-C1-COMP	SOIL	PHILADELPHIA, PA	08/12/22 11:00	08/12/22
L2243661-13	301-X02-C2-VOC	SOIL	PHILADELPHIA, PA	08/12/22 11:10	08/12/22
L2243661-14	301-X02-C2-COMP	SOIL	PHILADELPHIA, PA	08/12/22 11:10	08/12/22
L2243661-15	301-X02-C3-VOC	SOIL	PHILADELPHIA, PA	08/12/22 11:20	08/12/22
L2243661-16	301-X02-C3-COMP	SOIL	PHILADELPHIA, PA	08/12/22 11:20	08/12/22
L2243661-17	301-X02-C4-VOC	SOIL	PHILADELPHIA, PA	08/12/22 11:30	08/12/22
L2243661-18	301-X02-C4-COMP	SOIL	PHILADELPHIA, PA	08/12/22 11:30	08/12/22
L2243661-19	301-X02-C5-VOC	SOIL	PHILADELPHIA, PA	08/12/22 11:40	08/12/22
L2243661-20	301-X02-C5-COMP	SOIL	PHILADELPHIA, PA	08/12/22 11:40	08/12/22
L2243661-21	301-Y02-C1-VOC	SOIL	PHILADELPHIA, PA	08/12/22 12:00	08/12/22
L2243661-22	301-Y02-C1-COMP	SOIL	PHILADELPHIA, PA	08/12/22 12:00	08/12/22
L2243661-23	301-Y02-C2-VOC	SOIL	PHILADELPHIA, PA	08/12/22 12:10	08/12/22
L2243661-24	301-Y02-C2-COMP	SOIL	PHILADELPHIA, PA	08/12/22 12:10	08/12/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2243661-25	301-Y02-C3-VOC	SOIL	PHILADELPHIA, PA	08/12/22 12:20	08/12/22
L2243661-26	301-Y02-C3-COMP	SOIL	PHILADELPHIA, PA	08/12/22 12:20	08/12/22
L2243661-27	301-Y02-C4-VOC	SOIL	PHILADELPHIA, PA	08/12/22 12:30	08/12/22
L2243661-28	301-Y02-C4-COMP	SOIL	PHILADELPHIA, PA	08/12/22 12:30	08/12/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2243661-19: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2243661-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (142%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243661-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (311%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243661-23: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (156%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243661-25: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2243661-27D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (233%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Total Metals

L2243661-14 and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 08/19/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-01  
 Client ID: 301-W02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 09:16  
 Analyst: AJK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-03  
 Client ID: 301-W02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:40  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 09:42  
 Analyst: AJK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00078	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00080	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-05  
 Client ID: 301-W02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:50  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 10:08  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-07  
 Client ID: 301-W02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 10:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 10:34  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-09  
 Client ID: 301-W02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 10:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 11:00  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-11  
 Client ID: 301-X02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 11:26  
 Analyst: AJK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0039	0.00039	1
Benzene	0.00053	J	mg/kg	0.00097	0.00032	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00050	1
Toluene	ND		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00097	0.00057	1
Ethylbenzene	ND		mg/kg	0.0019	0.00027	1
p/m-Xylene	ND		mg/kg	0.0039	0.0011	1
o-Xylene	ND		mg/kg	0.0019	0.00056	1
Xylenes, Total	ND		mg/kg	0.0019	0.00056	1
Isopropylbenzene	ND		mg/kg	0.0019	0.00021	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0039	0.00037	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0039	0.00065	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	83		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-13  
 Client ID: 301-X02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 11:52  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	79		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-15  
 Client ID: 301-X02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:20  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 12:18  
 Analyst: AJK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-17  
 Client ID: 301-X02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 12:45  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-19  
 Client ID: 301-X02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:40  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 13:11  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0097	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	ND		mg/kg	0.058	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	ND		mg/kg	0.058	0.0082	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.058	0.017	1
Xylenes, Total	ND		mg/kg	0.058	0.017	1
Isopropylbenzene	0.12		mg/kg	0.058	0.0064	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	142	Q	70-130
Dibromofluoromethane	76		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

**Lab ID:** L2243661-21  
**Client ID:** 301-Y02-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/12/22 12:00  
**Date Received:** 08/12/22  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 08/18/22 03:59  
**Analyst:** NLK  
**Percent Solids:** 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0010		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	0.0010		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	0.00052	J	mg/kg	0.0010	0.00015	1
p/m-Xylene	0.00090	J	mg/kg	0.0021	0.00058	1
o-Xylene	0.00098	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0019	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.058		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	311	Q	70-130
Dibromofluoromethane	78		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-23  
 Client ID: 301-Y02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/18/22 04:25  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.029	0.0095	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	0.054	J	mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.014	J	mg/kg	0.057	0.0081	1
p/m-Xylene	ND		mg/kg	0.11	0.032	1
o-Xylene	ND		mg/kg	0.057	0.017	1
Xylenes, Total	ND		mg/kg	0.057	0.017	1
Isopropylbenzene	4.6		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	156	Q	70-130
Dibromofluoromethane	73		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-25  
 Client ID: 301-Y02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:20  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/18/22 04:52  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0097	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	0.094		mg/kg	0.058	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.032	J	mg/kg	0.058	0.0082	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	0.027	J	mg/kg	0.058	0.017	1
Xylenes, Total	0.027	J	mg/kg	0.058	0.017	1
Isopropylbenzene	12.		mg/kg	0.058	0.0064	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	71		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-27 D  
 Client ID: 301-Y02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 14:55  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	1.3	0.14	10
Benzene	ND		mg/kg	0.34	0.11	10
1,2-Dichloroethane	ND		mg/kg	0.67	0.17	10
Toluene	ND		mg/kg	0.67	0.36	10
1,2-Dibromoethane	ND		mg/kg	0.34	0.20	10
Ethylbenzene	0.10	J	mg/kg	0.67	0.095	10
p/m-Xylene	ND		mg/kg	1.3	0.38	10
o-Xylene	ND		mg/kg	0.67	0.20	10
Xylenes, Total	ND		mg/kg	0.67	0.20	10
Isopropylbenzene	54.		mg/kg	0.67	0.073	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.3	0.13	10
1,2,4-Trimethylbenzene	ND		mg/kg	1.3	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	70		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	233	Q	70-130
Dibromofluoromethane	72		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 08:49  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15,17 Batch: WG1676792-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 08:49  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 19,27 Batch: WG1676798-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 20:34  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 21 Batch: WG1676816-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 20:34  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 23,25 Batch: WG1676817-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	98		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17 Batch: WG1676792-3 WG1676792-4								
Methyl tert butyl ether	94		95		66-130	1		30
Benzene	89		92		70-130	3		30
1,2-Dichloroethane	73		73		70-130	0		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	81		81		70-130	0		30
Ethylbenzene	88		90		70-130	2		30
p/m-Xylene	92		96		70-130	4		30
o-Xylene	90		93		70-130	3		30
Isopropylbenzene	100		104		70-130	4		30
1,3,5-Trimethylbenzene	92		95		70-130	3		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		74		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	81		82		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 19,27 Batch: WG1676798-3 WG1676798-4								
Methyl tert butyl ether	94		95		66-130	1		30
Benzene	89		92		70-130	3		30
1,2-Dichloroethane	73		73		70-130	0		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	81		81		70-130	0		30
Ethylbenzene	88		90		70-130	2		30
p/m-Xylene	92		96		70-130	4		30
o-Xylene	90		93		70-130	3		30
Isopropylbenzene	100		104		70-130	4		30
1,3,5-Trimethylbenzene	92		95		70-130	3		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	81		82		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 21 Batch: WG1676816-3 WG1676816-4								
Methyl tert butyl ether	93		95		66-130	2		30
Benzene	90		92		70-130	2		30
1,2-Dichloroethane	72		74		70-130	3		30
Toluene	90		91		70-130	1		30
1,2-Dibromoethane	80		81		70-130	1		30
Ethylbenzene	88		89		70-130	1		30
p/m-Xylene	93		94		70-130	1		30
o-Xylene	90		91		70-130	1		30
Isopropylbenzene	100		101		70-130	1		30
1,3,5-Trimethylbenzene	93		94		70-130	1		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	75		75		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	82		84		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 23,25 Batch: WG1676817-3 WG1676817-4								
Methyl tert butyl ether	93		95		66-130	2		30
Benzene	90		92		70-130	2		30
1,2-Dichloroethane	72		74		70-130	3		30
Toluene	90		91		70-130	1		30
1,2-Dibromoethane	80		81		70-130	1		30
Ethylbenzene	88		89		70-130	1		30
p/m-Xylene	93		94		70-130	1		30
o-Xylene	90		91		70-130	1		30
Isopropylbenzene	100		101		70-130	1		30
1,3,5-Trimethylbenzene	93		94		70-130	1		30
1,2,4-Trimethylbenzene	91		92		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	75		75		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	82		84		70-130





# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-02  
 Client ID: 301-W02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 12:28  
 Analyst: IM  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.095	J	mg/kg	0.18	0.022	1
Fluorene	0.031	J	mg/kg	0.18	0.018	1
Phenanthrene	0.22		mg/kg	0.11	0.022	1
Anthracene	0.058	J	mg/kg	0.11	0.036	1
Pyrene	0.25		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.16		mg/kg	0.11	0.021	1
Chrysene	0.16		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.21		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.19		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.18		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-04  
 Client ID: 301-W02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:40  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 12:52  
 Analyst: IM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.041	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.068	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.048	J	mg/kg	0.11	0.021	1
Chrysene	0.056	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.058	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.051	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.042	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-06  
 Client ID: 301-W02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:50  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 13:15  
 Analyst: CMM  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.033	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.051	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.022	J	mg/kg	0.11	0.020	1
Chrysene	0.023	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	117		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-08  
 Client ID: 301-W02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 10:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 13:39  
 Analyst: CMM  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	80		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-10  
 Client ID: 301-W02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 10:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 14:02  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-12  
 Client ID: 301-X02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 14:25  
 Analyst: CMM  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.20	0.024	1
Fluorene	0.083	J	mg/kg	0.20	0.019	1
Phenanthrene	0.73		mg/kg	0.12	0.024	1
Anthracene	0.18		mg/kg	0.12	0.038	1
Pyrene	1.4		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.20		mg/kg	0.12	0.022	1
Chrysene	0.50		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.14		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.12	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.092	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	92		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-14  
 Client ID: 301-X02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 14:49  
 Analyst: CMM  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	92		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-16  
 Client ID: 301-X02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:20  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 15:36  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-18  
 Client ID: 301-X02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 15:59  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-20  
 Client ID: 301-X02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:40  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 16:46  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	89		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-22  
 Client ID: 301-Y02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 17:09  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.025	J	mg/kg	0.19	0.018	1
Phenanthrene	0.094	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.061	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.038	J	mg/kg	0.11	0.021	1
Chrysene	0.045	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.053	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.036	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-24  
 Client ID: 301-Y02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 17:33  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.64		mg/kg	0.20	0.020	1
Phenanthrene	1.2		mg/kg	0.12	0.025	1
Anthracene	0.10	J	mg/kg	0.12	0.040	1
Pyrene	0.14		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.030	J	mg/kg	0.12	0.023	1
Chrysene	0.15		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	160	Q	23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-26  
 Client ID: 301-Y02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:20  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 17:56  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	2.3		mg/kg	0.20	0.020	1
Phenanthrene	5.2		mg/kg	0.12	0.025	1
Anthracene	0.40		mg/kg	0.12	0.039	1
Pyrene	0.48		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.15		mg/kg	0.12	0.023	1
Chrysene	0.60		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.050	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.042	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	104		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-28  
 Client ID: 301-Y02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/18/22 18:20  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 08/15/22 10:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	3.6		mg/kg	0.21	0.020	1
Phenanthrene	8.2		mg/kg	0.12	0.025	1
Anthracene	0.72		mg/kg	0.12	0.040	1
Pyrene	0.59		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.19		mg/kg	0.12	0.023	1
Chrysene	0.66		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.061	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.066	J	mg/kg	0.17	0.051	1
Benzo(ghi)perylene	0.050	J	mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	86		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/15/22 08:27  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 08/14/22 19:53

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1675169-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		25-120
Phenol-d6	61		10-120
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	55		30-120
2,4,6-Tribromophenol	62		10-136
4-Terphenyl-d14	58		18-120



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1675169-2 WG1675169-3								
Naphthalene	73		80		40-140	9		50
Fluorene	75		81		40-140	8		50
Phenanthrene	72		77		40-140	7		50
Anthracene	74		80		40-140	8		50
Pyrene	73		80		35-142	9		50
Benzo(a)anthracene	72		77		40-140	7		50
Chrysene	73		79		40-140	8		50
Benzo(b)fluoranthene	78		84		40-140	7		50
Benzo(a)pyrene	80		85		40-140	6		50
Benzo(ghi)perylene	76		82		40-140	8		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	79		89		25-120
Phenol-d6	80		92		10-120
Nitrobenzene-d5	78		89		23-120
2-Fluorobiphenyl	78		87		30-120
2,4,6-Tribromophenol	92		105		10-136
4-Terphenyl-d14	78		86		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-02  
 Client ID: 301-W02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	59.7		mg/kg	2.22	0.119	1	08/15/22 20:26	08/19/22 08:44	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-04  
 Client ID: 301-W02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:40  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	35.5		mg/kg	2.19	0.117	1	08/15/22 20:26	08/19/22 08:30	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243661

**Project Number:** 200.00135.006

**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-06

Date Collected: 08/12/22 09:50

Client ID: 301-W02-C3-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	19.0		mg/kg	2.15	0.115	1	08/15/22 20:26	08/19/22 08:34	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-08  
 Client ID: 301-W02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 10:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.08		mg/kg	2.06	0.110	1	08/15/22 20:26	08/19/22 08:39	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243661

**Project Number:** 200.00135.006

**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-10

Date Collected: 08/12/22 10:10

Client ID: 301-W02-C5-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.78		mg/kg	2.45	0.131	1	08/15/22 20:26	08/19/22 09:18	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-12  
 Client ID: 301-X02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	70.9		mg/kg	2.28	0.122	1	08/15/22 20:26	08/19/22 09:23	EPA 3050B	1,6010D	ZK





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-14  
 Client ID: 301-X02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.39		mg/kg	4.64	0.249	2	08/15/22 20:26	08/19/22 10:44	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243661

**Project Number:** 200.00135.006

**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-16

Date Collected: 08/12/22 11:20

Client ID: 301-X02-C3-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.82		mg/kg	2.19	0.117	1	08/15/22 20:26	08/19/22 09:32	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-18  
 Client ID: 301-X02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.2	J	mg/kg	11.5	0.616	5	08/15/22 20:26	08/19/22 10:48	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-20  
 Client ID: 301-X02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:40  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.38		mg/kg	2.33	0.125	1	08/15/22 20:26	08/19/22 09:42	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243661

**Project Number:** 200.00135.006

**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-22

Date Collected: 08/12/22 12:00

Client ID: 301-Y02-C1-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	86.3		mg/kg	2.33	0.125	1	08/15/22 20:26	08/19/22 09:46	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243661

**Project Number:** 200.00135.006

**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-24

Date Collected: 08/12/22 12:10

Client ID: 301-Y02-C2-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.4		mg/kg	2.43	0.130	1	08/15/22 20:26	08/19/22 09:51	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-26  
 Client ID: 301-Y02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:20  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.61		mg/kg	2.40	0.129	1	08/15/22 20:26	08/19/22 09:56	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-28  
 Client ID: 301-Y02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:30  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.62		mg/kg	2.40	0.129	1	08/15/22 20:26	08/19/22 10:01	EPA 3050B	1,6010D	DL





Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1675076-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/15/22 20:26	08/19/22 08:20	1,6010D	ZK

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1675076-2 SRM Lot Number: D113-540								
Lead, Total	79		-		72-128			-

**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>MSD Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>MSD Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>RPD Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1675076-3 QC Sample: L2243661-02 Client ID: 301-W02-C1-COMP												
Lead, Total	59.7	47.4	99.6	84	-	-	-	-	75-125	-	-	20

**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2243661

**Report Date:** 08/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1675076-4 QC Sample: L2243661-02 Client ID: 301-W02-C1-COMP						
Lead, Total	59.7	49.3	mg/kg	19		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

**Lab ID:** L2243661-01  
**Client ID:** 301-W02-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/12/22 09:30  
**Date Received:** 08/12/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.2		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-02

Date Collected: 08/12/22 09:30

Client ID: 301-W02-C1-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-03

Date Collected: 08/12/22 09:40

Client ID: 301-W02-C2-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.4		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-04

Date Collected: 08/12/22 09:40

Client ID: 301-W02-C2-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-05

Date Collected: 08/12/22 09:50

Client ID: 301-W02-C3-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-06  
 Client ID: 301-W02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 09:50  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.4		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-07

Date Collected: 08/12/22 10:00

Client ID: 301-W02-C4-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

**Lab ID:** L2243661-08  
**Client ID:** 301-W02-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/12/22 10:00  
**Date Received:** 08/12/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.0		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-09

Date Collected: 08/12/22 10:10

Client ID: 301-W02-C5-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-10

Date Collected: 08/12/22 10:10

Client ID: 301-W02-C5-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-11

Date Collected: 08/12/22 11:00

Client ID: 301-X02-C1-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.7		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

**Lab ID:** L2243661-12  
**Client ID:** 301-X02-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/12/22 11:00  
**Date Received:** 08/12/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.3		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-13

Date Collected: 08/12/22 11:10

Client ID: 301-X02-C2-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-14  
 Client ID: 301-X02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:10  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.9		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-15

Date Collected: 08/12/22 11:20

Client ID: 301-X02-C3-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-16  
 Client ID: 301-X02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 11:20  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-17

Date Collected: 08/12/22 11:30

Client ID: 301-X02-C4-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.7		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-18

Date Collected: 08/12/22 11:30

Client ID: 301-X02-C4-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.9		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-19

Date Collected: 08/12/22 11:40

Client ID: 301-X02-C5-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-20

Date Collected: 08/12/22 11:40

Client ID: 301-X02-C5-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

Lab ID: L2243661-21  
 Client ID: 301-Y02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/12/22 12:00  
 Date Received: 08/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-22

Date Collected: 08/12/22 12:00

Client ID: 301-Y02-C1-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-23

Date Collected: 08/12/22 12:10

Client ID: 301-Y02-C2-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-24

Date Collected: 08/12/22 12:10

Client ID: 301-Y02-C2-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-25

Date Collected: 08/12/22 12:20

Client ID: 301-Y02-C3-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

**SAMPLE RESULTS**

**Lab ID:** L2243661-26  
**Client ID:** 301-Y02-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/12/22 12:20  
**Date Received:** 08/12/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**SAMPLE RESULTS**

Lab ID: L2243661-27

Date Collected: 08/12/22 12:30

Client ID: 301-Y02-C4-VOC

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.6		%	0.100	NA	1	-	08/13/22 10:18	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2243661

Project Number: 200.00135.006

Report Date: 08/19/22

## SAMPLE RESULTS

Lab ID: L2243661-28

Date Collected: 08/12/22 12:30

Client ID: 301-Y02-C4-COMP

Date Received: 08/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.4		%	0.100	NA	1	-	08/13/22 13:35	121,2540G	RI



### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21,23,25,27 QC Batch ID: WG1674849-1 QC Sample: L2243661-01 Client ID: 301-W02-C1-VOC						
Solids, Total	91.2	90.5	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1674923-1 QC Sample: L2243661-02 Client ID: 301-W02-C1-COMP						
Solids, Total	88.6	87.2	%	2		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243661-01A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-01B	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-01C	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-01D	Plastic 120ml unpreserved	A	NA		2.6	Y	Absent		TS(7)
L2243661-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2243661-02B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-03A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-03B	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-03C	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-03D	Plastic 120ml unpreserved	A	NA		2.6	Y	Absent		TS(7)
L2243661-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2243661-04B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-05A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-05B	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-05C	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-05D	Plastic 120ml unpreserved	A	NA		2.6	Y	Absent		TS(7)
L2243661-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2243661-06B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-07A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-07B	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-07C	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-07D	Plastic 120ml unpreserved	A	NA		2.6	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243661-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2243661-08B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-09A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-09B	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-09C	Vial water preserved	A	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-09D	Plastic 120ml unpreserved	A	NA		2.6	Y	Absent		TS(7)
L2243661-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2243661-10B	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-11A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-11B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-11C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-11D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-12B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-13A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-13B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-13C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-13D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-14B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-15A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-15B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-15C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-15D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-16B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-17A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-17B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243661**Project Number:** 200.00135.006**Report Date:** 08/19/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243661-17C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-17D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-18B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-19A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-19B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-19C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-19D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-20B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-21A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-21B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-21C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-21D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-22B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-23A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-23B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-23C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-23D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-24A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-24B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)
L2243661-25A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-25B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-25C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-25D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-26A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-26B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08192218:13  
**Lab Number:** L2243661  
**Report Date:** 08/19/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243661-27A	Vial MeOH preserved	B	NA		2.6	Y	Absent		PA-8260HLW(14)
L2243661-27B	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-27C	Vial water preserved	B	NA		2.6	Y	Absent	13-AUG-22 04:41	PA-8260HLW(14)
L2243661-27D	Plastic 120ml unpreserved	B	NA		2.6	Y	Absent		TS(7)
L2243661-28A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.6	Y	Absent		PB-TI(180)
L2243661-28B	Glass 120ml/4oz unpreserved	B	NA		2.6	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243661  
**Report Date:** 08/19/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-698-9220 TEL: 508-822-9300  
 FAX: 508-698-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilco-global.com

Date Rec'd in Lab: 8/13/22

ALPHA Job #: L 2243661

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	8260 - VOCs	8270 - SVOCs	LEAD											
43661-01	301-W02-C1-VOC	8/12	0930	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-02	301-W02-C1-Camp		0930			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-03	301-W02-C2-VOC		0940			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-04	301-W02-C2-Camp		0940			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-05	301-W02-C3-VOC		0950			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-06	301-W02-C3-Camp		0950			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-07	301-W02-C4-VOC		1000			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-08	301-W02-C4-Camp		1000			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-09	301-W02-C5-VOC		1010			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	301-W02-C5-Camp		1010			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### SAMPLE HANDLING

- Filtration
- Done
- Not Needed
- Lab to do
- Lab to do (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Handwritten signatures and dates: Relinquished By: [Signature] 8/12 13:40; Received By: [Signature] 8/12/22 18:10; Relinquished By: [Signature] 8-12-22; Received By: [Signature] 8/12/22 23:40

# CHAIN OF CUSTODY

PAGE 2 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 *18559*

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:   
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/13/22

ALPHA Job #: L 2243661

## Report Information Data Deliverables

FAX  EMAIL  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	8210 - VOCs	8270 - SVOCs	LEAD											
4x661-11	301-X02-C1-VOC	8/12	1100	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
72	301-X02-C1-Comp		1100	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73	301-X02-C2-VOC		1110	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74	301-X02-C2-Comp		1110	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
75	301-X02-C3-VOC		1120	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
76	301-X02-C3-Comp		1120	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
77	301-X02-C4-VOC		1130	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
78	301-X02-C4-Comp		1130	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
79	301-X02-C5-VOC		1140	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	301-X02-C5-Comp		1140	S		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/12/22 13:00	<i>[Signature]</i>	8/12/22 13:00
<i>[Signature]</i>	8/12/22 18:15	<i>[Signature]</i>	8/12/22 18:15
<i>[Signature]</i>	8/12/22	<i>[Signature]</i>	8/12/22 23:40

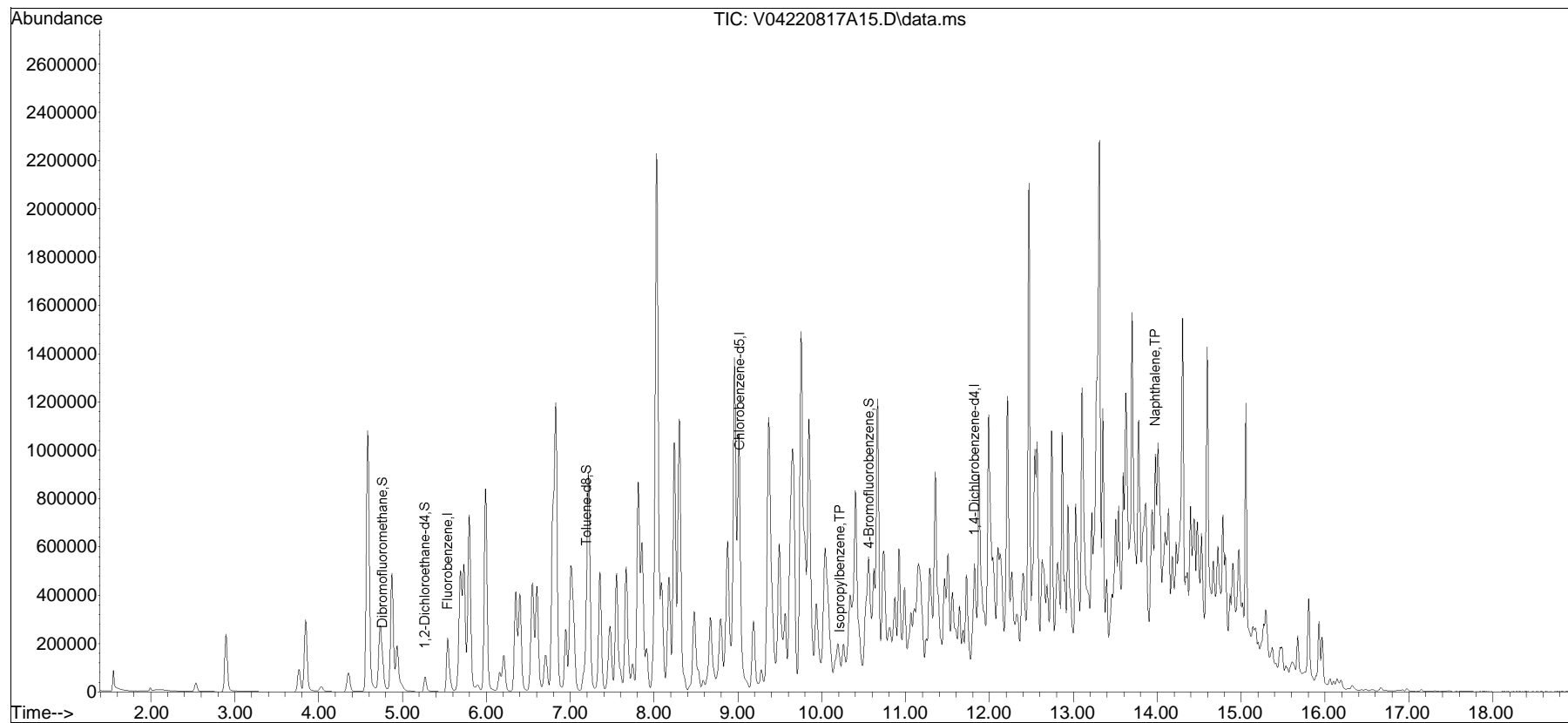


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220817A\  
Data File : V04220817A15.D  
Acq On : 17 Aug 2022 1:11 pm  
Operator : VOA104:AJK  
Sample : L2243661-19,31H,5.84,5,0.100,,A  
Misc : WG1676798,ICAL19119  
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 17 17:02:36 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220817A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17A\V04220817A01.D•

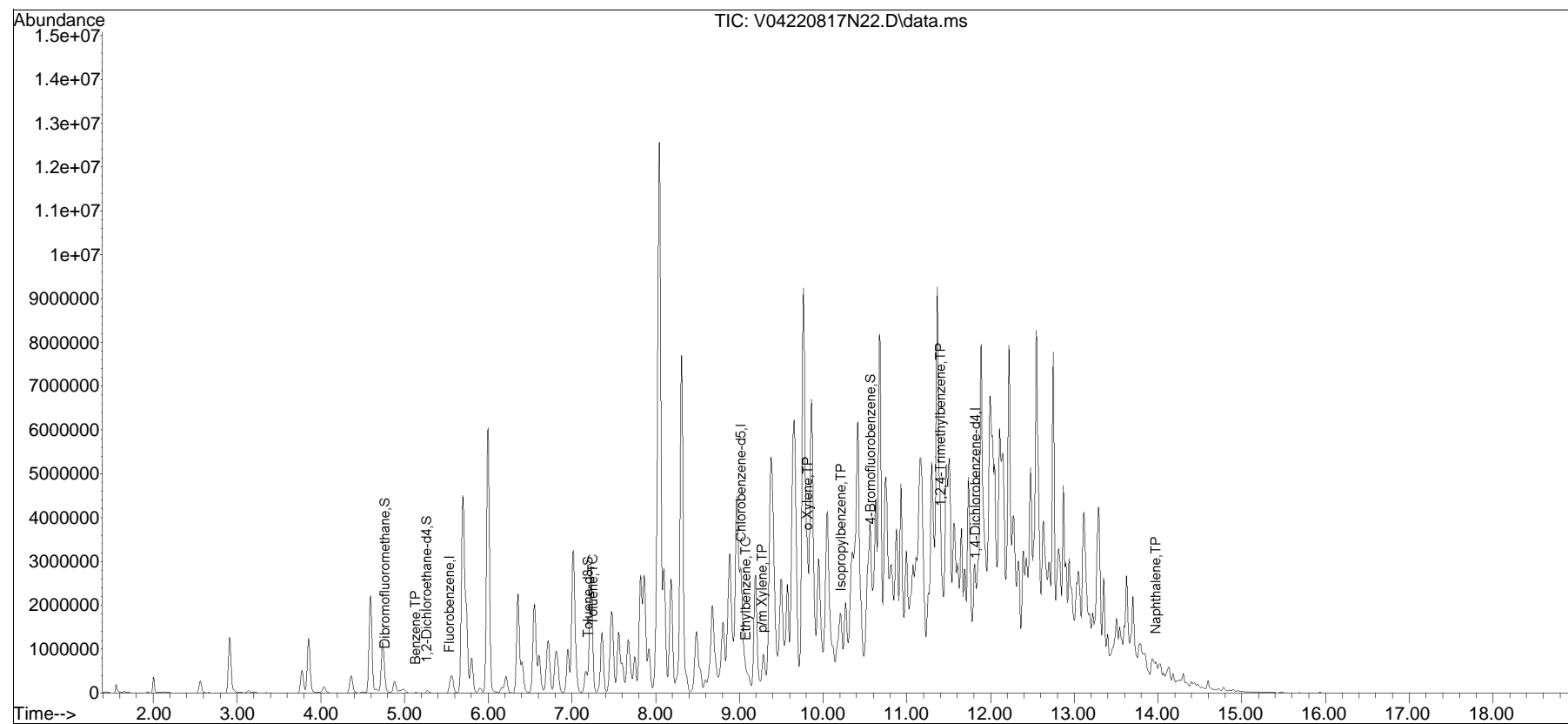


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220817N\  
Data File : V04220817N22.D  
Acq On : 18 Aug 2022 3:59 am  
Operator : VOA104:NLK  
Sample : L2243661-21,31,5.76,5,,B  
Misc : WG1676816,ICAL19119  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 18 08:44:35 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220817N\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17N\V04220817N01.D•



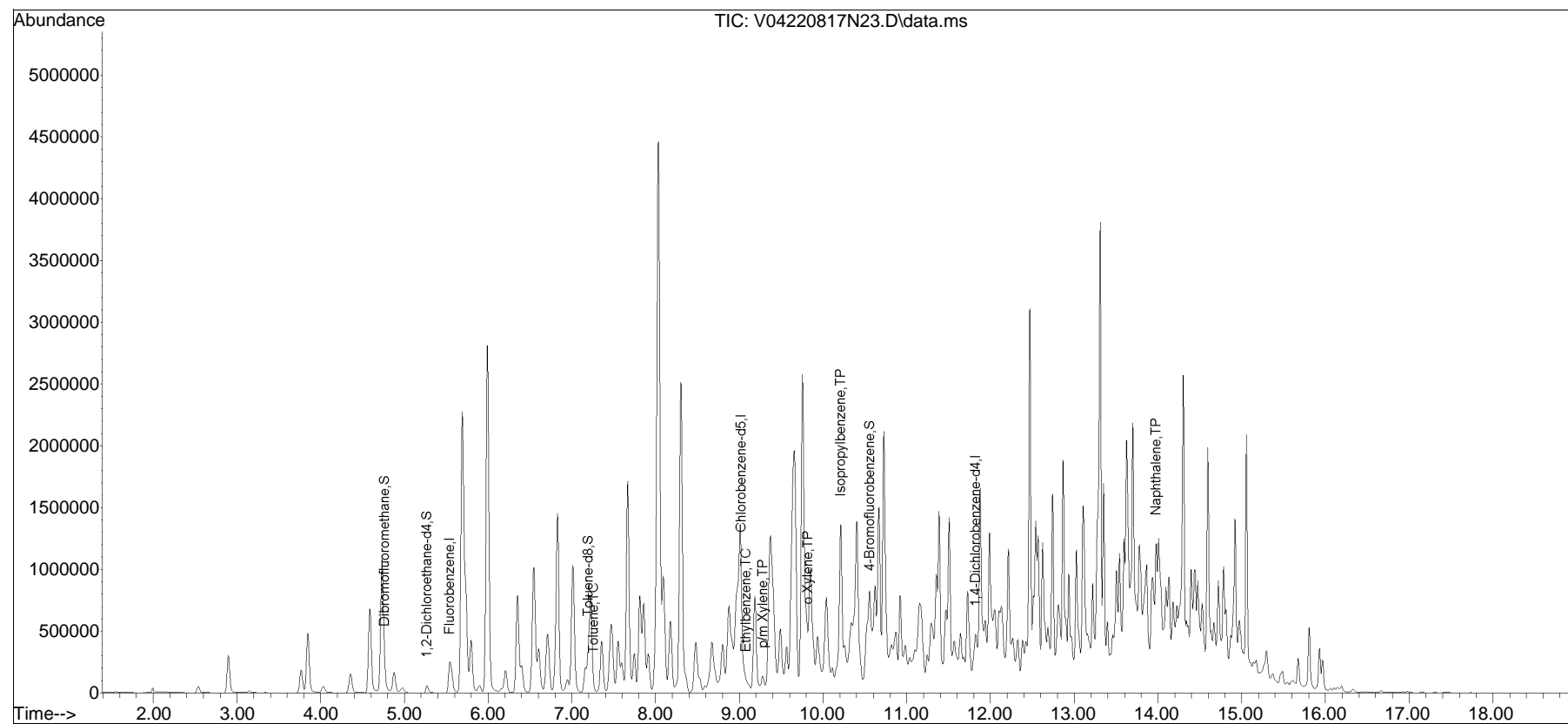


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220817N\  
Data File : V04220817N23.D  
Acq On : 18 Aug 2022 4:25 am  
Operator : VOA104:NLK  
Sample : L2243661-23,31H,6.16,5,0.100,,A  
Misc : WG1676817,ICAL19119  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Aug 18 08:44:49 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220817N\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17N\V04220817N01.D•

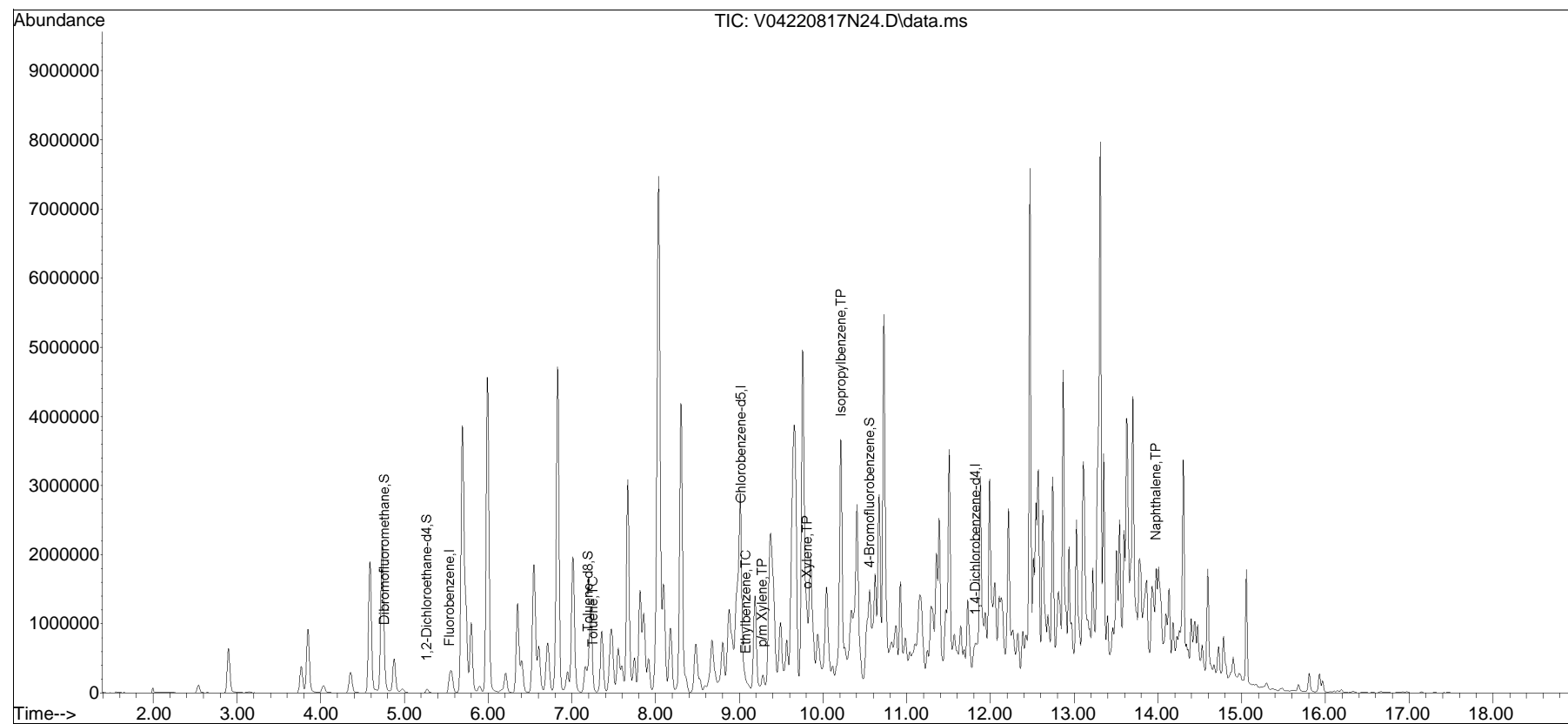


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220817N\  
Data File : V04220817N24.D  
Acq On : 18 Aug 2022 4:52 am  
Operator : VOA104:NLK  
Sample : L2243661-25,31H,6.27,5,0.100,,A  
Misc : WG1676817,ICAL19119  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Aug 18 08:45:07 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220817N\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17N\V04220817N01.D•

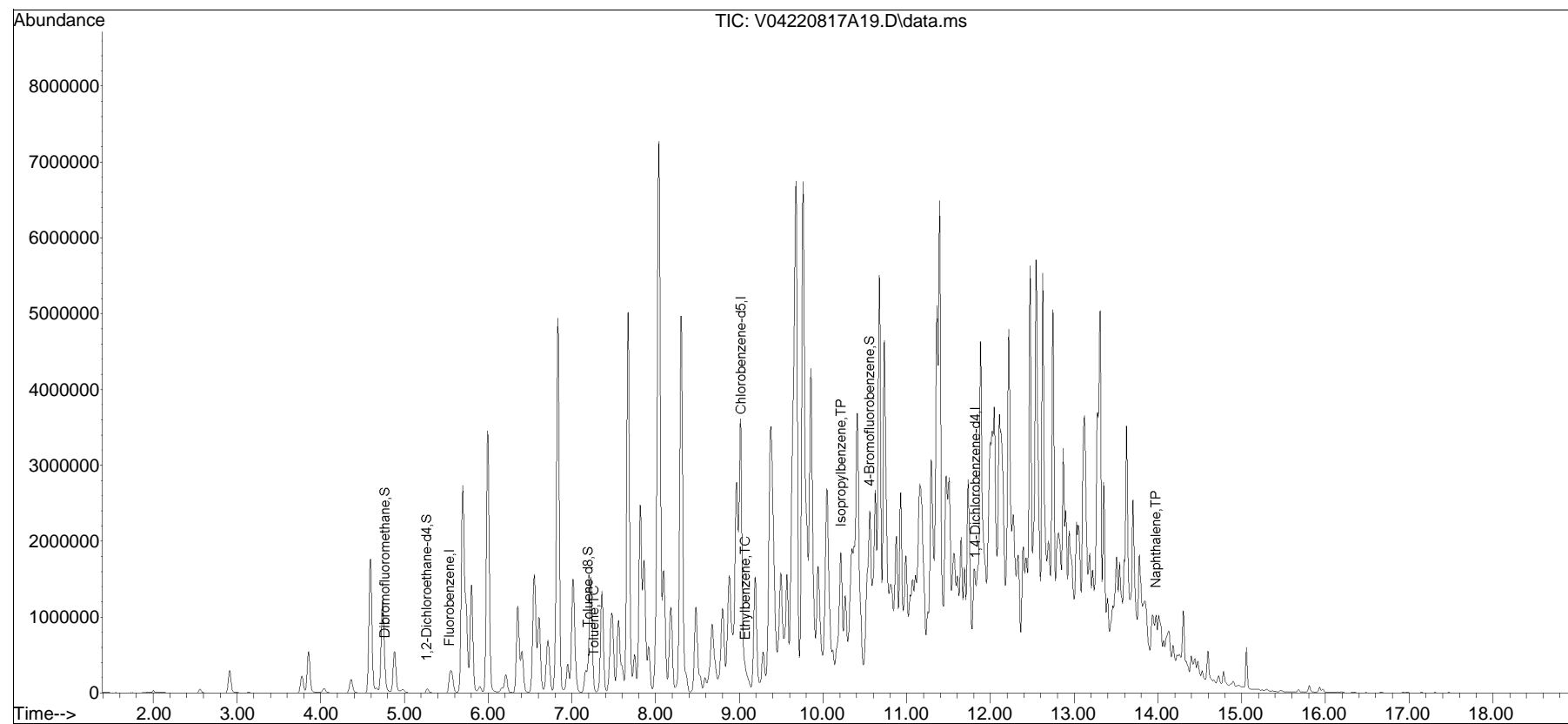


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220817A\  
Data File : V04220817A19.D  
Acq On : 17 Aug 2022 2:55 pm  
Operator : VOA104:AJK  
Sample : L2243661-27D,31H,5.77,5,0.010,,A  
Misc : WG1676798,ICAL19119  
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 18 09:18:34 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220817A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17A\V04220817A01.D•





## ANALYTICAL REPORT

Lab Number:	L2243873
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/22/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2243873-01	301-AB01-C1-VOC	SOIL	PHILADELPHIA, PA	08/15/22 09:30	08/15/22
L2243873-02	301-AB01-C1-COMP	SOIL	PHILADELPHIA, PA	08/15/22 09:30	08/15/22
L2243873-03	301-AB01-C2-VOC	SOIL	PHILADELPHIA, PA	08/15/22 09:45	08/15/22
L2243873-04	301-AB01-C2-COMP	SOIL	PHILADELPHIA, PA	08/15/22 09:45	08/15/22
L2243873-05	301-AB01-C3-VOC	SOIL	PHILADELPHIA, PA	08/15/22 10:00	08/15/22
L2243873-06	301-AB01-C3-COMP	SOIL	PHILADELPHIA, PA	08/15/22 10:00	08/15/22
L2243873-07	301-AB01-C4-VOC	SOIL	PHILADELPHIA, PA	08/15/22 10:10	08/15/22
L2243873-08	301-AB01-C4-COMP	SOIL	PHILADELPHIA, PA	08/15/22 10:10	08/15/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Steven Gniadek

Title: Technical Director/Representative

Date: 08/22/22

# ORGANICS



# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-01  
 Client ID: 301-AB01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 09:30  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 11:45  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00079	0.00020	1
Toluene	ND		mg/kg	0.00079	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	ND		mg/kg	0.00079	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00044	1
o-Xylene	ND		mg/kg	0.00079	0.00023	1
Xylenes, Total	ND		mg/kg	0.00079	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00079	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-03  
 Client ID: 301-AB01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 09:45  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 12:05  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-05  
 Client ID: 301-AB01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 10:00  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 12:26  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0015	0.00015	1
Benzene	ND		mg/kg	0.00038	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00076	0.00020	1
Toluene	ND		mg/kg	0.00076	0.00041	1
1,2-Dibromoethane	ND		mg/kg	0.00038	0.00022	1
Ethylbenzene	ND		mg/kg	0.00076	0.00011	1
p/m-Xylene	ND		mg/kg	0.0015	0.00043	1
o-Xylene	ND		mg/kg	0.00076	0.00022	1
Xylenes, Total	ND		mg/kg	0.00076	0.00022	1
Isopropylbenzene	ND		mg/kg	0.00076	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0015	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0015	0.00025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-07  
 Client ID: 301-AB01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 10:10  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/17/22 12:47  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00024	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00027	1
Xylenes, Total	ND		mg/kg	0.00091	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/17/22 11:11  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07 Batch: WG1676803-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	111		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2243873

Project Number: 200.00135.006

Report Date: 08/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07 Batch: WG1676803-3 WG1676803-4								
Methyl tert butyl ether	70		70		66-130	0		30
Benzene	88		87		70-130	1		30
1,2-Dichloroethane	90		89		70-130	1		30
Toluene	90		93		70-130	3		30
1,2-Dibromoethane	83		84		70-130	1		30
Ethylbenzene	94		96		70-130	2		30
p/m-Xylene	96		98		70-130	2		30
o-Xylene	95		97		70-130	2		30
Isopropylbenzene	95		98		70-130	3		30
1,3,5-Trimethylbenzene	98		101		70-130	3		30
1,2,4-Trimethylbenzene	99		102		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		91		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	96		98		70-130
Dibromofluoromethane	87		89		70-130

# SEMIVOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-02  
 Client ID: 301-AB01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 09:30  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/19/22 22:34  
 Analyst: EK  
 Percent Solids: 97%

Extraction Method: EPA 3546  
 Extraction Date: 08/17/22 01:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.017	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-04  
 Client ID: 301-AB01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 09:45  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/19/22 22:58  
 Analyst: EK  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/17/22 01:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	43		30-120
4-Terphenyl-d14	47		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-06  
 Client ID: 301-AB01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 10:00  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/19/22 23:21  
 Analyst: EK  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/17/22 01:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	74		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-08  
 Client ID: 301-AB01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 10:10  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/19/22 23:45  
 Analyst: EK  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/17/22 01:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	42		30-120
4-Terphenyl-d14	44		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/19/22 21:24  
Analyst: EK

Extraction Method: EPA 3546  
Extraction Date: 08/17/22 01:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1676057-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	32		30-120
4-Terphenyl-d14	40		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1676057-2 WG1676057-3								
Naphthalene	58		56		40-140	4		50
Fluorene	61		60		40-140	2		50
Phenanthrene	58		58		40-140	0		50
Anthracene	60		59		40-140	2		50
Pyrene	62		63		35-142	2		50
Benzo(a)anthracene	58		57		40-140	2		50
Chrysene	57		56		40-140	2		50
Benzo(b)fluoranthene	58		58		40-140	0		50
Benzo(a)pyrene	58		58		40-140	0		50
Benzo(ghi)perylene	59		58		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	89		86		23-120
2-Fluorobiphenyl	63		62		30-120
4-Terphenyl-d14	65		68		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-02  
 Client ID: 301-AB01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 09:30  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.68		mg/kg	1.95	0.104	1	08/16/22 21:25	08/22/22 09:25	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243873

**Project Number:** 200.00135.006

**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-04

Date Collected: 08/15/22 09:45

Client ID: 301-AB01-C2-COMP

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.99		mg/kg	2.32	0.124	1	08/16/22 21:25	08/22/22 12:45	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243873

**Project Number:** 200.00135.006

**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-06

Date Collected: 08/15/22 10:00

Client ID: 301-AB01-C3-COMP

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.02		mg/kg	2.25	0.121	1	08/16/22 21:25	08/22/22 12:50	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

Lab ID: L2243873-08  
 Client ID: 301-AB01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/15/22 10:10  
 Date Received: 08/15/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.22		mg/kg	2.29	0.122	1	08/16/22 21:25	08/22/22 12:55	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243873

Project Number: 200.00135.006

Report Date: 08/22/22

## Method Blank Analysis Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1675792-1										
Lead, Total	0.117	J	mg/kg	2.08	0.112	1	08/16/22 21:25	08/22/22 10:48	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1675792-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08    QC Batch ID: WG1675792-3    QC Sample: L2243899-05    Client ID: MS Sample												
Lead, Total	1330	45	288	0	Q	-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2243873

Report Date: 08/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1675792-4 QC Sample: L2243899-05 Client ID: DUP Sample						
Lead, Total	1330	1110	mg/kg	18		20

# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

**SAMPLE RESULTS**

**Lab ID:** L2243873-01  
**Client ID:** 301-AB01-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/15/22 09:30  
**Date Received:** 08/15/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243873**Project Number:** 200.00135.006**Report Date:** 08/22/22**SAMPLE RESULTS**

Lab ID: L2243873-02

Date Collected: 08/15/22 09:30

Client ID: 301-AB01-C1-COMP

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.8		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243873**Project Number:** 200.00135.006**Report Date:** 08/22/22**SAMPLE RESULTS**

Lab ID: L2243873-03

Date Collected: 08/15/22 09:45

Client ID: 301-AB01-C2-VOC

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.9		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243873

Project Number: 200.00135.006

Report Date: 08/22/22

## SAMPLE RESULTS

Lab ID: L2243873-04

Date Collected: 08/15/22 09:45

Client ID: 301-AB01-C2-COMP

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243873**Project Number:** 200.00135.006**Report Date:** 08/22/22**SAMPLE RESULTS**

Lab ID: L2243873-05

Date Collected: 08/15/22 10:00

Client ID: 301-AB01-C3-VOC

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243873**Project Number:** 200.00135.006**Report Date:** 08/22/22**SAMPLE RESULTS**

Lab ID: L2243873-06

Date Collected: 08/15/22 10:00

Client ID: 301-AB01-C3-COMP

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.1		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243873**Project Number:** 200.00135.006**Report Date:** 08/22/22**SAMPLE RESULTS**

Lab ID: L2243873-07

Date Collected: 08/15/22 10:10

Client ID: 301-AB01-C4-VOC

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2243873

Project Number: 200.00135.006

Report Date: 08/22/22

## SAMPLE RESULTS

Lab ID: L2243873-08

Date Collected: 08/15/22 10:10

Client ID: 301-AB01-C4-COMP

Date Received: 08/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	08/16/22 12:26	121,2540G	RI





## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2243873

**Report Date:** 08/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1675744-1 QC Sample: L2243873-01 Client ID: 301-AB01-C1-VOC						
Solids, Total	84.5	84.6	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2243873**Project Number:** 200.00135.006**Report Date:** 08/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243873-01A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2243873-01B	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-01C	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-01D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2243873-02A	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2243873-02B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2243873-03A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2243873-03B	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-03C	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-03D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2243873-04A	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2243873-04B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2243873-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2243873-05B	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-05C	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-05D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2243873-06A	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2243873-06B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2243873-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2243873-07B	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-07C	Vial water preserved	A	NA		2.7	Y	Absent	16-AUG-22 07:13	PA-8260HLW(14)
L2243873-07D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08222219:16  
**Lab Number:** L2243873  
**Report Date:** 08/22/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2243873-08A	Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2243873-08B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2243873  
**Report Date:** 08/22/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2243873

**Project Number:** 200.00135.006

**Report Date:** 08/22/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 1 OF 1

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/16/22

ALPHA Job #: L2243873

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOLs - 8220	SVOCs - 8270	LEAD												
43873-01	301 - AB01-C1-VOC	8/15	0930	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02	301 - AB01-C1-Comp		0930			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03	301 - AB01-C2-VOC		0945			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04	301 - AB01-C2-Comp		0945			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05	301 - AB01-C3-VOC		0900			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06	301 - AB01-C3-Comp		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07	301 - AB01-C4-VOC		1010			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
08	301 - AB01-C4-Comp		1010			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

AB01-C3

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/15 1350	<i>[Signature]</i>	8/15/22 1350
<i>[Signature]</i>	8/15/22 1350	<i>[Signature]</i>	8/15/22 1350
<i>[Signature]</i>	8/15/22 1350	<i>[Signature]</i>	8/15/22 2300

**PADEP Short List Analytical Suites per Table III-5:**

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



## ANALYTICAL REPORT

Lab Number:	L2244180
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/23/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2244180-01	301-AC02-C1-VOC	SOIL	PHILADELPHIA, PA	08/16/22 10:45	08/16/22
L2244180-02	301-AC02-C1-COMP	SOIL	PHILADELPHIA, PA	08/16/22 10:45	08/16/22
L2244180-03	301-AC02-C2-VOC	SOIL	PHILADELPHIA, PA	08/16/22 11:00	08/16/22
L2244180-04	301-AC02-C2-COMP	SOIL	PHILADELPHIA, PA	08/16/22 11:00	08/16/22
L2244180-05	301-AC02-C3-VOC	SOIL	PHILADELPHIA, PA	08/16/22 11:15	08/16/22
L2244180-06	301-AC02-C3-COMP	SOIL	PHILADELPHIA, PA	08/16/22 11:15	08/16/22
L2244180-07	301-AC02-C4-VOC	SOIL	PHILADELPHIA, PA	08/16/22 11:30	08/16/22
L2244180-08	301-AC02-C4-COMP	SOIL	PHILADELPHIA, PA	08/16/22 11:30	08/16/22
L2244180-09	301-AC02-C5-VOC	SOIL	PHILADELPHIA, PA	08/16/22 11:45	08/16/22
L2244180-10	301-AC02-C5-COMP	SOIL	PHILADELPHIA, PA	08/16/22 11:45	08/16/22
L2244180-11	302-AD03-C1-VOC	SOIL	PHILADELPHIA, PA	08/16/22 13:00	08/16/22
L2244180-12	302-AD03-C1-COMP	SOIL	PHILADELPHIA, PA	08/16/22 13:00	08/16/22
L2244180-13	302-AD03-C2-VOC	SOIL	PHILADELPHIA, PA	08/16/22 13:15	08/16/22
L2244180-14	302-AD03-C2-COMP	SOIL	PHILADELPHIA, PA	08/16/22 13:15	08/16/22
L2244180-15	302-AD03-C3-VOC	SOIL	PHILADELPHIA, PA	08/16/22 13:40	08/16/22
L2244180-16	302-AD03-C3-COMP	SOIL	PHILADELPHIA, PA	08/16/22 13:40	08/16/22
L2244180-17	302-AD03-C4-VOC	SOIL	PHILADELPHIA, PA	08/16/22 14:00	08/16/22
L2244180-18	302-AD03-C4-COMP	SOIL	PHILADELPHIA, PA	08/16/22 14:00	08/16/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2244180-09: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (inappropriate plastic) and preserved appropriately.

#### Total Metals

L2244180-14: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 08/23/22

# ORGANICS

# VOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-01  
 Client ID: 301-AC02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 10:45  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/19/22 14:06  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00024	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-03  
 Client ID: 301-AC02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:00  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 16:04  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-05  
 Client ID: 301-AC02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:15  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/20/22 00:45  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-07  
 Client ID: 301-AC02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:30  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/20/22 01:11  
 Analyst: NLK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-09  
 Client ID: 301-AC02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:45  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/18/22 17:20  
 Analyst: NLK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.062	0.0087	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.062	0.018	1
Xylenes, Total	ND		mg/kg	0.062	0.018	1
Isopropylbenzene	ND		mg/kg	0.062	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	111		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-09  
 Client ID: 301-AC02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:45  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 10:49  
 Analyst: NLK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0015	0.00015	1
Benzene	ND		mg/kg	0.00036	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.00073	0.00019	1
Toluene	ND		mg/kg	0.00073	0.00040	1
1,2-Dibromoethane	ND		mg/kg	0.00036	0.00021	1
Ethylbenzene	ND		mg/kg	0.00073	0.00010	1
p/m-Xylene	ND		mg/kg	0.0015	0.00041	1
o-Xylene	ND		mg/kg	0.00073	0.00021	1
Xylenes, Total	ND		mg/kg	0.00073	0.00021	1
Isopropylbenzene	ND		mg/kg	0.00073	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0015	0.00014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0015	0.00024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-11  
 Client ID: 302-AD03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:00  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/20/22 02:03  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	153	Q	70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-13  
 Client ID: 302-AD03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:15  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/20/22 02:29  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	132	Q	70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	102		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-15  
 Client ID: 302-AD03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:40  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/20/22 02:55  
 Analyst: NLK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00076	1
o-Xylene	ND		mg/kg	0.0014	0.00039	1
Xylenes, Total	ND		mg/kg	0.0014	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	139	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-17  
 Client ID: 302-AD03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 14:00  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 17:48  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	0.00030	J	mg/kg	0.0010	0.00029	1
Xylenes, Total	0.00030	J	mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00025	J	mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.00070	J	mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/19/22 20:25  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,07,11,13,15 Batch: WG1678058-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/19/22 07:59  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1678131-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/22/22 10:52  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,17 Batch: WG1678373-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/18/22 13:04  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1678506-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	112		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/23/22 08:14  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09 Batch: WG1678619-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,07,11,13,15 Batch: WG1678058-3 WG1678058-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		83		70-130	6		30
1,2-Dichloroethane	114		111		70-130	3		30
Toluene	85		81		70-130	5		30
1,2-Dibromoethane	85		86		70-130	1		30
Ethylbenzene	86		81		70-130	6		30
p/m-Xylene	87		82		70-130	6		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	88		83		70-130	6		30
1,3,5-Trimethylbenzene	92		87		70-130	6		30
1,2,4-Trimethylbenzene	93		88		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	127		126		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	98		97		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1678131-3 WG1678131-4								
Methyl tert butyl ether	90		85		66-130	6		30
Benzene	87		87		70-130	0		30
1,2-Dichloroethane	88		86		70-130	2		30
Toluene	82		82		70-130	0		30
1,2-Dibromoethane	87		86		70-130	1		30
Ethylbenzene	87		87		70-130	0		30
p/m-Xylene	87		87		70-130	0		30
o-Xylene	86		88		70-130	2		30
Isopropylbenzene	89		87		70-130	2		30
1,3,5-Trimethylbenzene	89		86		70-130	3		30
1,2,4-Trimethylbenzene	89		85		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		100		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	100		96		70-130
Dibromofluoromethane	98		98		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,17 Batch: WG1678373-3 WG1678373-4								
Methyl tert butyl ether	92		94		66-130	2		30
Benzene	98		98		70-130	0		30
1,2-Dichloroethane	90		91		70-130	1		30
Toluene	104		104		70-130	0		30
1,2-Dibromoethane	100		101		70-130	1		30
Ethylbenzene	104		105		70-130	1		30
p/m-Xylene	108		108		70-130	0		30
o-Xylene	108		108		70-130	0		30
Isopropylbenzene	105		104		70-130	1		30
1,3,5-Trimethylbenzene	108		107		70-130	1		30
1,2,4-Trimethylbenzene	108		107		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		98		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	100		100		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1678506-3 WG1678506-4								
Methyl tert butyl ether	65	Q	60	Q	66-130	8		30
Benzene	81		79		70-130	3		30
1,2-Dichloroethane	83		80		70-130	4		30
Toluene	84		82		70-130	2		30
1,2-Dibromoethane	76		72		70-130	5		30
Ethylbenzene	90		87		70-130	3		30
p/m-Xylene	90		88		70-130	2		30
o-Xylene	88		87		70-130	1		30
Isopropylbenzene	91		86		70-130	6		30
1,3,5-Trimethylbenzene	92		88		70-130	4		30
1,2,4-Trimethylbenzene	92		88		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		91		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	96		95		70-130
Dibromofluoromethane	91		88		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09 Batch: WG1678619-3 WG1678619-4								
Methyl tert butyl ether	84		80		66-130	5		30
Benzene	89		85		70-130	5		30
1,2-Dichloroethane	90		86		70-130	5		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	87		83		70-130	5		30
Ethylbenzene	88		84		70-130	5		30
p/m-Xylene	87		83		70-130	5		30
o-Xylene	88		84		70-130	5		30
Isopropylbenzene	89		84		70-130	6		30
1,3,5-Trimethylbenzene	90		86		70-130	5		30
1,2,4-Trimethylbenzene	89		84		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		103		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	98		99		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-02  
 Client ID: 301-AC02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 10:45  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 16:10  
 Analyst: EK  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.050	J	mg/kg	0.19	0.023	1
Fluorene	0.027	J	mg/kg	0.19	0.018	1
Phenanthrene	0.35		mg/kg	0.11	0.023	1
Anthracene	0.087	J	mg/kg	0.11	0.037	1
Pyrene	0.73		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.46		mg/kg	0.11	0.021	1
Chrysene	0.46		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.64		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.56		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.38		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-04  
 Client ID: 301-AC02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:00  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 16:33  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-06  
 Client ID: 301-AC02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:15  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 16:57  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	58		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-08  
 Client ID: 301-AC02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:30  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 17:20  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-10  
 Client ID: 301-AC02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 11:45  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 20:28  
 Analyst: EK  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.087	J	mg/kg	0.18	0.022	1
Fluorene	0.14	J	mg/kg	0.18	0.017	1
Phenanthrene	0.28		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.062	J	mg/kg	0.10	0.018	1
Benzo(a)anthracene	0.033	J	mg/kg	0.10	0.020	1
Chrysene	0.034	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.035	J	mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-12  
 Client ID: 302-AD03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:00  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 20:51  
 Analyst: EK  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	121	Q	23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-14  
 Client ID: 302-AD03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:15  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 21:15  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-16  
 Client ID: 302-AD03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:40  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 21:38  
 Analyst: EK  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-18  
 Client ID: 302-AD03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 14:00  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/20/22 22:02  
 Analyst: EK  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/20/22 11:27  
Analyst: EK

Extraction Method: EPA 3546  
Extraction Date: 08/18/22 20:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1677036-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	100		18-120

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1677036-2 WG1677036-3								
Naphthalene	73		82		40-140	12		50
Fluorene	77		86		40-140	11		50
Phenanthrene	75		82		40-140	9		50
Anthracene	78		85		40-140	9		50
Pyrene	81		90		35-142	11		50
Benzo(a)anthracene	74		80		40-140	8		50
Chrysene	73		80		40-140	9		50
Benzo(b)fluoranthene	73		80		40-140	9		50
Benzo(a)pyrene	73		82		40-140	12		50
Benzo(ghi)perylene	75		82		40-140	9		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	110		120		23-120
2-Fluorobiphenyl	78		84		30-120
4-Terphenyl-d14	83		92		18-120





## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-02  
 Client ID: 301-AC02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 10:45  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	74.8		mg/kg	2.31	0.124	1	08/17/22 22:10	08/23/22 14:45	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-04

Date Collected: 08/16/22 11:00

Client ID: 301-AC02-C2-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.14		mg/kg	2.36	0.127	1	08/17/22 22:10	08/23/22 14:50	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-06

Date Collected: 08/16/22 11:15

Client ID: 301-AC02-C3-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.74		mg/kg	2.40	0.129	1	08/17/22 22:10	08/23/22 14:55	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-08

Date Collected: 08/16/22 11:30

Client ID: 301-AC02-C4-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.74		mg/kg	2.28	0.122	1	08/17/22 22:10	08/23/22 15:00	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-10

Date Collected: 08/16/22 11:45

Client ID: 301-AC02-C5-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	35.8		mg/kg	2.10	0.112	1	08/17/22 22:10	08/23/22 15:46	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-12

Date Collected: 08/16/22 13:00

Client ID: 302-AD03-C1-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.59		mg/kg	2.24	0.120	1	08/17/22 22:10	08/23/22 15:50	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-14

Date Collected: 08/16/22 13:15

Client ID: 302-AD03-C2-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.16		mg/kg	4.68	0.251	2	08/17/22 22:10	08/23/22 16:32	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-16  
 Client ID: 302-AD03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/16/22 13:40  
 Date Received: 08/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.17		mg/kg	2.22	0.119	1	08/17/22 22:10	08/23/22 16:00	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

**SAMPLE RESULTS**

Lab ID: L2244180-18

Date Collected: 08/16/22 14:00

Client ID: 302-AD03-C4-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.21		mg/kg	2.60	0.139	1	08/17/22 22:10	08/23/22 16:05	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1676419-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/17/22 22:10	08/23/22 13:23	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1676419-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1676419-3 WG1676419-4 QC Sample: L2200081-76 Client ID: MS Sample												
Lead, Total	17.0	42	52.7	85		48.5	77		75-125	8		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-01

Date Collected: 08/16/22 10:45

Client ID: 301-AC02-C1-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.2		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-02

Date Collected: 08/16/22 10:45

Client ID: 301-AC02-C1-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-03

Date Collected: 08/16/22 11:00

Client ID: 301-AC02-C2-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-04

Date Collected: 08/16/22 11:00

Client ID: 301-AC02-C2-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-05

Date Collected: 08/16/22 11:15

Client ID: 301-AC02-C3-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.5		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-06

Date Collected: 08/16/22 11:15

Client ID: 301-AC02-C3-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.5		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-07

Date Collected: 08/16/22 11:30

Client ID: 301-AC02-C4-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

**Lab ID:** L2244180-08  
**Client ID:** 301-AC02-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/16/22 11:30  
**Date Received:** 08/16/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-09

Date Collected: 08/16/22 11:45

Client ID: 301-AC02-C5-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.2		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-10

Date Collected: 08/16/22 11:45

Client ID: 301-AC02-C5-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.5		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

**Lab ID:** L2244180-11  
**Client ID:** 302-AD03-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/16/22 13:00  
**Date Received:** 08/16/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.4		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-12

Date Collected: 08/16/22 13:00

Client ID: 302-AD03-C1-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.4		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**SAMPLE RESULTS**

Lab ID: L2244180-13

Date Collected: 08/16/22 13:15

Client ID: 302-AD03-C2-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-14

Date Collected: 08/16/22 13:15

Client ID: 302-AD03-C2-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-15

Date Collected: 08/16/22 13:40

Client ID: 302-AD03-C3-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.3		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-16

Date Collected: 08/16/22 13:40

Client ID: 302-AD03-C3-COMP

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244180

Project Number: 200.00135.006

Report Date: 08/23/22

## SAMPLE RESULTS

Lab ID: L2244180-17

Date Collected: 08/16/22 14:00

Client ID: 302-AD03-C4-VOC

Date Received: 08/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

**SAMPLE RESULTS**

**Lab ID:** L2244180-18  
**Client ID:** 302-AD03-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/16/22 14:00  
**Date Received:** 08/16/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.5		%	0.100	NA	1	-	08/17/22 11:20	121,2540G	RI





**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2244180

**Report Date:** 08/23/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1676251-1 QC Sample: L2244180-01 Client ID: 301-AC02-C1-VOC						
Solids, Total	89.2	90.5	%	1		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244180-01A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2244180-01B	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-01C	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-01D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2244180-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2244180-02B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2244180-03A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2244180-03B	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-03C	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-03D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2244180-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2244180-04B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2244180-05A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2244180-05B	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-05C	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-05D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2244180-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2244180-06B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2244180-07A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2244180-07B	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-07C	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-07D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244180**Project Number:** 200.00135.006**Report Date:** 08/23/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244180-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2244180-08B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2244180-09A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2244180-09B	Vial water preserved	B	NA		3.7	Y	Absent	17-AUG-22 08:56	PA-8260H(14),PA-8260HLW(14)
L2244180-09C	Vial water preserved	B	NA		3.7	Y	Absent	17-AUG-22 08:56	PA-8260H(14),PA-8260HLW(14)
L2244180-09D	Plastic 120ml unpreserved	B	NA		3.7	Y	Absent		TS(7)
L2244180-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2244180-10B	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2244180-11A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2244180-11B	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-11C	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-11D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2244180-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2244180-12B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2244180-13A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2244180-13B	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-13C	Vial water preserved	A	NA		3.1	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-13D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2244180-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2244180-14B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2244180-15A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2244180-15B	Vial water preserved	B	NA		3.7	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-15C	Vial water preserved	B	NA		3.7	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-15D	Plastic 120ml unpreserved	B	NA		3.7	Y	Absent		TS(7)
L2244180-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2244180-16B	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2244180-17A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2244180-17B	Vial water preserved	B	NA		3.7	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244180-17C	Vial water preserved	B	NA		3.7	Y	Absent	17-AUG-22 08:56	PA-8260HLW(14)
L2244180-17D	Plastic 120ml unpreserved	B	NA		3.7	Y	Absent		TS(7)
L2244180-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2244180-18B	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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**Report Date:** 08/23/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244180  
**Report Date:** 08/23/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244180

**Project Number:** 200.00135.006

**Report Date:** 08/23/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 2



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com**

Date Rec'd in Lab: 8/17/22

ALPHA Job #: L2244180

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 356Z

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_

Criteria \_\_\_\_\_

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Volcs - 8260	SVolcs - 8270	LEAD										
44180-01	301-AC02-C1-VoC	8/16	1045	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 02	301-AC02-C1-Comp		1045			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 03	301-AC02-C2-VoC		1100			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 04	301-AC02-C2-Comp		1100			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 05	301-AC02-C3-VoC		1115			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 06	301-AC02-C3-Comp		1115			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 07	301-AC02-C4-VoC		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 08	301-AC02-C4-Comp		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 09	301-AC02-C5-VoC		1145			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- 10	301-AC02-C5-Comp		1145			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/16 1605	<i>[Signature]</i>	8/16 22 1505
<i>[Signature]</i>	8/16 22 2100	<i>[Signature]</i>	8/16 22 2100
<i>[Signature]</i>	8/16 22 2100	<i>[Signature]</i>	8/17/22 0000

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 / 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/17/22

ALPHA Job #: 42244180

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs - 8260	SVOCs - 8270	LEAD											
44180-11	302-AD03-C1-VOC	8/16	1300	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-12	302-AD03-C1-Camp	8/16	1300	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-13	302-AD03-C2-VOC	8/16	1315	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-14	302-AD03-C2-Camp	8/16	1315	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-15	302-AD03-C3-VOC	8/16	1340	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-16	302-AD03-C3-Camp	8/16	1340	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-17	302-AD03-C4-VOC	8/16	1400	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-18	302-AD03-C4-Camp	8/16	1400	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type - - G - - - - -  
 Preservative - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/16 1505	<i>[Signature]</i>	8/16 1505
STONES AAL	8-16-22 / PUL	MP	8/16 1800
	8:16 2100	JPS	8-16-22 Jale

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

*[Handwritten notes and signatures at the bottom of the page]*



## ANALYTICAL REPORT

Lab Number:	L2244443
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/24/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2244443

Report Date: 08/24/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2244443-01	301-AC03-C1-VOC	SOIL	PHILADELPHIA, PA	08/17/22 10:30	08/17/22
L2244443-02	301-AC03-C1-COMP	SOIL	PHILADELPHIA, PA	08/17/22 10:30	08/17/22
L2244443-03	301-AC03-C2-VOC	SOIL	PHILADELPHIA, PA	08/17/22 10:40	08/17/22
L2244443-04	301-AC03-C2-COMP	SOIL	PHILADELPHIA, PA	08/17/22 10:40	08/17/22
L2244443-05	301-AC03-C3-VOC	SOIL	PHILADELPHIA, PA	08/17/22 10:50	08/17/22
L2244443-06	301-AC03-C3-COMP	SOIL	PHILADELPHIA, PA	08/17/22 10:50	08/17/22
L2244443-07	301-AC03-C4-VOC	SOIL	PHILADELPHIA, PA	08/17/22 11:00	08/17/22
L2244443-08	301-AC03-C4-COMP	SOIL	PHILADELPHIA, PA	08/17/22 11:00	08/17/22
L2244443-09	302-AD04-C1-VOC	SOIL	PHILADELPHIA, PA	08/17/22 12:20	08/17/22
L2244443-10	302-AD04-C1-COMP	SOIL	PHILADELPHIA, PA	08/17/22 12:20	08/17/22
L2244443-11	302-AD04-C2-VOC	SOIL	PHILADELPHIA, PA	08/17/22 12:30	08/17/22
L2244443-12	302-AD04-C2-COMP	SOIL	PHILADELPHIA, PA	08/17/22 12:30	08/17/22
L2244443-13	302-AD04-C3-VOC	SOIL	PHILADELPHIA, PA	08/17/22 12:40	08/17/22
L2244443-14	302-AD04-C3-COMP	SOIL	PHILADELPHIA, PA	08/17/22 12:40	08/17/22
L2244443-15	302-AD04-C4-VOC	SOIL	PHILADELPHIA, PA	08/17/22 12:50	08/17/22
L2244443-16	302-AD04-C4-COMP	SOIL	PHILADELPHIA, PA	08/17/22 12:50	08/17/22
L2244443-17	302-AD04-C5-VOC	SOIL	PHILADELPHIA, PA	08/17/22 13:00	08/17/22
L2244443-18	302-AD04-C5-COMP	SOIL	PHILADELPHIA, PA	08/17/22 13:00	08/17/22
L2244443-19	302-AD05-C1-VOC	SOIL	PHILADELPHIA, PA	08/17/22 13:20	08/17/22
L2244443-20	302-AD05-C1-COMP	SOIL	PHILADELPHIA, PA	08/17/22 13:20	08/17/22
L2244443-21	302-AD05-C2-VOC	SOIL	PHILADELPHIA, PA	08/17/22 13:30	08/17/22
L2244443-22	302-AD05-C2-COMP	SOIL	PHILADELPHIA, PA	08/17/22 13:30	08/17/22
L2244443-23	302-AD05-C3-VOC	SOIL	PHILADELPHIA, PA	08/17/22 13:40	08/17/22
L2244443-24	302-AD05-C3-COMP	SOIL	PHILADELPHIA, PA	08/17/22 13:40	08/17/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2244443-25	302-AD05-C4-VOC	SOIL	PHILADELPHIA, PA	08/17/22 13:50	08/17/22
L2244443-26	302-AD05-C4-COMP	SOIL	PHILADELPHIA, PA	08/17/22 13:50	08/17/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics


L2244443-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (172%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Total Metals

L2244443-16 and -22: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/24/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-01  
 Client ID: 301-AC03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 10:30  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 09:24  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-03  
 Client ID: 301-AC03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 10:40  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 09:44  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-05  
 Client ID: 301-AC03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 10:50  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 22:21  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-07  
 Client ID: 301-AC03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 11:00  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 10:26  
 Analyst: NLK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-09  
 Client ID: 302-AD04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:20  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 10:46  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00035	1
Benzene	ND		mg/kg	0.00086	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0034	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0034	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0034	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-11  
 Client ID: 302-AD04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:30  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 11:07  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-13  
 Client ID: 302-AD04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:40  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 11:28  
 Analyst: NLK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00070	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00076	1
1,2-Dibromoethane	ND		mg/kg	0.00070	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00078	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-15  
 Client ID: 302-AD04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:50  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 11:49  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-17  
 Client ID: 302-AD04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:00  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 12:10  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-19  
 Client ID: 302-AD05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:20  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 22:44  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.00054	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	0.00041	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00041	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.047		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	172	Q	70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-21  
 Client ID: 302-AD05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:30  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 12:51  
 Analyst: NLK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.0017		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-23  
 Client ID: 302-AD05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:40  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 13:12  
 Analyst: NLK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00026	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.0014		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-25  
 Client ID: 302-AD05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:50  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 21:57  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00042	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	0.00053	J	mg/kg	0.00091	0.00026	1
Xylenes, Total	0.00053	J	mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.0013		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	85		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/22/22 19:14  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,19,25 Batch: WG1678561-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	89		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 08:29  
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,07,09,11,13,15,17,21,23 Batch: WG1678589-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	114		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,19,25 Batch: WG1678561-3 WG1678561-4									
Methyl tert butyl ether	99		96		66-130		3		30
Benzene	100		97		70-130		3		30
1,2-Dichloroethane	75		75		70-130		0		30
Toluene	100		100		70-130		0		30
1,2-Dibromoethane	102		103		70-130		1		30
Ethylbenzene	97		98		70-130		1		30
p/m-Xylene	98		100		70-130		2		30
o-Xylene	97		99		70-130		2		30
Isopropylbenzene	105		105		70-130		0		30
1,3,5-Trimethylbenzene	103		104		70-130		1		30
1,2,4-Trimethylbenzene	103		103		70-130		0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		80		70-130
Toluene-d8	100		103		70-130
4-Bromofluorobenzene	103		105		70-130
Dibromofluoromethane	84		86		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,07,09,11,13,15,17,21,23 Batch: WG1678589-3 WG1678589-4								
Methyl tert butyl ether	68		68		66-130	0		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	97		98		70-130	1		30
Toluene	97		92		70-130	5		30
1,2-Dibromoethane	85		85		70-130	0		30
Ethylbenzene	102		96		70-130	6		30
p/m-Xylene	104		98		70-130	6		30
o-Xylene	101		96		70-130	5		30
Isopropylbenzene	101		95		70-130	6		30
1,3,5-Trimethylbenzene	105		98		70-130	7		30
1,2,4-Trimethylbenzene	104		98		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	92		93		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-02  
 Client ID: 301-AC03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 10:30  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 13:27  
 Analyst: EK  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.039	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.027	J	mg/kg	0.11	0.021	1
Chrysene	0.026	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-04  
 Client ID: 301-AC03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 10:40  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 13:51  
 Analyst: EK  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.033	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.048	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.033	J	mg/kg	0.11	0.021	1
Chrysene	0.042	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.044	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.029	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	83		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-06  
 Client ID: 301-AC03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 10:50  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 14:14  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-08  
 Client ID: 301-AC03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 11:00  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 14:38  
 Analyst: EK  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	81		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-10  
 Client ID: 302-AD04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:20  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 15:01  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-12  
 Client ID: 302-AD04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:30  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 15:24  
 Analyst: EK  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.027	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.025	1
Chrysene	ND		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.054	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-14  
 Client ID: 302-AD04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:40  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 15:48  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-16  
 Client ID: 302-AD04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:50  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 16:11  
 Analyst: EK  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	80		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-18  
 Client ID: 302-AD04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:00  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 04:35  
 Analyst: EK  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	89		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-20  
 Client ID: 302-AD05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:20  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 06:56  
 Analyst: EK  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.030	J	mg/kg	0.19	0.023	1
Fluorene	0.032	J	mg/kg	0.19	0.018	1
Phenanthrene	0.067	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.088	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.069	J	mg/kg	0.11	0.022	1
Chrysene	0.059	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.091	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.079	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	87		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-22  
 Client ID: 302-AD05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:30  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 05:22  
 Analyst: EK  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-24  
 Client ID: 302-AD05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:40  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 04:59  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	90		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-26  
 Client ID: 302-AD05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 13:50  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 05:46  
 Analyst: EK  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.046	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	98		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/22/22 13:04  
 Analyst: EK

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1677884-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	92		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1677884-2 WG1677884-3								
Naphthalene	86		74		40-140	15		50
Fluorene	92		79		40-140	15		50
Phenanthrene	90		80		40-140	12		50
Anthracene	94		82		40-140	14		50
Pyrene	96		85		35-142	12		50
Benzo(a)anthracene	91		80		40-140	13		50
Chrysene	89		77		40-140	14		50
Benzo(b)fluoranthene	91		78		40-140	15		50
Benzo(a)pyrene	91		80		40-140	13		50
Benzo(ghi)perylene	92		81		40-140	13		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	126	Q	113		23-120
2-Fluorobiphenyl	89		81		30-120
4-Terphenyl-d14	99		90		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-02

Date Collected: 08/17/22 10:30

Client ID: 301-AC03-C1-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.09		mg/kg	2.24	0.120	1	08/18/22 21:58	08/24/22 17:45	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-04

Date Collected: 08/17/22 10:40

Client ID: 301-AC03-C2-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.0		mg/kg	2.25	0.120	1	08/18/22 21:58	08/24/22 17:50	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-06

Date Collected: 08/17/22 10:50

Client ID: 301-AC03-C3-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.40		mg/kg	2.30	0.123	1	08/18/22 21:58	08/24/22 17:55	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-08

Date Collected: 08/17/22 11:00

Client ID: 301-AC03-C4-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.88		mg/kg	2.40	0.128	1	08/18/22 21:58	08/24/22 18:32	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-10

Date Collected: 08/17/22 12:20

Client ID: 302-AD04-C1-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.09		mg/kg	2.28	0.122	1	08/18/22 23:15	08/24/22 18:37	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-12

Date Collected: 08/17/22 12:30

Client ID: 302-AD04-C2-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.59		mg/kg	2.57	0.138	1	08/18/22 23:15	08/24/22 18:42	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-14

Date Collected: 08/17/22 12:40

Client ID: 302-AD04-C3-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.14		mg/kg	2.38	0.127	1	08/18/22 23:15	08/24/22 18:47	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-16

Date Collected: 08/17/22 12:50

Client ID: 302-AD04-C4-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	29.3		mg/kg	4.82	0.258	2	08/18/22 23:15	08/24/22 20:32	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-18

Date Collected: 08/17/22 13:00

Client ID: 302-AD04-C5-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.32		mg/kg	2.45	0.131	1	08/18/22 23:15	08/24/22 18:57	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-20

Date Collected: 08/17/22 13:20

Client ID: 302-AD05-C1-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.98		mg/kg	2.19	0.117	1	08/18/22 23:15	08/24/22 19:01	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-22

Date Collected: 08/17/22 13:30

Client ID: 302-AD05-C2-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.15		mg/kg	4.84	0.260	2	08/18/22 23:15	08/24/22 20:37	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-24

Date Collected: 08/17/22 13:40

Client ID: 302-AD05-C3-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.26		mg/kg	2.32	0.125	1	08/18/22 23:15	08/24/22 19:12	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2244443

**Project Number:** 200.00135.006

**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-26

Date Collected: 08/17/22 13:50

Client ID: 302-AD05-C4-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.90		mg/kg	2.49	0.133	1	08/18/22 23:15	08/24/22 19:17	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244443

Project Number: 200.00135.006

Report Date: 08/24/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1676964-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/18/22 21:58	08/24/22 17:36	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1676964-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26    QC Batch ID: WG1676964-3    QC Sample: L2244365-01    Client ID: MS Sample												
Lead, Total	39.6	44	68.0	64	Q	-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2244443

**Report Date:** 08/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 QC Batch ID: WG1676964-4 QC Sample: L2244365-01 Client ID: DUP Sample						
Lead, Total	39.6	32.6	mg/kg	19		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-01

Date Collected: 08/17/22 10:30

Client ID: 301-AC03-C1-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.8		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-02

Date Collected: 08/17/22 10:30

Client ID: 301-AC03-C1-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.5		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-03

Date Collected: 08/17/22 10:40

Client ID: 301-AC03-C2-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-04

Date Collected: 08/17/22 10:40

Client ID: 301-AC03-C2-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-05

Date Collected: 08/17/22 10:50

Client ID: 301-AC03-C3-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.9		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-06

Date Collected: 08/17/22 10:50

Client ID: 301-AC03-C3-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-07

Date Collected: 08/17/22 11:00

Client ID: 301-AC03-C4-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.5		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244443

Project Number: 200.00135.006

Report Date: 08/24/22

## SAMPLE RESULTS

Lab ID: L2244443-08

Date Collected: 08/17/22 11:00

Client ID: 301-AC03-C4-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.3		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

Lab ID: L2244443-09  
 Client ID: 302-AD04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/17/22 12:20  
 Date Received: 08/17/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-10

Date Collected: 08/17/22 12:20

Client ID: 302-AD04-C1-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.6		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-11

Date Collected: 08/17/22 12:30

Client ID: 302-AD04-C2-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.3		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-12

Date Collected: 08/17/22 12:30

Client ID: 302-AD04-C2-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.6		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-13

Date Collected: 08/17/22 12:40

Client ID: 302-AD04-C3-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-14

Date Collected: 08/17/22 12:40

Client ID: 302-AD04-C3-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244443

Project Number: 200.00135.006

Report Date: 08/24/22

## SAMPLE RESULTS

Lab ID: L2244443-15

Date Collected: 08/17/22 12:50

Client ID: 302-AD04-C4-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-16

Date Collected: 08/17/22 12:50

Client ID: 302-AD04-C4-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.1		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244443

Project Number: 200.00135.006

Report Date: 08/24/22

## SAMPLE RESULTS

Lab ID: L2244443-17

Date Collected: 08/17/22 13:00

Client ID: 302-AD04-C5-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-18

Date Collected: 08/17/22 13:00

Client ID: 302-AD04-C5-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.7		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-19

Date Collected: 08/17/22 13:20

Client ID: 302-AD05-C1-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-20

Date Collected: 08/17/22 13:20

Client ID: 302-AD05-C1-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.1		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2244443

Project Number: 200.00135.006

Report Date: 08/24/22

## SAMPLE RESULTS

Lab ID: L2244443-21

Date Collected: 08/17/22 13:30

Client ID: 302-AD05-C2-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.7		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

**SAMPLE RESULTS**

**Lab ID:** L2244443-22  
**Client ID:** 302-AD05-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/17/22 13:30  
**Date Received:** 08/17/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.9		%	0.100	NA	1	-	08/19/22 12:50	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-23

Date Collected: 08/17/22 13:40

Client ID: 302-AD05-C3-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-24

Date Collected: 08/17/22 13:40

Client ID: 302-AD05-C3-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.5		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-25

Date Collected: 08/17/22 13:50

Client ID: 302-AD05-C4-VOC

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.7		%	0.100	NA	1	-	08/18/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**SAMPLE RESULTS**

Lab ID: L2244443-26

Date Collected: 08/17/22 13:50

Client ID: 302-AD05-C4-COMP

Date Received: 08/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.8		%	0.100	NA	1	-	08/18/22 19:48	121,2540G	MF





## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2244443

Report Date: 08/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21,23,25 QC Batch ID: WG1676939-1 QC Sample: L2244443-01 Client ID: 301-AC03-C1-VOC						
Solids, Total	87.8	87.7	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,24,26 QC Batch ID: WG1677025-1 QC Sample: L2242668-26 Client ID: DUP Sample						
Solids, Total	86.8	87.4	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 22 QC Batch ID: WG1677361-1 QC Sample: L2244595-01 Client ID: DUP Sample						
Solids, Total	92.7	91.6	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244443-01A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-01B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-01C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-01D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-02B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-03A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-03B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-03C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-03D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-04B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-05A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-05B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-05C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-05D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-06B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-07A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-07B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-07C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-07D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244443-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-08B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-09A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2244443-09B	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-09C	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-09D	Plastic 2oz unpreserved for TS	B	NA		4.8	Y	Absent		TS(7)
L2244443-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2244443-10B	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2244443-11A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2244443-11B	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-11C	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-11D	Plastic 2oz unpreserved for TS	B	NA		4.8	Y	Absent		TS(7)
L2244443-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2244443-12B	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2244443-13A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2244443-13B	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-13C	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-13D	Plastic 2oz unpreserved for TS	B	NA		4.8	Y	Absent		TS(7)
L2244443-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2244443-14B	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2244443-15A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2244443-15B	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-15C	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-15D	Plastic 2oz unpreserved for TS	B	NA		4.8	Y	Absent		TS(7)
L2244443-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2244443-16B	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2244443-17A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2244443-17B	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244443**Project Number:** 200.00135.006**Report Date:** 08/24/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244443-17C	Vial water preserved	B	NA		4.8	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-17D	Plastic 2oz unpreserved for TS	B	NA		4.8	Y	Absent		TS(7)
L2244443-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2244443-18B	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2244443-19A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-19B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-19C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-19D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-20B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-21A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-21B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-21C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-21D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-22B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-23A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-23B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-23C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-23D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-24B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)
L2244443-25A	Vial MeOH preserved	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2244443-25B	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-25C	Vial water preserved	A	NA		5.2	Y	Absent	18-AUG-22 10:53	PA-8260HLW(14)
L2244443-25D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2244443-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2244443-26B	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08242221:49  
**Lab Number:** L2244443  
**Report Date:** 08/24/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
---------------------	-----------------------	---------------	-----------------------	---------------------	-----------------------	-------------	-------------	-----------------------------	--------------------

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244443  
**Report Date:** 08/24/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18899 **18559**

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: **8/18/22**

ALPHA Job #: **L2244443**

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

**VOCs-8260**  
**SVOCs-8270**  
**LEAD**

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
<b>44443-01</b>	301-AC03-C1-VOC	8/17	1030	S	TS
<b>-02</b>	301-AC03-C1-Comp		1030		
<b>-03</b>	301-AC03-C2-VOC		1040		
<b>-04</b>	301-AC03-C2-Comp		1040		
<b>-05</b>	301-AC03-C3-VOC		1050		
<b>-06</b>	301-AC03-C3-Comp		1050		
<b>-07</b>	301-AC03-C4-VOC		1100		
<b>-08</b>	301-AC03-C4-Comp		1100		
<b>-09</b>					
<b>-10</b>					

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

*[Handwritten signatures and dates]*  
 Relinquished By: *[Signature]* Date/Time: 8/17 10:21  
 Received By: *[Signature]* Date/Time: 8-17-22 2100  
 8-17-22 2100



# CHAIN OF CUSTODY

PAGE 3 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18589 **18559**

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/18/22

ALPHA Job #: L2244443

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEX  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

VOCs - 8260  
 SVOCs - 8270  
 LEAD

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
44443-19	302-AD05-C1-VOC	8/17	1320	S	TS
-20	302-AD05-C1-COMP		1320		
-21	302-AD05-C2-VOC		1330		
-22	302-AD05-C2-COMP		1330		
-23	302-AD05-C3-VOC		1340		
-24	302-AD05-C3-COMP		1340		
-25	302-AD05-C4-VOC		1350		
-26	302-AD05-C4-COMP		1350		

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

**PADEP Short List Analytical Suites per Table III-5:**

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

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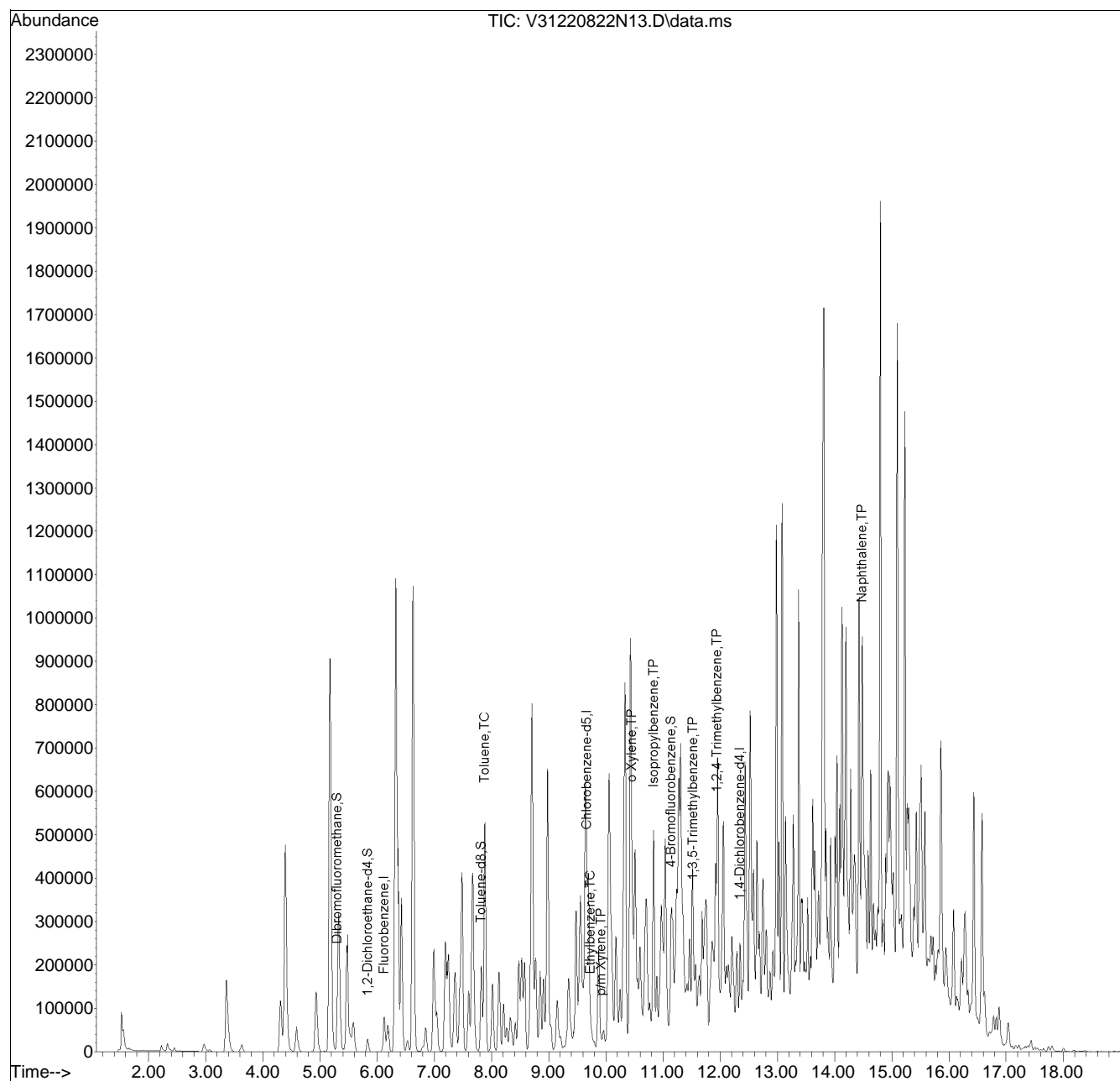
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\220822N\  
Data File : V31220822N13.D  
Acq On : 22 Aug 2022 10:44 pm  
Operator : VOA131:JC  
Sample : L2244443-19,31,5.80,5,,B  
Misc : WG1678561,ICAL19050  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Aug 23 11:01:32 2022  
Quant Method : I:\VOLATILES\VOA131\2022\220822N\V31\_220525N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue May 31 11:11:48 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list22N\V31220822N01.D•





## ANALYTICAL REPORT

Lab Number:	L2244797
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/26/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2244797-01	302-AD06-C1-VOC	SOIL	PHILADELPHIA, PA	08/18/22 10:30	08/18/22
L2244797-02	302-AD06-C1-COMP	SOIL	PHILADELPHIA, PA	08/18/22 10:30	08/18/22
L2244797-03	302-AD06-C2-VOC	SOIL	PHILADELPHIA, PA	08/18/22 10:40	08/18/22
L2244797-04	302-AD06-C2-COMP	SOIL	PHILADELPHIA, PA	08/18/22 10:40	08/18/22
L2244797-05	302-AD06-C3-VOC	SOIL	PHILADELPHIA, PA	08/18/22 10:50	08/18/22
L2244797-06	302-AD06-C3-COMP	SOIL	PHILADELPHIA, PA	08/18/22 10:50	08/18/22
L2244797-07	302-AD06-C4-VOC	SOIL	PHILADELPHIA, PA	08/18/22 11:00	08/18/22
L2244797-08	302-AD06-C4-COMP	SOIL	PHILADELPHIA, PA	08/18/22 11:00	08/18/22
L2244797-09	302-AD07-C1-VOC	SOIL	PHILADELPHIA, PA	08/18/22 12:00	08/18/22
L2244797-10	302-AD07-C1-COMP	SOIL	PHILADELPHIA, PA	08/18/22 12:00	08/18/22
L2244797-11	302-AD07-C2-VOC	SOIL	PHILADELPHIA, PA	08/18/22 12:10	08/18/22
L2244797-12	302-AD07-C2-COMP	SOIL	PHILADELPHIA, PA	08/18/22 12:10	08/18/22
L2244797-13	302-AD07-C3-VOC	SOIL	PHILADELPHIA, PA	08/18/22 12:20	08/18/22
L2244797-14	302-AD07-C3-COMP	SOIL	PHILADELPHIA, PA	08/18/22 12:20	08/18/22
L2244797-15	302-AD07-C4-VOC	SOIL	PHILADELPHIA, PA	08/18/22 12:30	08/18/22
L2244797-16	302-AD07-C4-COMP	SOIL	PHILADELPHIA, PA	08/18/22 12:30	08/18/22
L2244797-17	302-AD07-C5-VOC	SOIL	PHILADELPHIA, PA	08/18/22 12:40	08/18/22
L2244797-18	302-AD07-C5-COMP	SOIL	PHILADELPHIA, PA	08/18/22 12:40	08/18/22
L2244797-19	302-AE04-C1-VOC	SOIL	PHILADELPHIA, PA	08/18/22 13:00	08/18/22
L2244797-20	302-AE04-C1-COMP	SOIL	PHILADELPHIA, PA	08/18/22 13:00	08/18/22
L2244797-21	302-AE04-C2-VOC	SOIL	PHILADELPHIA, PA	08/18/22 13:10	08/18/22
L2244797-22	302-AE04-C2-COMP	SOIL	PHILADELPHIA, PA	08/18/22 13:10	08/18/22
L2244797-23	302-AE04-C3-VOC	SOIL	PHILADELPHIA, PA	08/18/22 13:20	08/18/22
L2244797-24	302-AE04-C3-COMP	SOIL	PHILADELPHIA, PA	08/18/22 13:20	08/18/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2244797-25	302-AE04-C4-VOC	SOIL	PHILADELPHIA, PA	08/18/22 13:30	08/18/22
L2244797-26	302-AE04-C4-COMP	SOIL	PHILADELPHIA, PA	08/18/22 13:30	08/18/22
L2244797-27	302-AE04-C5-VOC	SOIL	PHILADELPHIA, PA	08/18/22 13:40	08/18/22
L2244797-28	302-AE04-C5-COMP	SOIL	PHILADELPHIA, PA	08/18/22 13:40	08/18/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

### Case Narrative (continued)

#### Report Submission

August 26, 2022: This final report includes the results of all requested analyses.

August 25, 2022: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2244797-05: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (226%) and 4-bromofluorobenzene (173%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2244797-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (152%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2244797-07 and -21: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2244797-11: The surrogate recovery was below the acceptance criteria for 1,2-dichloroethane-d4 (69%). A second low-level vial was analyzed, but yielded no internal standard recoveries. A high-level analysis was performed, and those results are also reported.

L2244797-21: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (232%) and 4-bromofluorobenzene (171%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2244797-23: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (175%) and 4-bromofluorobenzene (161%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Case Narrative (continued)**

L2244797-06D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Total Metals

L2244797-06, -08, -10, -12, -20, and -22: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 08/26/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-01  
 Client ID: 302-AD06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 11:44  
 Analyst: NLK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00088		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.00072	J	mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	0.00049	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0025		mg/kg	0.0021	0.00058	1
o-Xylene	0.0016		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0041		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00023	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00039	J	mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.00085	J	mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	82		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-03  
 Client ID: 302-AD06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 05:15  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0012		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.00016	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	0.00053	J	mg/kg	0.0010	0.00029	1
Xylenes, Total	0.00053	J	mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.0015		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00064	J	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	129		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	74		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-05  
 Client ID: 302-AD06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:50  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 16:18  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	ND		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.018	1
Toluene	0.037	J	mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	ND		mg/kg	0.068	0.0096	1
p/m-Xylene	ND		mg/kg	0.14	0.038	1
o-Xylene	ND		mg/kg	0.068	0.020	1
Xylenes, Total	ND		mg/kg	0.068	0.020	1
Isopropylbenzene	4.4		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	226	Q	70-130
4-Bromofluorobenzene	173	Q	70-130
Dibromofluoromethane	71		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-07  
 Client ID: 302-AD06-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 11:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 15:52  
 Analyst: AJK  
 Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.15	0.015	1
Benzene	ND		mg/kg	0.038	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.075	0.019	1
Toluene	ND		mg/kg	0.075	0.041	1
1,2-Dibromoethane	ND		mg/kg	0.038	0.022	1
Ethylbenzene	ND		mg/kg	0.075	0.010	1
p/m-Xylene	ND		mg/kg	0.15	0.042	1
o-Xylene	ND		mg/kg	0.075	0.022	1
Xylenes, Total	ND		mg/kg	0.075	0.022	1
Isopropylbenzene	0.018	J	mg/kg	0.075	0.0082	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.15	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.15	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	152	Q	70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-09  
 Client ID: 302-AD07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 13:28  
 Analyst: NLK  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-11  
 Client ID: 302-AD07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 05:41  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00015	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	69	Q	70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	75		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-11  
 Client ID: 302-AD07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 09:21  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	ND		mg/kg	0.065	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	ND		mg/kg	0.065	0.0092	1
p/m-Xylene	ND		mg/kg	0.13	0.037	1
o-Xylene	ND		mg/kg	0.065	0.019	1
Xylenes, Total	ND		mg/kg	0.065	0.019	1
Isopropylbenzene	ND		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-13  
 Client ID: 302-AD07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:20  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 15:26  
 Analyst: AJK  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00069	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00075	1
1,2-Dibromoethane	ND		mg/kg	0.00069	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00078	1
o-Xylene	ND		mg/kg	0.0014	0.00040	1
Xylenes, Total	ND		mg/kg	0.0014	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-15  
 Client ID: 302-AD07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 14:47  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00023	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	80		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-17  
 Client ID: 302-AD07-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 15:13  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00024	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-19  
 Client ID: 302-AE04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 16:44  
 Analyst: AJK  
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00080	0.00021	1
Toluene	ND		mg/kg	0.00080	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00024	1
Ethylbenzene	ND		mg/kg	0.00080	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00045	1
o-Xylene	ND		mg/kg	0.00080	0.00023	1
Xylenes, Total	ND		mg/kg	0.00080	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	82		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-21  
 Client ID: 302-AE04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 15:00  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0096	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	0.037	J	mg/kg	0.058	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.14		mg/kg	0.058	0.0081	1
p/m-Xylene	ND		mg/kg	0.12	0.032	1
o-Xylene	0.10		mg/kg	0.058	0.017	1
Xylenes, Total	0.10		mg/kg	0.058	0.017	1
Isopropylbenzene	1.0		mg/kg	0.058	0.0063	1
1,3,5-Trimethylbenzene	0.026	J	mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	0.063	J	mg/kg	0.12	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	232	Q	70-130
4-Bromofluorobenzene	171	Q	70-130
Dibromofluoromethane	79		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-23  
 Client ID: 302-AE04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:20  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 14:33  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.056	0.014	1
Toluene	0.032	J	mg/kg	0.056	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	0.038	J	mg/kg	0.056	0.0079	1
p/m-Xylene	ND		mg/kg	0.11	0.031	1
o-Xylene	0.024	J	mg/kg	0.056	0.016	1
Xylenes, Total	0.024	J	mg/kg	0.056	0.016	1
Isopropylbenzene	0.28		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	2.0		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	4.1		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	175	Q	70-130
4-Bromofluorobenzene	161	Q	70-130
Dibromofluoromethane	74		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-25  
 Client ID: 302-AE04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 16:57  
 Analyst: NLK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-27  
 Client ID: 302-AE04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/22/22 17:23  
 Analyst: NLK  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/22/22 08:41  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,09,15,17,25,27 Batch: WG1678497-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	108		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/23/22 10:12  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 13,19 Batch: WG1678845-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	101		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/23/22 10:12  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05,07,21,23 Batch: WG1678847-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/24/22 22:17  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,11 Batch: WG1679557-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/25/22 08:11  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11 Batch: WG1679612-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,09,15,17,25,27 Batch: WG1678497-3 WG1678497-4								
Methyl tert butyl ether	88		87		66-130	1		30
Benzene	99		97		70-130	2		30
1,2-Dichloroethane	80		75		70-130	6		30
Toluene	97		84		70-130	14		30
1,2-Dibromoethane	85		80		70-130	6		30
Ethylbenzene	93		87		70-130	7		30
p/m-Xylene	98		87		70-130	12		30
o-Xylene	96		88		70-130	9		30
Isopropylbenzene	103		99		70-130	4		30
1,3,5-Trimethylbenzene	96		90		70-130	6		30
1,2,4-Trimethylbenzene	93		90		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		77		70-130
Toluene-d8	98		94		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	87		87		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 13,19 Batch: WG1678845-3 WG1678845-4								
Methyl tert butyl ether	100		96		66-130	4		30
Benzene	90		91		70-130	1		30
1,2-Dichloroethane	76		78		70-130	3		30
Toluene	86		86		70-130	0		30
1,2-Dibromoethane	85		84		70-130	1		30
Ethylbenzene	85		84		70-130	1		30
p/m-Xylene	91		90		70-130	1		30
o-Xylene	87		90		70-130	3		30
Isopropylbenzene	98		98		70-130	0		30
1,3,5-Trimethylbenzene	92		88		70-130	4		30
1,2,4-Trimethylbenzene	90		87		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		79		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	84		85		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05,07,21,23 Batch: WG1678847-3 WG1678847-4								
Methyl tert butyl ether	100		96		66-130	4		30
Benzene	90		91		70-130	1		30
1,2-Dichloroethane	76		78		70-130	3		30
Toluene	86		86		70-130	0		30
1,2-Dibromoethane	85		84		70-130	1		30
Ethylbenzene	85		84		70-130	1		30
p/m-Xylene	91		90		70-130	1		30
o-Xylene	87		90		70-130	3		30
Isopropylbenzene	98		98		70-130	0		30
1,3,5-Trimethylbenzene	92		88		70-130	4		30
1,2,4-Trimethylbenzene	90		87		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		79		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	84		85		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,11 Batch: WG1679557-3 WG1679557-4								
Methyl tert butyl ether	118		97		66-130	20		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	81		78		70-130	4		30
Toluene	93		93		70-130	0		30
1,2-Dibromoethane	86		86		70-130	0		30
Ethylbenzene	90		88		70-130	2		30
p/m-Xylene	98		95		70-130	3		30
o-Xylene	92		92		70-130	0		30
Isopropylbenzene	104		100		70-130	4		30
1,3,5-Trimethylbenzene	96		98		70-130	2		30
1,2,4-Trimethylbenzene	95		92		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	81		78		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	84		82		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11 Batch: WG1679612-3 WG1679612-4								
Methyl tert butyl ether	88		87		66-130	1		30
Benzene	96		93		70-130	3		30
1,2-Dichloroethane	94		93		70-130	1		30
Toluene	86		85		70-130	1		30
1,2-Dibromoethane	88		88		70-130	0		30
Ethylbenzene	94		92		70-130	2		30
p/m-Xylene	93		91		70-130	2		30
o-Xylene	94		91		70-130	3		30
Isopropylbenzene	93		90		70-130	3		30
1,3,5-Trimethylbenzene	96		92		70-130	4		30
1,2,4-Trimethylbenzene	94		91		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	100		101		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-02  
 Client ID: 302-AD06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 07:19  
 Analyst: EK  
 Percent Solids: 70%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.15	J	mg/kg	0.24	0.029	1
Fluorene	0.16	J	mg/kg	0.24	0.023	1
Phenanthrene	1.4		mg/kg	0.14	0.029	1
Anthracene	0.26		mg/kg	0.14	0.046	1
Pyrene	1.5		mg/kg	0.14	0.024	1
Benzo(a)anthracene	0.92		mg/kg	0.14	0.027	1
Chrysene	0.94		mg/kg	0.14	0.025	1
Benzo(b)fluoranthene	1.2		mg/kg	0.14	0.040	1
Benzo(a)pyrene	0.96		mg/kg	0.19	0.058	1
Benzo(ghi)perylene	0.57		mg/kg	0.19	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	130	Q	23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	108		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-04  
 Client ID: 302-AD06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 12:21  
 Analyst: MG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.073	J	mg/kg	0.19	0.023	1
Fluorene	0.025	J	mg/kg	0.19	0.019	1
Phenanthrene	0.26		mg/kg	0.12	0.023	1
Anthracene	0.050	J	mg/kg	0.12	0.038	1
Pyrene	0.40		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.22		mg/kg	0.12	0.022	1
Chrysene	0.24		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.29		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.25		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.17		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	121	Q	23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	103		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-06 D  
 Client ID: 302-AD06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:50  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 07:40  
 Analyst: EK  
 Percent Solids: 73%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.39	J	mg/kg	2.2	0.27	10
Fluorene	1.9	J	mg/kg	2.2	0.22	10
Phenanthrene	25.		mg/kg	1.3	0.27	10
Anthracene	6.8		mg/kg	1.3	0.44	10
Pyrene	42.		mg/kg	1.3	0.22	10
Benzo(a)anthracene	23.		mg/kg	1.3	0.25	10
Chrysene	20.		mg/kg	1.3	0.23	10
Benzo(b)fluoranthene	23.		mg/kg	1.3	0.38	10
Benzo(a)pyrene	20.		mg/kg	1.8	0.55	10
Benzo(ghi)perylene	9.7		mg/kg	1.8	0.26	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	121	Q	23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	100		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-08  
 Client ID: 302-AD06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 11:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 13:08  
 Analyst: MG  
 Percent Solids: 69%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.037	J	mg/kg	0.24	0.029	1
Fluorene	0.053	J	mg/kg	0.24	0.023	1
Phenanthrene	0.54		mg/kg	0.14	0.029	1
Anthracene	0.13	J	mg/kg	0.14	0.047	1
Pyrene	0.74		mg/kg	0.14	0.024	1
Benzo(a)anthracene	0.39		mg/kg	0.14	0.027	1
Chrysene	0.41		mg/kg	0.14	0.025	1
Benzo(b)fluoranthene	0.47		mg/kg	0.14	0.040	1
Benzo(a)pyrene	0.43		mg/kg	0.19	0.059	1
Benzo(ghi)perylene	0.32		mg/kg	0.19	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	87		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-10  
 Client ID: 302-AD07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 13:31  
 Analyst: MG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.028	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.024	J	mg/kg	0.12	0.022	1
Chrysene	0.020	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	135	Q	23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	107		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-12  
 Client ID: 302-AD07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 08:04  
 Analyst: EK  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.22		mg/kg	0.21	0.026	1
Fluorene	0.44		mg/kg	0.21	0.021	1
Phenanthrene	5.7		mg/kg	0.13	0.026	1
Anthracene	1.2		mg/kg	0.13	0.042	1
Pyrene	9.2	E	mg/kg	0.13	0.021	1
Benzo(a)anthracene	4.6		mg/kg	0.13	0.024	1
Chrysene	5.4		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	3.4		mg/kg	0.13	0.036	1
Benzo(a)pyrene	3.6		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	1.7		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	136	Q	23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	104		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-12 D  
 Client ID: 302-AD07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/25/22 12:37  
 Analyst: IM  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Pyrene	8.3		mg/kg	0.64	0.11	5



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-14  
 Client ID: 302-AD07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:20  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 06:07  
 Analyst: EK  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.024	J	mg/kg	0.18	0.022	1
Fluorene	0.046	J	mg/kg	0.18	0.017	1
Phenanthrene	0.41		mg/kg	0.11	0.022	1
Anthracene	0.090	J	mg/kg	0.11	0.035	1
Pyrene	0.62		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.27		mg/kg	0.11	0.020	1
Chrysene	0.27		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.32		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.27		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.16		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	134	Q	23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	102		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-16  
 Client ID: 302-AD07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 05:20  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.19		mg/kg	0.12	0.024	1
Anthracene	0.050	J	mg/kg	0.12	0.038	1
Pyrene	0.40		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.21		mg/kg	0.12	0.022	1
Chrysene	0.24		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.27		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.22		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	131	Q	23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-18  
 Client ID: 302-AD07-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 05:43  
 Analyst: EK  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.068	J	mg/kg	0.19	0.023	1
Fluorene	0.081	J	mg/kg	0.19	0.018	1
Phenanthrene	0.52		mg/kg	0.11	0.023	1
Anthracene	0.31		mg/kg	0.11	0.037	1
Pyrene	0.69		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.39		mg/kg	0.11	0.021	1
Chrysene	0.37		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.47		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.39		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.23		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	141	Q	23-120
2-Fluorobiphenyl	97		30-120
4-Terphenyl-d14	101		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-20  
 Client ID: 302-AE04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 02:13  
 Analyst: EK  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.039	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	86		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-22  
 Client ID: 302-AE04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 06:33  
 Analyst: EK  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-24  
 Client ID: 302-AE04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:20  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 22:19  
 Analyst: EK  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	122	Q	23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	99		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-26  
 Client ID: 302-AE04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 06:09  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 16:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	87		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-28  
 Client ID: 302-AE04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 22:42  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	99		30-120
4-Terphenyl-d14	108		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/22/22 13:04  
Analyst: EK

Extraction Method: EPA 3546  
Extraction Date: 08/21/22 16:19

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,22,26 Batch: WG1677884-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	92		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 10:00  
 Analyst: MG

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04,06,08,10,12,14,16,18,20,24,28 Batch: WG1677952-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	104		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,22,26 Batch: WG1677884-2 WG1677884-3								
Naphthalene	86		74		40-140	15		50
Fluorene	92		79		40-140	15		50
Phenanthrene	90		80		40-140	12		50
Anthracene	94		82		40-140	14		50
Pyrene	96		85		35-142	12		50
Benzo(a)anthracene	91		80		40-140	13		50
Chrysene	89		77		40-140	14		50
Benzo(b)fluoranthene	91		78		40-140	15		50
Benzo(a)pyrene	91		80		40-140	13		50
Benzo(ghi)perylene	92		81		40-140	13		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	126	Q	113		23-120
2-Fluorobiphenyl	89		81		30-120
4-Terphenyl-d14	99		90		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

<b>Parameter</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>%Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,06,08,10,12,14,16,18,20,24,28 Batch: WG1677952-2 WG1677952-3								
Naphthalene	89		93		40-140	4		50
Fluorene	100		102		40-140	2		50
Phenanthrene	96		99		40-140	3		50
Anthracene	100		103		40-140	3		50
Pyrene	107		110		35-142	3		50
Benzo(a)anthracene	95		98		40-140	3		50
Chrysene	95		98		40-140	3		50
Benzo(b)fluoranthene	97		99		40-140	2		50
Benzo(a)pyrene	100		102		40-140	2		50
Benzo(ghi)perylene	100		101		40-140	1		50

<b>Surrogate</b>	<b>LCS %Recovery</b>	<b>Qual</b>	<b>LCSD %Recovery</b>	<b>Qual</b>	<b>Acceptance Criteria</b>
Nitrobenzene-d5	117		122	Q	23-120
2-Fluorobiphenyl	87		89		30-120
4-Terphenyl-d14	98		100		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-02  
 Client ID: 302-AD06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 70%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	47.5		mg/kg	2.85	0.153	1	08/19/22 23:05	08/25/22 16:56	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-04  
 Client ID: 302-AD06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	54.6		mg/kg	2.22	0.119	1	08/19/22 23:05	08/25/22 17:40	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-06  
 Client ID: 302-AD06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:50  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	36.4		mg/kg	13.4	0.718	5	08/19/22 23:05	08/25/22 19:53	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-08  
 Client ID: 302-AD06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 11:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	23.1		mg/kg	13.8	0.739	5	08/19/22 23:05	08/25/22 19:57	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-10  
 Client ID: 302-AD07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	493		mg/kg	11.4	0.612	5	08/19/22 23:05	08/25/22 20:02	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-12  
 Client ID: 302-AD07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	109		mg/kg	12.5	0.671	5	08/19/22 23:05	08/25/22 19:37	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-14  
 Client ID: 302-AD07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:20  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.31		mg/kg	2.06	0.110	1	08/19/22 23:05	08/25/22 18:03	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-16  
 Client ID: 302-AD07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	26.4		mg/kg	2.31	0.124	1	08/19/22 23:05	08/25/22 18:08	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-18  
 Client ID: 302-AD07-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 12:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.52		mg/kg	2.29	0.123	1	08/19/22 23:05	08/25/22 18:13	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-20  
 Client ID: 302-AE04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:00  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.8		mg/kg	12.5	0.673	5	08/19/22 23:05	08/25/22 19:42	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-22  
 Client ID: 302-AE04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	92.9		mg/kg	11.2	0.600	5	08/19/22 23:05	08/25/22 20:56	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-24  
 Client ID: 302-AE04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:20  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.15		mg/kg	2.35	0.126	1	08/19/22 23:05	08/25/22 18:36	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-26  
 Client ID: 302-AE04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:30  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	49.8		mg/kg	2.42	0.130	1	08/19/22 23:05	08/25/22 18:41	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-28  
 Client ID: 302-AE04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:40  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.47		mg/kg	2.34	0.125	1	08/19/22 23:05	08/25/22 18:46	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1677482-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/19/22 23:05	08/25/22 16:38	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1677482-2 SRM Lot Number: D113-540								
Lead, Total	94		-		72-128			-

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28    QC Batch ID: WG1677482-3    QC Sample: L2244677-01 Client ID: MS Sample												
Lead, Total	126	43	117	0	Q	-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1677482-4 QC Sample: L2244677-01 Client ID: DUP Sample						
Lead, Total	126	201	mg/kg	46	Q	20



**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1677482-6 QC Sample: L2244677-01 Client ID: DUP Sample						
Lead, Total	126	160	mg/kg	27	Q	20





# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-01  
**Client ID:** 302-AD06-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 10:30  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.2		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-02  
**Client ID:** 302-AD06-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 10:30  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	70.0		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-03  
**Client ID:** 302-AD06-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 10:40  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-04  
**Client ID:** 302-AD06-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 10:40  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.3		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-05  
**Client ID:** 302-AD06-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 10:50  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.9		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-06  
 Client ID: 302-AD06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 10:50  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	73.0		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-07  
**Client ID:** 302-AD06-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 11:00  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.8		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-08  
**Client ID:** 302-AD06-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 11:00  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	68.9		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-09  
**Client ID:** 302-AD07-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:00  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.2		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-10  
**Client ID:** 302-AD07-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:00  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.9		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-11  
**Client ID:** 302-AD07-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:10  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.7		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-12  
**Client ID:** 302-AD07-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:10  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	76.6		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-13  
**Client ID:** 302-AD07-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:20  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.2		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-14  
**Client ID:** 302-AD07-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:20  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.7		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-15  
**Client ID:** 302-AD07-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:30  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.3		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-16  
**Client ID:** 302-AD07-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:30  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-17  
**Client ID:** 302-AD07-C5-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:40  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-18  
**Client ID:** 302-AD07-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 12:40  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.0		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-19  
**Client ID:** 302-AE04-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:00  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	97.4		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-20  
**Client ID:** 302-AE04-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:00  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.0		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-21  
**Client ID:** 302-AE04-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:10  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.6		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2244797-22  
 Client ID: 302-AE04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/18/22 13:10  
 Date Received: 08/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-23  
**Client ID:** 302-AE04-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:20  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244797**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2244797-24

Date Collected: 08/18/22 13:20

Client ID: 302-AE04-C3-COMP

Date Received: 08/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-25  
**Client ID:** 302-AE04-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:30  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.8		%	0.100	NA	1	-	08/20/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-26  
**Client ID:** 302-AE04-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:30  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-27  
**Client ID:** 302-AE04-C5-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:40  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.2		%	0.100	NA	1	-	08/20/22 11:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2244797-28  
**Client ID:** 302-AE04-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/18/22 13:40  
**Date Received:** 08/18/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	08/20/22 14:47	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2244797  
**Report Date:** 08/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21,23,25 QC Batch ID: WG1677569-1 QC Sample: L2244905-37 Client ID: DUP Sample						
Solids, Total	86.3	86.7	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 27 QC Batch ID: WG1677570-1 QC Sample: L2244887-40 Client ID: DUP Sample						
Solids, Total	94.4	94.2	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 QC Batch ID: WG1677659-1 QC Sample: L2244797-02 Client ID: 302-AD06-C1-COMP						
Solids, Total	70.0	67.8	%	3		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244797**Project Number:** 200.00135.006**Report Date:** 08/26/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244797-01A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2244797-01B	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-01C	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-01D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)
L2244797-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2244797-02B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2244797-03A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2244797-03B	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-03C	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-03D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)
L2244797-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2244797-04B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2244797-05A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2244797-05B	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-05C	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-05D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)
L2244797-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2244797-06B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2244797-07A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2244797-07B	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-07C	Vial water preserved	A	NA		3.7	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-07D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244797**Project Number:** 200.00135.006**Report Date:** 08/26/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244797-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-08B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-09A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-09B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-09C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-09D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-10B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-11A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2244797-11B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260H(14),PA-8260HLW(14)
L2244797-11C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260H(14),PA-8260HLW(14)
L2244797-11D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-12B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-13A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-13B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-13C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-13D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-14B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-15A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-15B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-15C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-15D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-16B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-17A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-17B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2244797**Project Number:** 200.00135.006**Report Date:** 08/26/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244797-17C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-17D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-18B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-19A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-19B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-19C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-19D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-20B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-21A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-21B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-21C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-21D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-22B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-23A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-23B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-23C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-23D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-24A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-24B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2244797-25A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-25B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-25C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-25D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-26A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-26B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)

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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2244797-27A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2244797-27B	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-27C	Vial water preserved	B	NA		3.8	Y	Absent	19-AUG-22 14:09	PA-8260HLW(14)
L2244797-27D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2244797-28A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2244797-28B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



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## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







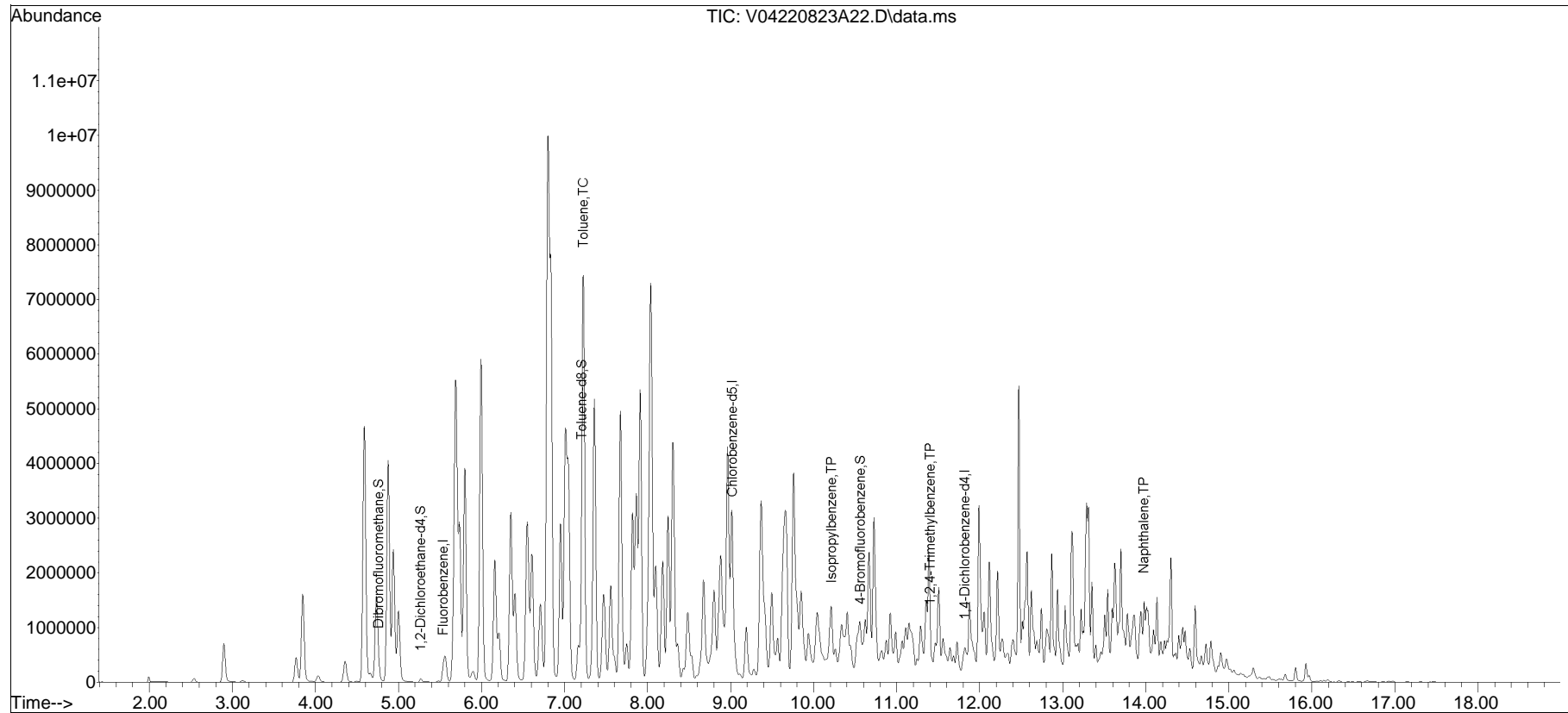


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220823A\  
Data File : V04220823A22.D  
Acq On : 23 Aug 2022 4:18 pm  
Operator : VOA104:AJK  
Sample : L2244797-05,31H,4.96,5,0.100,,A,R2F  
Misc : WG1678847,ICAL19119  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Aug 23 16:47:00 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220823A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V04220823A04.D•

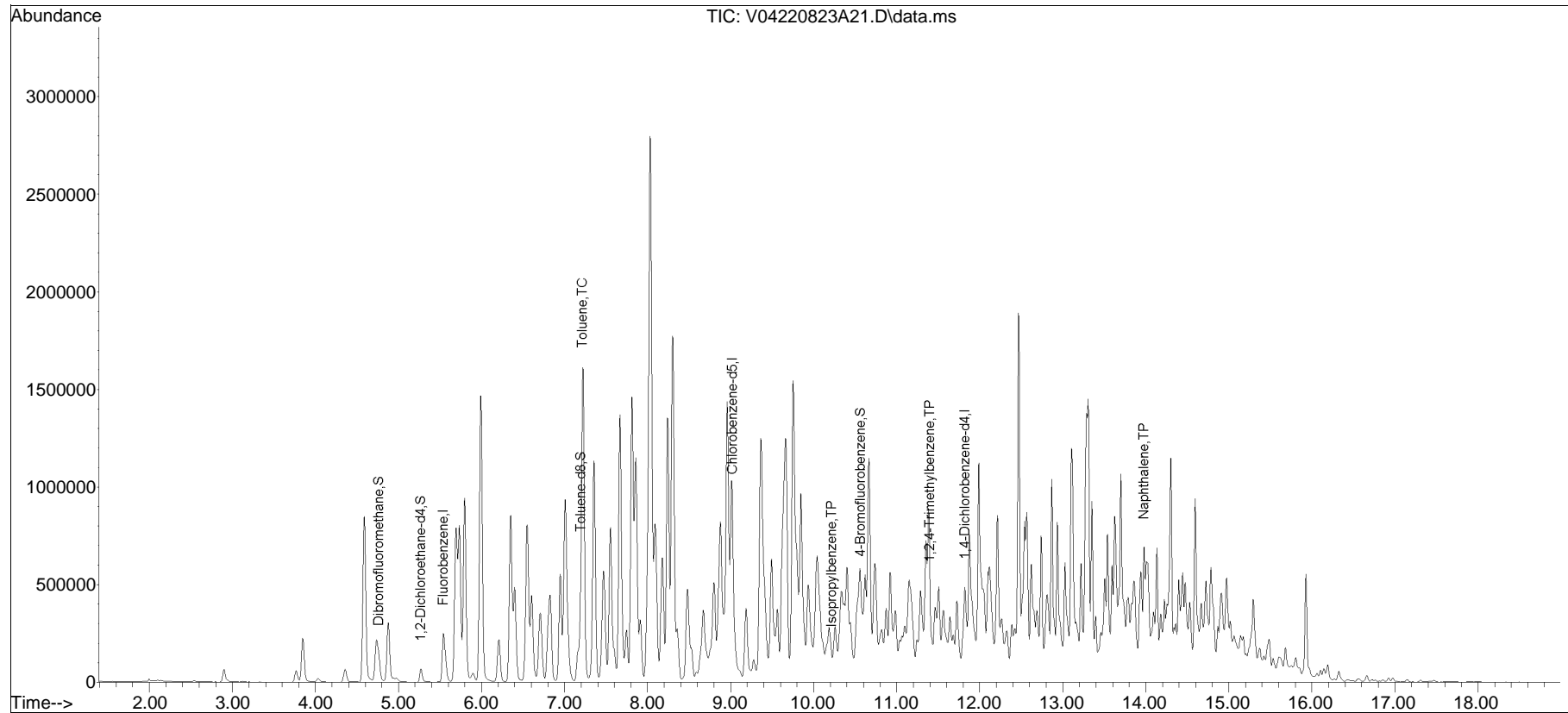


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220823A\  
Data File : V04220823A21.D  
Acq On : 23 Aug 2022 3:52 pm  
Operator : VOA104:AJK  
Sample : L2244797-07,31H,6.08,5,0.100,,A,R2F  
Misc : WG1678847,ICAL19119  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 23 16:36:06 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220823A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V04220823A04.D•

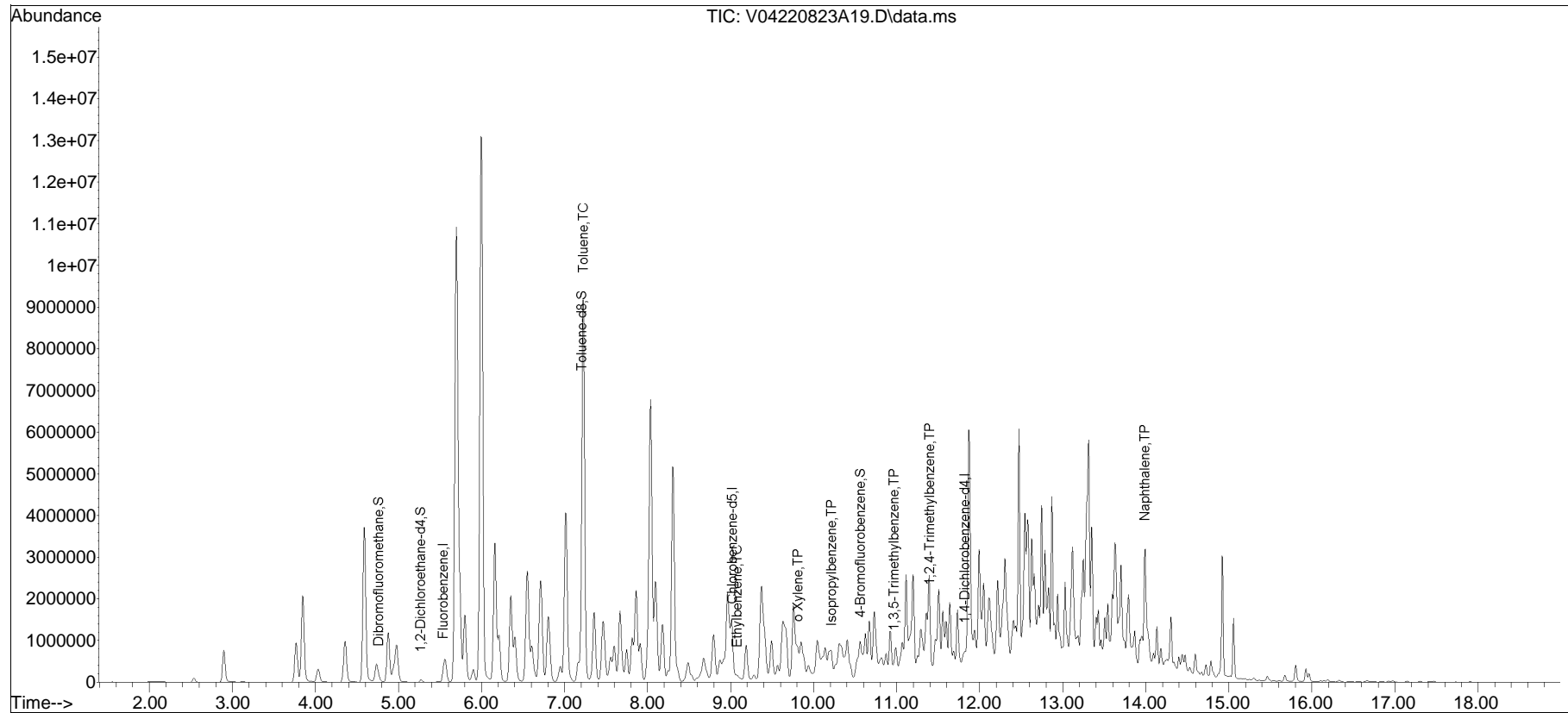


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220823A\  
Data File : V04220823A19.D  
Acq On : 23 Aug 2022 3:00 pm  
Operator : VOA104:AJK  
Sample : L2244797-21,31H,5.94,5,0.100,,A,R2F  
Misc : WG1678847,ICAL19119  
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 23 16:00:53 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220823A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V04220823A04.D•

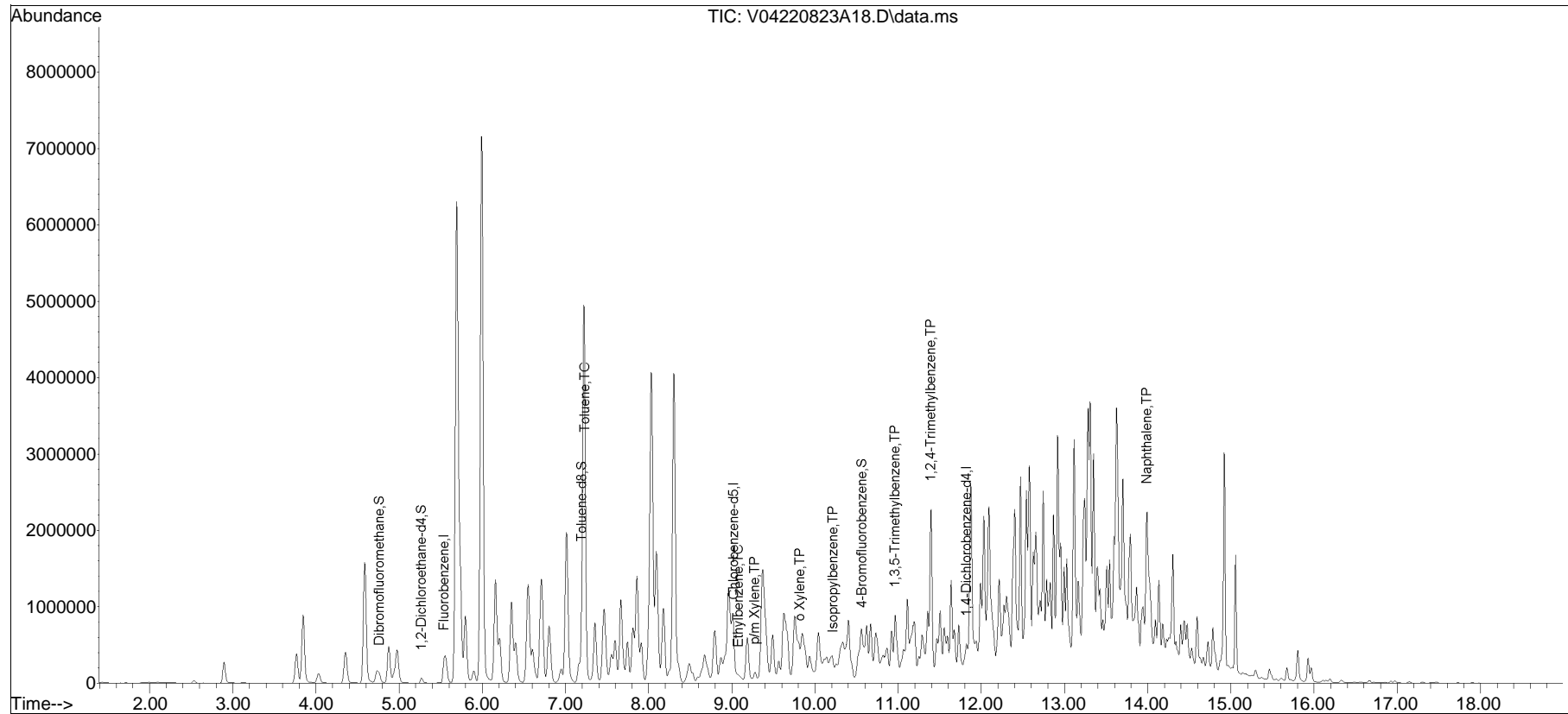


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220823A\  
 Data File : V04220823A18.D  
 Acq On : 23 Aug 2022 2:33 pm  
 Operator : VOA104:AJK  
 Sample : L2244797-23,31H,5.68,5,0.100,,A,R2F  
 Misc : WG1678847,ICAL19119  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 23 16:00:24 2022  
 Quant Method : I:\VOLATILES\VOA104\2022\220823A\V104\_220621A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Wed Jun 22 06:56:43 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V04220823A04.D•





## ANALYTICAL REPORT

Lab Number:	L2245031
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/26/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245031

Report Date: 08/26/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2245031-01	302-AE05-C1-VOC	SOIL	PHILADELPHIA, PA	08/19/22 09:45	08/19/22
L2245031-02	302-AE05-C1-COMP	SOIL	PHILADELPHIA, PA	08/19/22 09:45	08/19/22
L2245031-03	302-AE05-C2-VOC	SOIL	PHILADELPHIA, PA	08/19/22 09:55	08/19/22
L2245031-04	302-AE05-C2-COMP	SOIL	PHILADELPHIA, PA	08/19/22 09:55	08/19/22
L2245031-05	302-AE05-C3-VOC	SOIL	PHILADELPHIA, PA	08/19/22 10:05	08/19/22
L2245031-06	302-AE05-C3-COMP	SOIL	PHILADELPHIA, PA	08/19/22 10:05	08/19/22
L2245031-07	302-AE05-C4-VOC	SOIL	PHILADELPHIA, PA	08/19/22 10:15	08/19/22
L2245031-08	302-AE05-C4-COMP	SOIL	PHILADELPHIA, PA	08/19/22 10:15	08/19/22
L2245031-09	302-AE05-C5-VOC	SOIL	PHILADELPHIA, PA	08/19/22 10:30	08/19/22
L2245031-10	302-AE05-C5-COMP	SOIL	PHILADELPHIA, PA	08/19/22 10:30	08/19/22
L2245031-11	302-AF05-C1-VOC	SOIL	PHILADELPHIA, PA	08/19/22 12:45	08/19/22
L2245031-12	302-AF05-C1-COMP	SOIL	PHILADELPHIA, PA	08/19/22 12:45	08/19/22
L2245031-13	302-AF05-C2-VOC	SOIL	PHILADELPHIA, PA	08/19/22 12:55	08/19/22
L2245031-14	302-AF05-C2-COMP	SOIL	PHILADELPHIA, PA	08/19/22 12:55	08/19/22
L2245031-15	302-AF05-C3-VOC	SOIL	PHILADELPHIA, PA	08/19/22 13:10	08/19/22
L2245031-16	302-AF05-C3-COMP	SOIL	PHILADELPHIA, PA	08/19/22 13:10	08/19/22
L2245031-17	302-AF05-C4-VOC	SOIL	PHILADELPHIA, PA	08/19/22 13:25	08/19/22
L2245031-18	302-AF05-C4-COMP	SOIL	PHILADELPHIA, PA	08/19/22 13:25	08/19/22
L2245031-19	302-AF05-C5-VOC	SOIL	PHILADELPHIA, PA	08/19/22 13:35	08/19/22
L2245031-20	302-AF05-C5-COMP	SOIL	PHILADELPHIA, PA	08/19/22 13:35	08/19/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2245031-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (136%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

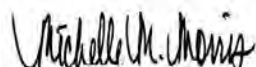
L2245031-19: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container ( jar) and preserved appropriately.

#### Total Metals

L2245031-10, -14, and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 08/26/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-01  
 Client ID: 302-AE05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 09:45  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 22:35  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-03  
 Client ID: 302-AE05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 09:55  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 23:14  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-05  
 Client ID: 302-AE05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:05  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/24/22 21:27  
 Analyst: JC  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-07  
 Client ID: 302-AE05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:15  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/24/22 20:08  
 Analyst: JC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00080	0.00021	1
Toluene	ND		mg/kg	0.00080	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00024	1
Ethylbenzene	ND		mg/kg	0.00080	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00045	1
o-Xylene	ND		mg/kg	0.00080	0.00023	1
Xylenes, Total	ND		mg/kg	0.00080	0.00023	1
Isopropylbenzene	0.00017	J	mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	97		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-09  
 Client ID: 302-AE05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:30  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/24/22 20:34  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.0027		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.00044	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	0.0014	J	mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	0.0014	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.00051	J	mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.00037	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.00052	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-11  
 Client ID: 302-AF05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 12:45  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/23/22 23:52  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00027	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00030	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-13  
 Client ID: 302-AF05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 12:55  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/24/22 21:01  
 Analyst: JC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0037	0.00038	1
Benzene	0.019		mg/kg	0.00093	0.00031	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00048	1
Toluene	0.0020		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00093	0.00055	1
Ethylbenzene	0.0011	J	mg/kg	0.0019	0.00026	1
p/m-Xylene	0.0050		mg/kg	0.0037	0.0010	1
o-Xylene	0.0024		mg/kg	0.0019	0.00054	1
Xylenes, Total	0.0074		mg/kg	0.0019	0.00054	1
Isopropylbenzene	0.017		mg/kg	0.0019	0.00020	1
1,3,5-Trimethylbenzene	0.00056	J	mg/kg	0.0037	0.00036	1
1,2,4-Trimethylbenzene	0.0018	J	mg/kg	0.0037	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	136	Q	70-130
Dibromofluoromethane	85		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-15  
 Client ID: 302-AF05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:10  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/24/22 00:31  
 Analyst: JC  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-17  
 Client ID: 302-AF05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:25  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/24/22 01:09  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00034	J	mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.00019	J	mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-19  
 Client ID: 302-AF05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:35  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 14:06  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/23/22 20:39  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,11,15,17 Batch: WG1679095-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/24/22 12:03  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,07,09,13 Batch: WG1679521-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	92		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/25/22 11:28  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 19 Batch: WG1680020-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	96		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,11,15,17 Batch: WG1679095-3 WG1679095-4								
Methyl tert butyl ether	98		100		66-130	2		30
Benzene	104		105		70-130	1		30
1,2-Dichloroethane	100		101		70-130	1		30
Toluene	102		102		70-130	0		30
1,2-Dibromoethane	104		107		70-130	3		30
Ethylbenzene	104		104		70-130	0		30
p/m-Xylene	104		104		70-130	0		30
o-Xylene	103		102		70-130	1		30
Isopropylbenzene	104		104		70-130	0		30
1,3,5-Trimethylbenzene	103		103		70-130	0		30
1,2,4-Trimethylbenzene	103		103		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	96		95		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	98		98		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2245031

Project Number: 200.00135.006

Report Date: 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,07,09,13 Batch: WG1679521-3 WG1679521-4								
Methyl tert butyl ether	109		105		66-130	4		30
Benzene	112		111		70-130	1		30
1,2-Dichloroethane	89		87		70-130	2		30
Toluene	110		109		70-130	1		30
1,2-Dibromoethane	109		104		70-130	5		30
Ethylbenzene	108		106		70-130	2		30
p/m-Xylene	112		110		70-130	2		30
o-Xylene	115		112		70-130	3		30
Isopropylbenzene	112		112		70-130	0		30
1,3,5-Trimethylbenzene	109		108		70-130	1		30
1,2,4-Trimethylbenzene	111		110		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		81		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	104		106		70-130
Dibromofluoromethane	90		90		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 19 Batch: WG1680020-3 WG1680020-4									
Methyl tert butyl ether	92		94		66-130		2		30
Benzene	92		90		70-130		2		30
1,2-Dichloroethane	77		78		70-130		1		30
Toluene	93		90		70-130		3		30
1,2-Dibromoethane	84		86		70-130		2		30
Ethylbenzene	90		87		70-130		3		30
p/m-Xylene	96		94		70-130		2		30
o-Xylene	94		92		70-130		2		30
Isopropylbenzene	105		101		70-130		4		30
1,3,5-Trimethylbenzene	97		95		70-130		2		30
1,2,4-Trimethylbenzene	96		93		70-130		3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	74		75		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	99		98		70-130
Dibromofluoromethane	81		83		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-02  
 Client ID: 302-AE05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 09:45  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 17:12  
 Analyst: JG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.059	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.21		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.096	J	mg/kg	0.11	0.021	1
Chrysene	0.098	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.10	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.084	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.047	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	132	Q	23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-04  
 Client ID: 302-AE05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 09:55  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 17:35  
 Analyst: JG  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	0.022	J	mg/kg	0.18	0.018	1
Phenanthrene	0.042	J	mg/kg	0.11	0.022	1
Anthracene	0.34		mg/kg	0.11	0.035	1
Pyrene	1.8		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.64		mg/kg	0.11	0.020	1
Chrysene	0.63		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.58		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.36		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.097	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	127	Q	23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-06  
 Client ID: 302-AE05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:05  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 17:59  
 Analyst: JG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.026	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	76		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-08  
 Client ID: 302-AE05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:15  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/25/22 23:04  
 Analyst: IM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/25/22 08:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.034	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.11		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.18		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.079	J	mg/kg	0.11	0.021	1
Chrysene	0.088	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.083	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.066	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.034	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-10  
 Client ID: 302-AE05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:30  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 18:23  
 Analyst: JG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-12  
 Client ID: 302-AF05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 12:45  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 18:46  
 Analyst: JG  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.091	J	mg/kg	0.20	0.024	1
Fluorene	0.13	J	mg/kg	0.20	0.019	1
Phenanthrene	1.4		mg/kg	0.12	0.024	1
Anthracene	0.42		mg/kg	0.12	0.038	1
Pyrene	3.1		mg/kg	0.12	0.020	1
Benzo(a)anthracene	1.9		mg/kg	0.12	0.022	1
Chrysene	1.8		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	3.0		mg/kg	0.12	0.033	1
Benzo(a)pyrene	2.8		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	1.6		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	126	Q	23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-14  
 Client ID: 302-AF05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 12:55  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 19:10  
 Analyst: JG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.56		mg/kg	0.19	0.023	1
Fluorene	0.36		mg/kg	0.19	0.019	1
Phenanthrene	2.6		mg/kg	0.12	0.023	1
Anthracene	0.62		mg/kg	0.12	0.037	1
Pyrene	3.1		mg/kg	0.12	0.019	1
Benzo(a)anthracene	1.8		mg/kg	0.12	0.022	1
Chrysene	2.0		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	2.5		mg/kg	0.12	0.032	1
Benzo(a)pyrene	2.2		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	1.4		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-16  
 Client ID: 302-AF05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:10  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 19:33  
 Analyst: JG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.043	J	mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	0.026	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.020	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-18  
 Client ID: 302-AF05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:25  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 19:57  
 Analyst: JG  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	96		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-20  
 Client ID: 302-AF05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:35  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/24/22 20:20  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/22/22 03:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.27		mg/kg	0.19	0.023	1
Fluorene	0.44		mg/kg	0.19	0.018	1
Phenanthrene	1.9		mg/kg	0.11	0.023	1
Anthracene	0.39		mg/kg	0.11	0.036	1
Pyrene	2.1		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.3		mg/kg	0.11	0.021	1
Chrysene	1.4		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.9		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.6		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.82		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	74		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/23/22 10:00  
 Analyst: MG

Extraction Method: EPA 3546  
 Extraction Date: 08/21/22 23:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,10,12,14,16,18,20 Batch: WG1677952-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	104		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/25/22 20:20  
Analyst: IM

Extraction Method: EPA 3546  
Extraction Date: 08/25/22 08:48

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08 Batch: WG1679573-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	84		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,10,12,14,16,18,20 Batch: WG1677952-2 WG1677952-3								
Naphthalene	89		93		40-140	4		50
Fluorene	100		102		40-140	2		50
Phenanthrene	96		99		40-140	3		50
Anthracene	100		103		40-140	3		50
Pyrene	107		110		35-142	3		50
Benzo(a)anthracene	95		98		40-140	3		50
Chrysene	95		98		40-140	3		50
Benzo(b)fluoranthene	97		99		40-140	2		50
Benzo(a)pyrene	100		102		40-140	2		50
Benzo(ghi)perylene	100		101		40-140	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	117		122	Q	23-120
2-Fluorobiphenyl	87		89		30-120
4-Terphenyl-d14	98		100		18-120



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245031

Report Date: 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1679573-2 WG1679573-3								
Naphthalene	78		62		40-140	23		50
Fluorene	83		63		40-140	27		50
Phenanthrene	81		61		40-140	28		50
Anthracene	82		62		40-140	28		50
Pyrene	89		66		35-142	30		50
Benzo(a)anthracene	79		60		40-140	27		50
Chrysene	79		60		40-140	27		50
Benzo(b)fluoranthene	84		61		40-140	32		50
Benzo(a)pyrene	85		62		40-140	31		50
Benzo(ghi)perylene	81		62		40-140	27		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	116		95		23-120
2-Fluorobiphenyl	91		71		30-120
4-Terphenyl-d14	101		76		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245031

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-02

Date Collected: 08/19/22 09:45

Client ID: 302-AE05-C1-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	44.3		mg/kg	4.38	0.235	2	08/22/22 09:30	08/25/22 11:44	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245031

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-04

Date Collected: 08/19/22 09:55

Client ID: 302-AE05-C2-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.6		mg/kg	4.17	0.223	2	08/22/22 09:30	08/25/22 12:12	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-06  
 Client ID: 302-AE05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:05  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.90		mg/kg	2.37	0.127	1	08/22/22 09:30	08/25/22 09:34	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-08  
 Client ID: 302-AE05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:15  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.54		mg/kg	2.24	0.120	1	08/22/22 10:35	08/26/22 10:33	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-10  
 Client ID: 302-AE05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 10:30  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	23.1		mg/kg	11.6	0.623	5	08/22/22 10:35	08/26/22 12:34	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245031

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-12

Date Collected: 08/19/22 12:45

Client ID: 302-AF05-C1-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.4		mg/kg	2.35	0.126	1	08/22/22 10:35	08/26/22 10:43	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245031

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-14

Date Collected: 08/19/22 12:55

Client ID: 302-AF05-C2-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	175		mg/kg	11.6	0.622	5	08/22/22 10:35	08/26/22 12:39	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-16  
 Client ID: 302-AF05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/19/22 13:10  
 Date Received: 08/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.8		mg/kg	4.56	0.244	2	08/26/22 08:05	08/26/22 14:09	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245031

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

**SAMPLE RESULTS**

Lab ID: L2245031-18

Date Collected: 08/19/22 13:25

Client ID: 302-AF05-C4-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.64	J	mg/kg	21.0	1.13	10	08/22/22 10:35	08/26/22 15:03	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-20

Date Collected: 08/19/22 13:35

Client ID: 302-AF05-C5-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	22.4		mg/kg	2.19	0.117	1	08/22/22 10:35	08/26/22 10:57	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1677793-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/22/22 09:30	08/25/22 07:28	1,6010D	ZK

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 08,10,12,14,18,20 Batch: WG1678102-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/22/22 10:35	08/26/22 08:37	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 16 Batch: WG1680003-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/26/22 08:05	08/26/22 13:51	1,6010D	JF

### Prep Information

Digestion Method: EPA 3050B

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245031

**Project Number:** 200.00135.006

**Report Date:** 08/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1677793-2 SRM Lot Number: D113-540								
Lead, Total	91		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 08,10,12,14,18,20 Batch: WG1678102-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 16 Batch: WG1680003-2 SRM Lot Number: D113-540								
Lead, Total	87		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MS Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1677793-3 QC Sample: L2245134-01 Client ID: MS Sample												
Lead, Total	28.7	42.9	45.2	38	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 08,10,12,14,18,20 QC Batch ID: WG1678102-3 WG1678102-4 QC Sample: L2244887-41 Client ID: MS Sample												
Lead, Total	3.74J	43	38.3	89		36.9	86		75-125	4		20
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1680003-3 QC Sample: L2245031-16 Client ID: 302-AF05-C3-COMP												
Lead, Total	17.8	48.3	61.6	91		-	-		75-125	-		20

### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2245031

**Report Date:** 08/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1677793-4 QC Sample: L2245134-01 Client ID: DUP Sample						
Lead, Total	28.7	14.5	mg/kg	66	Q	20
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1680003-4 QC Sample: L2245031-16 Client ID: 302-AF05-C3-COMP						
Lead, Total	17.8	18.5	mg/kg	4		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-01

Date Collected: 08/19/22 09:45

Client ID: 302-AE05-C1-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.0		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-02

Date Collected: 08/19/22 09:45

Client ID: 302-AE05-C1-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-03

Date Collected: 08/19/22 09:55

Client ID: 302-AE05-C2-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-04

Date Collected: 08/19/22 09:55

Client ID: 302-AE05-C2-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.4		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

**SAMPLE RESULTS**

**Lab ID:** L2245031-05  
**Client ID:** 302-AE05-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/19/22 10:05  
**Date Received:** 08/19/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.3		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-06

Date Collected: 08/19/22 10:05

Client ID: 302-AE05-C3-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.8		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245031

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2245031-07

Date Collected: 08/19/22 10:15

Client ID: 302-AE05-C4-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.5		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-08

Date Collected: 08/19/22 10:15

Client ID: 302-AE05-C4-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-09

Date Collected: 08/19/22 10:30

Client ID: 302-AE05-C5-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-10

Date Collected: 08/19/22 10:30

Client ID: 302-AE05-C5-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.5		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-11

Date Collected: 08/19/22 12:45

Client ID: 302-AF05-C1-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-12

Date Collected: 08/19/22 12:45

Client ID: 302-AF05-C1-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-13

Date Collected: 08/19/22 12:55

Client ID: 302-AF05-C2-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.2		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2245031

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2245031-14

Date Collected: 08/19/22 12:55

Client ID: 302-AF05-C2-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245031

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2245031-15

Date Collected: 08/19/22 13:10

Client ID: 302-AF05-C3-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.6		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-16

Date Collected: 08/19/22 13:10

Client ID: 302-AF05-C3-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.4		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245031

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2245031-17

Date Collected: 08/19/22 13:25

Client ID: 302-AF05-C4-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.9		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-18

Date Collected: 08/19/22 13:25

Client ID: 302-AF05-C4-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.2		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**SAMPLE RESULTS**

Lab ID: L2245031-19

Date Collected: 08/19/22 13:35

Client ID: 302-AF05-C5-VOC

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.9		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245031

Project Number: 200.00135.006

Report Date: 08/26/22

## SAMPLE RESULTS

Lab ID: L2245031-20

Date Collected: 08/19/22 13:35

Client ID: 302-AF05-C5-COMP

Date Received: 08/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.5		%	0.100	NA	1	-	08/20/22 14:13	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2245031

**Report Date:** 08/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1677655-1 QC Sample: L2245031-01 Client ID: 302-AE05-C1-VOC						
Solids, Total	90.0	89.2	%	1		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245031-01A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-01B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-01C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-01D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-02B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-03A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-03B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-03C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-03D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-04B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-05A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-05B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-05C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-05D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-06B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-07A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-07B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-07C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-07D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245031-08B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-09A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-09B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-09C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-09D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-10B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-11A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-11B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-11C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-11D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-12B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-13A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-13B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-13C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-13D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-14B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-15A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-15B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-15C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-15D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-16B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-17A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-17B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-17C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245031**Project Number:** 200.00135.006**Report Date:** 08/26/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245031-17D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-18B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245031-19A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245031-19B	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-19C	Vial water preserved	A	NA		3.4	Y	Absent	20-AUG-22 09:08	PA-8260HLW(14)
L2245031-19D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2245031-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2245031-20B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245031  
**Report Date:** 08/26/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

---

For a complete listing of analytes and methods, please contact your Alpha Project Manager.







# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/20/22

ALPHA Job #: L2245031

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES		
		Date	Time																		
45031 -11	302-AF05-C1-VOC	8.19.22	12:45	S	TR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-12	302-AF05-C1-COMP		12:45			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-AF05-C2-VOC		12:55			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-AF05-C2-COMP		12:55			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-AF05-C3-VOC		13:10			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-AF05-C3-COMP		13:10			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-AF05-C4-VOC		13:25			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-AF05-C4-COMP		13:25			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-19	302-AF05-C5-VOC		13:35			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-20	302-AF05-C5-COMP		13:35			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/19/22 14:00	<i>[Signature]</i>	8/19/22 14:00
<i>[Signature]</i>	8/19/22 14:00	<i>[Signature]</i>	8/19/22 14:00
<i>[Signature]</i>	8/19/22 2:00	<i>[Signature]</i>	8/19/22 2:10
<i>[Signature]</i>	8/19/22	<i>[Signature]</i>	8/19/22 2340

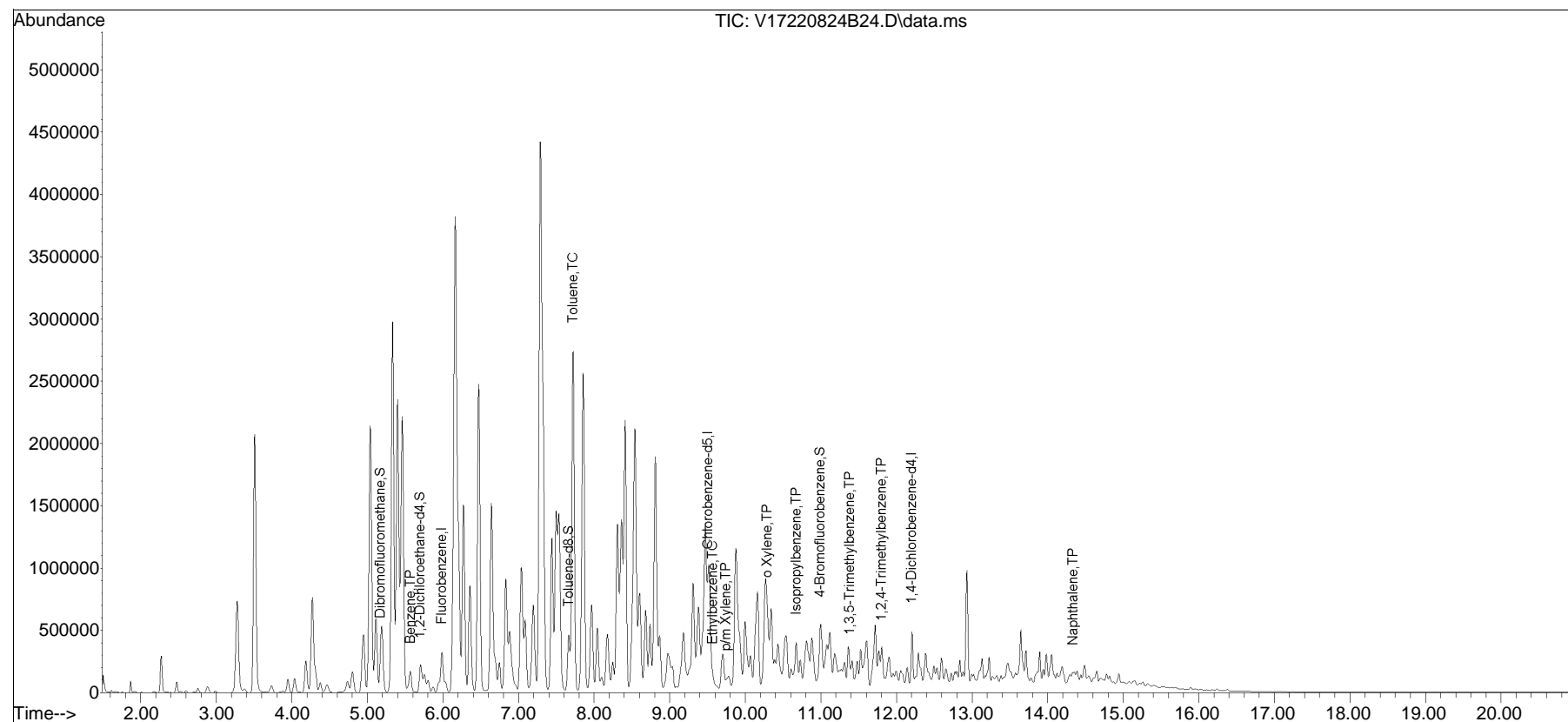
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2022\220824B\  
Data File : V17220824B24.D  
Acq On : 24 Aug 2022 09:01 pm  
Operator : VOA117:JC  
Sample : 12245031-13,31,3.30,5,,b  
Misc : WG1679521,ICAL19278  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Aug 25 12:14:57 2022  
Quant Method : I:\VOLATILES\VOA117\2022\220824B\V117\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 08:12:35 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list24B\V17220824B02.D•





## ANALYTICAL REPORT

Lab Number:	L2245326
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/29/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245326

Report Date: 08/29/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2245326-01	302-AG04-C1-VOC	SOIL	PHILADELPHIA, PA	08/22/22 09:45	08/22/22
L2245326-02	302-AG04-C1-COMP	SOIL	PHILADELPHIA, PA	08/22/22 09:45	08/22/22
L2245326-03	302-AG04-C2-VOC	SOIL	PHILADELPHIA, PA	08/22/22 10:00	08/22/22
L2245326-04	302-AG04-C2-COMP	SOIL	PHILADELPHIA, PA	08/22/22 10:00	08/22/22
L2245326-05	302-AG04-C3-VOC	SOIL	PHILADELPHIA, PA	08/22/22 10:10	08/22/22
L2245326-06	302-AG04-C3-COMP	SOIL	PHILADELPHIA, PA	08/22/22 10:10	08/22/22
L2245326-07	302-AG04-C4-VOC	SOIL	PHILADELPHIA, PA	08/22/22 10:20	08/22/22
L2245326-08	302-AG04-C4-COMP	SOIL	PHILADELPHIA, PA	08/22/22 10:20	08/22/22
L2245326-09	302-AG05-C1-VOC	SOIL	PHILADELPHIA, PA	08/22/22 11:50	08/22/22
L2245326-10	302-AG05-C1-COMP	SOIL	PHILADELPHIA, PA	08/22/22 11:50	08/22/22
L2245326-11	302-AG05-C2-VOC	SOIL	PHILADELPHIA, PA	08/22/22 12:00	08/22/22
L2245326-12	302-AG05-C2-COMP	SOIL	PHILADELPHIA, PA	08/22/22 12:00	08/22/22
L2245326-13	302-AG05-C3-VOC	SOIL	PHILADELPHIA, PA	08/22/22 12:10	08/22/22
L2245326-14	302-AG05-C3-COMP	SOIL	PHILADELPHIA, PA	08/22/22 12:10	08/22/22
L2245326-15	302-AG05-C4-VOC	SOIL	PHILADELPHIA, PA	08/22/22 12:20	08/22/22
L2245326-16	302-AG05-C4-COMP	SOIL	PHILADELPHIA, PA	08/22/22 12:20	08/22/22
L2245326-17	302-AG06-C1-VOC	SOIL	PHILADELPHIA, PA	08/22/22 13:00	08/22/22
L2245326-18	302-AG06-C1-COMP	SOIL	PHILADELPHIA, PA	08/22/22 13:00	08/22/22
L2245326-19	302-AG06-C2-VOC	SOIL	PHILADELPHIA, PA	08/22/22 13:20	08/22/22
L2245326-20	302-AG06-C2-COMP	SOIL	PHILADELPHIA, PA	08/22/22 13:20	08/22/22
L2245326-21	302-AG06-C3-VOC	SOIL	PHILADELPHIA, PA	08/22/22 13:40	08/22/22
L2245326-22	302-AG06-C3-COMP	SOIL	PHILADELPHIA, PA	08/22/22 13:40	08/22/22
L2245326-23	302-AG06-C4-VOC	SOIL	PHILADELPHIA, PA	08/22/22 14:00	08/22/22
L2245326-24	302-AG06-C4-COMP	SOIL	PHILADELPHIA, PA	08/22/22 14:00	08/22/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2245326-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (244%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245326-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (219%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245326-09, -11, and -13: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2245326-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245326-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (189%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245326-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (183%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245326-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (205%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Case Narrative (continued)**

Total Metals

L2245326-04, -06, -08, -10, -12 and -20: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 08/29/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-01  
 Client ID: 302-AG04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 09:45  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 04:45  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-03  
 Client ID: 302-AG04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 10:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/29/22 11:29  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	0.00075	J	mg/kg	0.00076	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00039	1
Toluene	ND		mg/kg	0.0015	0.00082	1
1,2-Dibromoethane	ND		mg/kg	0.00076	0.00044	1
Ethylbenzene	0.00032	J	mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00085	1
o-Xylene	0.00052	J	mg/kg	0.0015	0.00044	1
Xylenes, Total	0.00052	J	mg/kg	0.0015	0.00044	1
Isopropylbenzene	0.0086		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	0.00052	J	mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	0.00095	J	mg/kg	0.0030	0.00051	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	126		70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-05  
 Client ID: 302-AG04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 10:10  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 02:28  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.013	J	mg/kg	0.030	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	0.087		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.017	1
Ethylbenzene	0.46		mg/kg	0.059	0.0083	1
p/m-Xylene	0.062	J	mg/kg	0.12	0.033	1
o-Xylene	0.019	J	mg/kg	0.059	0.017	1
Xylenes, Total	0.081	J	mg/kg	0.059	0.017	1
Isopropylbenzene	4.0		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	1.7		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	11.		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	<b>244</b>	Q	70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-07  
 Client ID: 302-AG04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 10:20  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 02:56  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.0099	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	0.054	J	mg/kg	0.060	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	0.12		mg/kg	0.060	0.0084	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.060	0.017	1
Xylenes, Total	ND		mg/kg	0.060	0.017	1
Isopropylbenzene	2.7		mg/kg	0.060	0.0065	1
1,3,5-Trimethylbenzene	0.18		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	1.6		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	219	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-09  
 Client ID: 302-AG05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 11:50  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 03:23  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.052		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	ND		mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.033	J	mg/kg	0.064	0.0090	1
p/m-Xylene	0.059	J	mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.064	0.018	1
Xylenes, Total	0.059	J	mg/kg	0.064	0.018	1
Isopropylbenzene	0.44		mg/kg	0.064	0.0069	1
1,3,5-Trimethylbenzene	0.014	J	mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.039	J	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-11  
 Client ID: 302-AG05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 03:51  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	ND		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	ND		mg/kg	0.065	0.0092	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.065	0.019	1
Xylenes, Total	ND		mg/kg	0.065	0.019	1
Isopropylbenzene	1.7		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	<b>189</b>	Q	70-130
Dibromofluoromethane	97		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-13  
 Client ID: 302-AG05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:10  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 04:18  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.062	0.0088	1
p/m-Xylene	ND		mg/kg	0.12	0.035	1
o-Xylene	ND		mg/kg	0.062	0.018	1
Xylenes, Total	ND		mg/kg	0.062	0.018	1
Isopropylbenzene	0.67		mg/kg	0.062	0.0068	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	<b>183</b>	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-15  
 Client ID: 302-AG05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:20  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 06:06  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00072		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	0.00052	J	mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00022	J	mg/kg	0.00093	0.00013	1
p/m-Xylene	0.00085	J	mg/kg	0.0019	0.00052	1
o-Xylene	0.00038	J	mg/kg	0.00093	0.00027	1
Xylenes, Total	0.0012	J	mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.032		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	0.0013	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.0031		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	205	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-17  
 Client ID: 302-AG06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 13:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 05:12  
 Analyst: JC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00025	J	mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00015	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-19  
 Client ID: 302-AG06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 13:20  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 05:39  
 Analyst: JC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00068		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00038	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00058	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-21  
 Client ID: 302-AG06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 13:40  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 12:32  
 Analyst: KJD  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00021	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.00030	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.00023	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	83		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-23  
 Client ID: 302-AG06-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 14:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 12:53  
 Analyst: KJD  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00025	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.00011	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/25/22 21:01  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05,07,09,11,13 Batch: WG1680142-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/25/22 21:01  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,15,17,19 Batch: WG1680143-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 08:19  
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 21,23 Batch: WG1680170-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	108		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/29/22 08:50  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1680930-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	82		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	91		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05,07,09,11,13 Batch: WG1680142-3 WG1680142-4								
Methyl tert butyl ether	97		96		66-130	1		30
Benzene	97		96		70-130	1		30
1,2-Dichloroethane	92		92		70-130	0		30
Toluene	93		95		70-130	2		30
1,2-Dibromoethane	98		99		70-130	1		30
Ethylbenzene	96		97		70-130	1		30
p/m-Xylene	100		101		70-130	1		30
o-Xylene	100		101		70-130	1		30
Isopropylbenzene	97		98		70-130	1		30
1,3,5-Trimethylbenzene	98		98		70-130	0		30
1,2,4-Trimethylbenzene	98		98		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	93		95		70-130
Dibromofluoromethane	100		99		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,15,17,19 Batch: WG1680143-3 WG1680143-4								
Methyl tert butyl ether	97		96		66-130	1		30
Benzene	97		96		70-130	1		30
1,2-Dichloroethane	92		92		70-130	0		30
Toluene	93		95		70-130	2		30
1,2-Dibromoethane	98		99		70-130	1		30
Ethylbenzene	96		97		70-130	1		30
p/m-Xylene	100		101		70-130	1		30
o-Xylene	100		101		70-130	1		30
Isopropylbenzene	97		98		70-130	1		30
1,3,5-Trimethylbenzene	98		98		70-130	0		30
1,2,4-Trimethylbenzene	98		98		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	93		95		70-130
Dibromofluoromethane	100		98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 21,23 Batch: WG1680170-3 WG1680170-4									
Methyl tert butyl ether	66		69		66-130	4		30	
Benzene	89		89		70-130	0		30	
1,2-Dichloroethane	91		95		70-130	4		30	
Toluene	95		93		70-130	2		30	
1,2-Dibromoethane	81		86		70-130	6		30	
Ethylbenzene	98		97		70-130	1		30	
p/m-Xylene	100		98		70-130	2		30	
o-Xylene	98		97		70-130	1		30	
Isopropylbenzene	100		95		70-130	5		30	
1,3,5-Trimethylbenzene	102		99		70-130	3		30	
1,2,4-Trimethylbenzene	102		99		70-130	3		30	

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		101		70-130
Toluene-d8	104		101		70-130
4-Bromofluorobenzene	96		93		70-130
Dibromofluoromethane	91		92		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1680930-3 WG1680930-4								
Methyl tert butyl ether	91		91		66-130	0		30
Benzene	97		96		70-130	1		30
1,2-Dichloroethane	73		73		70-130	0		30
Toluene	95		94		70-130	1		30
1,2-Dibromoethane	90		90		70-130	0		30
Ethylbenzene	94		93		70-130	1		30
p/m-Xylene	97		96		70-130	1		30
o-Xylene	97		98		70-130	1		30
Isopropylbenzene	100		98		70-130	2		30
1,3,5-Trimethylbenzene	95		94		70-130	1		30
1,2,4-Trimethylbenzene	95		94		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	79		78		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	106		105		70-130
Dibromofluoromethane	90		89		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-02  
 Client ID: 302-AG04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 09:45  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 16:00  
 Analyst: JG  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	0.036	J	mg/kg	0.17	0.017	1
Phenanthrene	0.11		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.044	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.030	J	mg/kg	0.10	0.020	1
Chrysene	0.056	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.034	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.043	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	51		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-04  
 Client ID: 302-AG04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 10:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 16:24  
 Analyst: JG  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.21		mg/kg	0.21	0.026	1
Fluorene	0.063	J	mg/kg	0.21	0.021	1
Phenanthrene	0.54		mg/kg	0.13	0.026	1
Anthracene	0.12	J	mg/kg	0.13	0.041	1
Pyrene	0.57		mg/kg	0.13	0.021	1
Benzo(a)anthracene	0.37		mg/kg	0.13	0.024	1
Chrysene	0.43		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.50		mg/kg	0.13	0.036	1
Benzo(a)pyrene	0.48		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	0.44		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	42		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-06  
 Client ID: 302-AG04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 10:10  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 16:48  
 Analyst: JG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	48		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-08  
 Client ID: 302-AG04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 10:20  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 17:12  
 Analyst: JG  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.067	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	42		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-10  
 Client ID: 302-AG05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 11:50  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 17:36  
 Analyst: JG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.51		mg/kg	0.19	0.023	1
Fluorene	0.099	J	mg/kg	0.19	0.018	1
Phenanthrene	0.10	J	mg/kg	0.11	0.023	1
Anthracene	0.038	J	mg/kg	0.11	0.037	1
Pyrene	0.16		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.11		mg/kg	0.11	0.021	1
Chrysene	0.15		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.078	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.10	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.079	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	143	Q	23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-12  
 Client ID: 302-AG05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 18:00  
 Analyst: JG  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.033	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.027	J	mg/kg	0.12	0.022	1
Chrysene	0.026	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	41		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-14  
 Client ID: 302-AG05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:10  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 18:24  
 Analyst: JG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.030	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-16  
 Client ID: 302-AG05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:20  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 04:37  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/26/22 03:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-18  
 Client ID: 302-AG06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 13:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 04:13  
 Analyst: CMM  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 08/26/22 03:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.098	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.095	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.049	J	mg/kg	0.11	0.020	1
Chrysene	0.056	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.071	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.050	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.034	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	57		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-20  
 Client ID: 302-AG06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 13:20  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 02:14  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/26/22 03:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-22  
 Client ID: 302-AG06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 13:40  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/27/22 03:26  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 08/26/22 03:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-24  
 Client ID: 302-AG06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 14:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/26/22 20:21  
 Analyst: CMM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/26/22 03:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.048	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.025	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.023	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/26/22 17:09  
Analyst: MG

Extraction Method: EPA 3546  
Extraction Date: 08/26/22 03:55

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 16,18,20,22,24 Batch: WG1679940-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/27/22 14:18  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 08/27/22 01:13

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1680310-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	79		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 16,18,20,22,24 Batch: WG1679940-2 WG1679940-3								
Naphthalene	71		62		40-140	14		50
Fluorene	76		70		40-140	8		50
Phenanthrene	72		67		40-140	7		50
Anthracene	74		68		40-140	8		50
Pyrene	74		70		35-142	6		50
Benzo(a)anthracene	79		73		40-140	8		50
Chrysene	78		72		40-140	8		50
Benzo(b)fluoranthene	78		71		40-140	9		50
Benzo(a)pyrene	79		69		40-140	14		50
Benzo(ghi)perylene	74		65		40-140	13		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	67		62		23-120
2-Fluorobiphenyl	74		68		30-120
4-Terphenyl-d14	73		69		18-120



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1680310-2 WG1680310-3								
Naphthalene	79		66		40-140	18		50
Fluorene	80		66		40-140	19		50
Phenanthrene	79		65		40-140	19		50
Anthracene	82		68		40-140	19		50
Pyrene	81		67		35-142	19		50
Benzo(a)anthracene	79		65		40-140	19		50
Chrysene	80		66		40-140	19		50
Benzo(b)fluoranthene	84		69		40-140	20		50
Benzo(a)pyrene	82		69		40-140	17		50
Benzo(ghi)perylene	81		67		40-140	19		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	84		72		23-120
2-Fluorobiphenyl	81		68		30-120
4-Terphenyl-d14	84		70		18-120



## METALS



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-02

Date Collected: 08/22/22 09:45

Client ID: 302-AG04-C1-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.12		mg/kg	2.04	0.109	1	08/23/22 11:14	08/24/22 20:27	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-04

Date Collected: 08/22/22 10:00

Client ID: 302-AG04-C2-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2420		mg/kg	5.04	0.270	2	08/23/22 11:14	08/24/22 21:28	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-06

Date Collected: 08/22/22 10:10

Client ID: 302-AG04-C3-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.7		mg/kg	11.9	0.640	5	08/23/22 11:14	08/24/22 15:40	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-08

Date Collected: 08/22/22 10:20

Client ID: 302-AG04-C4-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.89	J	mg/kg	11.6	0.624	5	08/23/22 11:14	08/24/22 15:44	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-10

Date Collected: 08/22/22 11:50

Client ID: 302-AG05-C1-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.91		mg/kg	4.53	0.243	2	08/23/22 11:14	08/24/22 16:44	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-12  
 Client ID: 302-AG05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/22/22 12:00  
 Date Received: 08/22/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.16		mg/kg	4.58	0.245	2	08/23/22 11:14	08/24/22 16:48	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-14

Date Collected: 08/22/22 12:10

Client ID: 302-AG05-C3-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.70		mg/kg	2.44	0.131	1	08/23/22 11:14	08/24/22 14:49	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-16

Date Collected: 08/22/22 12:20

Client ID: 302-AG05-C4-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.80		mg/kg	2.34	0.125	1	08/23/22 11:14	08/24/22 15:25	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-18

Date Collected: 08/22/22 13:00

Client ID: 302-AG06-C1-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	255		mg/kg	2.10	0.112	1	08/23/22 11:14	08/24/22 15:30	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-20

Date Collected: 08/22/22 13:20

Client ID: 302-AG06-C2-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.2	J	mg/kg	23.7	1.27	10	08/23/22 11:14	08/24/22 17:02	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-22

Date Collected: 08/22/22 13:40

Client ID: 302-AG06-C3-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.36		mg/kg	2.41	0.129	1	08/23/22 11:14	08/24/22 16:21	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

**Project Number:** 200.00135.006

**Report Date:** 08/29/22

**SAMPLE RESULTS**

Lab ID: L2245326-24

Date Collected: 08/22/22 14:00

Client ID: 302-AG06-C4-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.37		mg/kg	2.15	0.115	1	08/23/22 11:14	08/24/22 16:26	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24						Batch: WG1678603-1			
Lead, Total	ND	mg/kg	2.00	0.107	1	08/23/22 11:14	08/24/22 11:56	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1678603-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24    QC Batch ID: WG1678603-3    QC Sample: L2245366-01    Client ID: MS Sample												
Lead, Total	39700	48.9	49000	<b>19000</b>	Q	-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2245326

**Report Date:** 08/29/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1678603-4 QC Sample: L2245366-01 Client ID: DUP Sample						
Lead, Total	39700	40500	mg/kg	2		20





**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1678603-6 QC Sample: L2245366-01 Client ID: DUP Sample						
Lead, Total	39700	45400	mg/kg	14		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-01

Date Collected: 08/22/22 09:45

Client ID: 302-AG04-C1-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.5		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-02

Date Collected: 08/22/22 09:45

Client ID: 302-AG04-C1-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.8		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-03

Date Collected: 08/22/22 10:00

Client ID: 302-AG04-C2-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.5		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-04

Date Collected: 08/22/22 10:00

Client ID: 302-AG04-C2-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.7		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-05

Date Collected: 08/22/22 10:10

Client ID: 302-AG04-C3-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.7		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-06

Date Collected: 08/22/22 10:10

Client ID: 302-AG04-C3-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-07

Date Collected: 08/22/22 10:20

Client ID: 302-AG04-C4-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-08

Date Collected: 08/22/22 10:20

Client ID: 302-AG04-C4-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-09

Date Collected: 08/22/22 11:50

Client ID: 302-AG05-C1-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-10

Date Collected: 08/22/22 11:50

Client ID: 302-AG05-C1-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-11

Date Collected: 08/22/22 12:00

Client ID: 302-AG05-C2-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.7		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-12

Date Collected: 08/22/22 12:00

Client ID: 302-AG05-C2-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-13

Date Collected: 08/22/22 12:10

Client ID: 302-AG05-C3-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-14

Date Collected: 08/22/22 12:10

Client ID: 302-AG05-C3-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-15

Date Collected: 08/22/22 12:20

Client ID: 302-AG05-C4-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245326

Project Number: 200.00135.006

Report Date: 08/29/22

## SAMPLE RESULTS

Lab ID: L2245326-16

Date Collected: 08/22/22 12:20

Client ID: 302-AG05-C4-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-17

Date Collected: 08/22/22 13:00

Client ID: 302-AG06-C1-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.5		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-18

Date Collected: 08/22/22 13:00

Client ID: 302-AG06-C1-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.8		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-19

Date Collected: 08/22/22 13:20

Client ID: 302-AG06-C2-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-20

Date Collected: 08/22/22 13:20

Client ID: 302-AG06-C2-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	08/23/22 10:43	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-21

Date Collected: 08/22/22 13:40

Client ID: 302-AG06-C3-VOC

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/23/22 10:34	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-22

Date Collected: 08/22/22 13:40

Client ID: 302-AG06-C3-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	08/23/22 10:34	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245326  
**Report Date:** 08/29/22

**SAMPLE RESULTS**

**Lab ID:** L2245326-23  
**Client ID:** 302-AG06-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/22/22 14:00  
**Date Received:** 08/22/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	08/23/22 10:34	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**SAMPLE RESULTS**

Lab ID: L2245326-24

Date Collected: 08/22/22 14:00

Client ID: 302-AG06-C4-COMP

Date Received: 08/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	08/23/22 10:34	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2245326

**Report Date:** 08/29/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 21-24 QC Batch ID: WG1678551-1 QC Sample: L2245296-01 Client ID: DUP Sample						
Solids, Total	80.7	80.6	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1678552-1 QC Sample: L2245326-01 Client ID: 302-AG04-C1-VOC						
Solids, Total	89.5	89.4	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245326-01A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-01B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-01C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-01D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-02B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-03B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-03C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-03D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-04B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-05B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-05C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-05D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-06B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-07A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-07B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-07C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-07D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245326-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-08B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-09A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245326-09B	Vial water preserved	B	NA		3.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-09C	Vial water preserved	B	NA		3.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-09D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2245326-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2245326-10B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-11A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245326-11B	Vial water preserved	B	NA		3.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-11C	Vial water preserved	B	NA		3.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-11D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2245326-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2245326-12B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-13A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2245326-13B	Vial water preserved	B	NA		3.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-13C	Vial water preserved	B	NA		3.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-13D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2245326-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2245326-14B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-15A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-15B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-15C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-15D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-16B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-17A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-17B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245326**Project Number:** 200.00135.006**Report Date:** 08/29/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245326-17C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-17D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-18B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-19A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-19B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-19C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-19D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-20B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-21A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-21B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-21C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-21D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-22B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2245326-23A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2245326-23B	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-23C	Vial water preserved	A	NA		2.4	Y	Absent	23-AUG-22 07:05	PA-8260HLW(14)
L2245326-23D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2245326-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2245326-24B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)

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## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245326

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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

---

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 3 OF 3



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3286

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  Standard     Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to [edd@terraphase.com](mailto:edd@terraphase.com), [William.Schmidt@ransomenv.com](mailto:William.Schmidt@ransomenv.com), and [jjeray@hilcoglobal.com](mailto:jjeray@hilcoglobal.com)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
45326-01	302-AG04-C1-VOC	8/22	0945	S	TS
02	302-AG04-C1-Comp		0945		
03	302-AG04-C2-VOC		1000		
04	302-AG04-C2-Comp		1000		
05	302-AG04-C3-VOC		1010		
06	302-AG04-C3-Comp		1010		
07	302-AG04-C4-VOC		1020		
08	302-AG04-C4-Comp		1020		
09	302-AG05-C1-VOC		1150		
10	302-AG05-C1-Comp		1150		

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Relinquished By: *[Signature]* Date/Time: 8/23/22 0214  
 Received By: *[Signature]* Date/Time: 8/22/22 2145

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Date Rec'd in Lab: 8/23/22    ALPHA Job #: 62245326

### Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

### Billing Information

Same as Client info    PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program

Criteria

### ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>														4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														2

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 2 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974  
 Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Date Rec'd in Lab: 8/23/02 ALPHA Job #: 62245326

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
45326-11	302-AG05-C2-VOC	8/22	1200	G	TS
12	302-AG05-C2-COMP		1700		
13	302-AG05-C3-VOC		1210		
14	302-AG05-C3-COMP		1210		
15	302-AG05-CA-VOC		1220		
16	302-AG05-CA-COMP		1220		
17	302-AG06-C1-VOC		1300		
18	302-AG06-C1-COMP		1300		
19	302-AG06-C2-VOC		1320		
20	302-AG06-C2-COMP		1320		

VOCs (8260)	SVOCs (8270)	Lead	ANALYSIS										SAMPLE HANDLING	TOTAL # BOTTLES		
			1	2	3	4	5	6	7	8	9	10				
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do (Please specify below)	4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 8/22/02 1500  
 Received By: *[Signature]* Date/Time: 8/22/02 1800  
*[Signature]* 8/22/02  
 Paul Mazzella 8/22/02  
 2145

# CHAIN OF CUSTODY PAGE 3 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1201~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA    Mansfield, MA  
 TEL: 508-896-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3268

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/23/22    ALPHA Job #: L2245326

## Report Information Data Deliverables Billing Information

FAX     EMAIL     Same as Client info    PO #: 3562  
 ADEx     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES			
		Date	Time																				
45326-21	302-AG-06-C3-VOC	8/22	1340	S	JS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	22 302-AG-06-C3-COMP		1340			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	23 302-AG-06-C4-VOC		1900			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	24 302-AG-06-C4-COMP		1900			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 8/22/22 1500  
 Received By: *[Signature]* Date/Time: 8/22/22 1500  
 Paul Maggella 8/22/22    Col DAL 8/22/22 1500

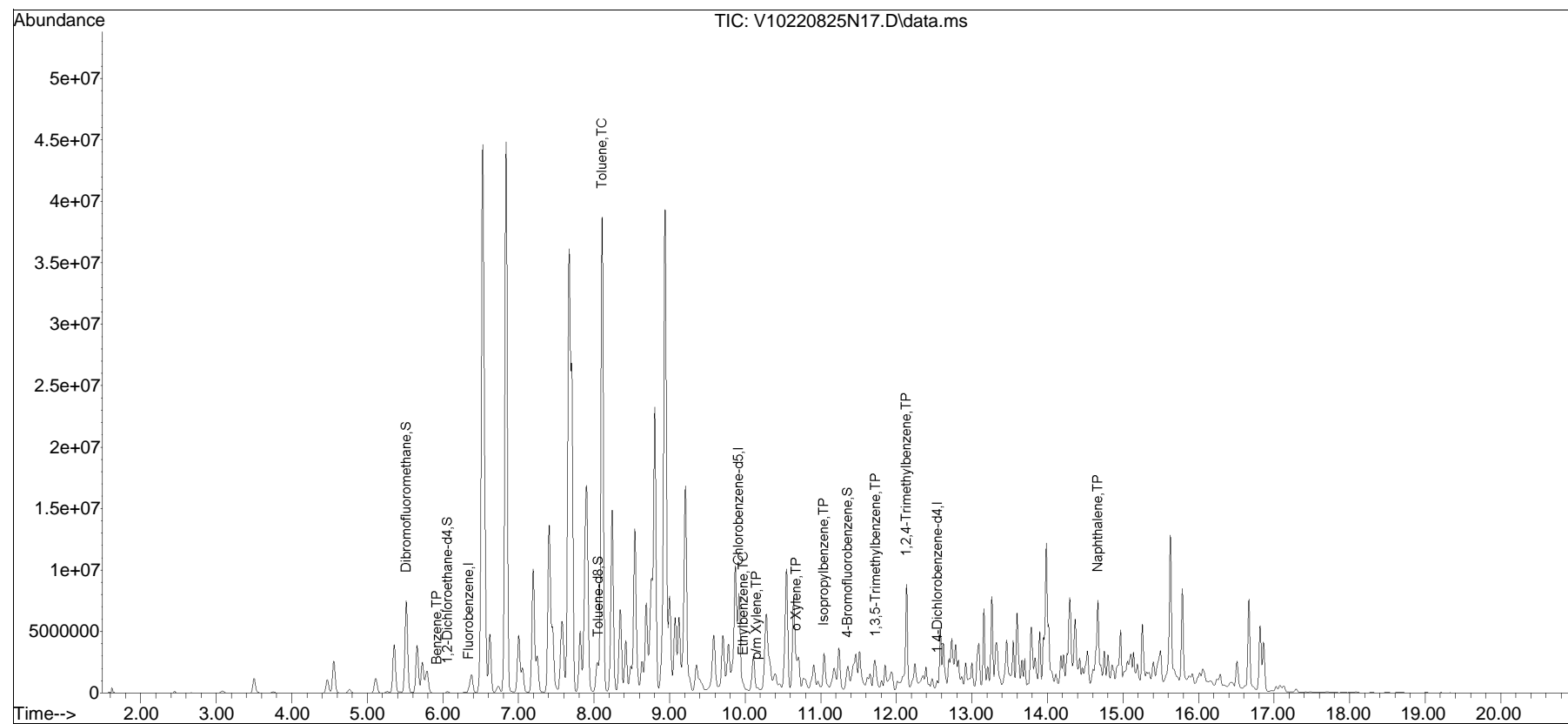
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220825N\  
Data File : V10220825N17.D  
Acq On : 26 Aug 2022 2:28 am  
Operator : VOA110:JC  
Sample : 12245326-05,31h,6.22,5,0.100,,a,r2f  
Misc : WG1680142,ICAL19281  
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 26 11:48:52 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220825N\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list25N\V10220825N01.D•

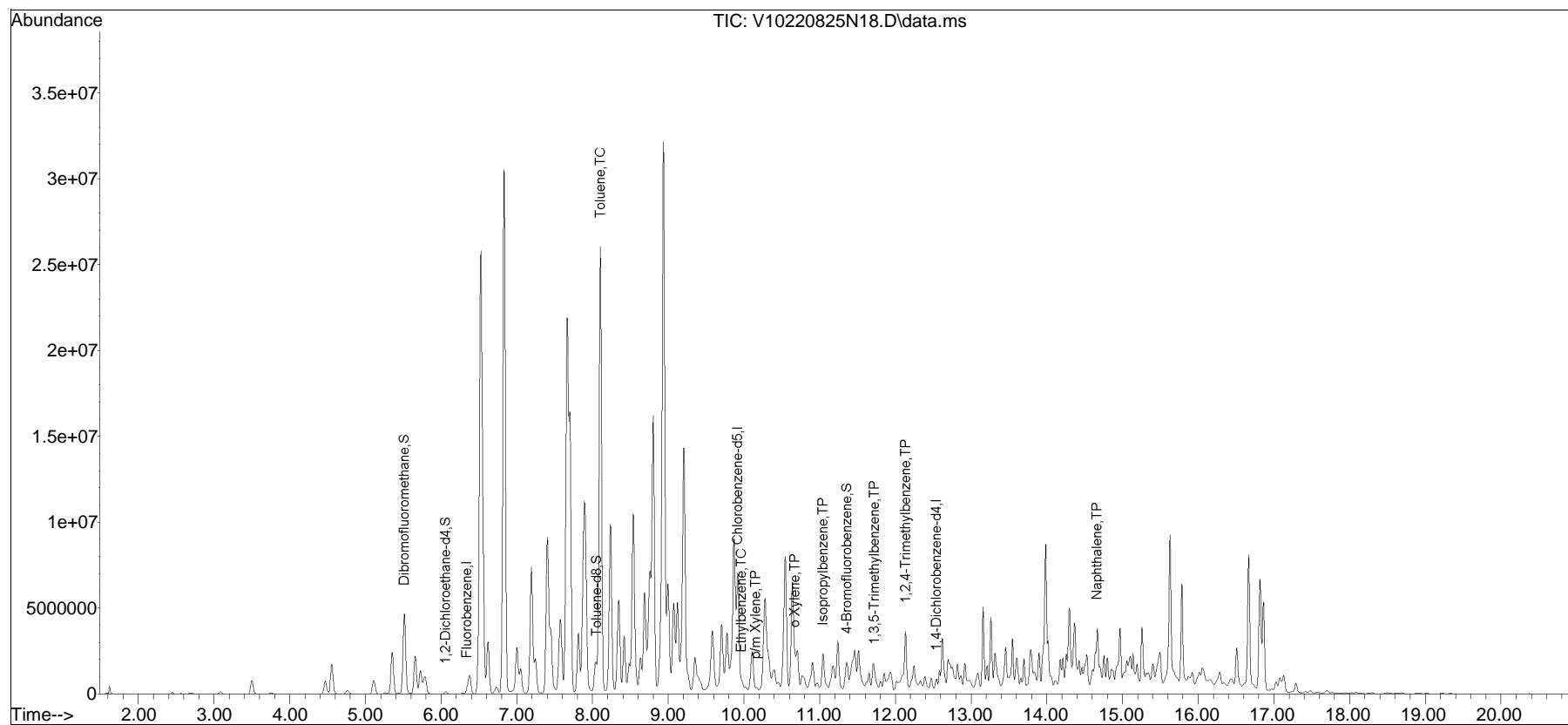


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220825N\  
Data File : V10220825N18.D  
Acq On : 26 Aug 2022 2:56 am  
Operator : VOA110:JC  
Sample : 12245326-07,31h,5.92,5,0.100,,a,r2f  
Misc : WG1680142,ICAL19281  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 26 11:15:39 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220825N\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list25N\V10220825N01.D•



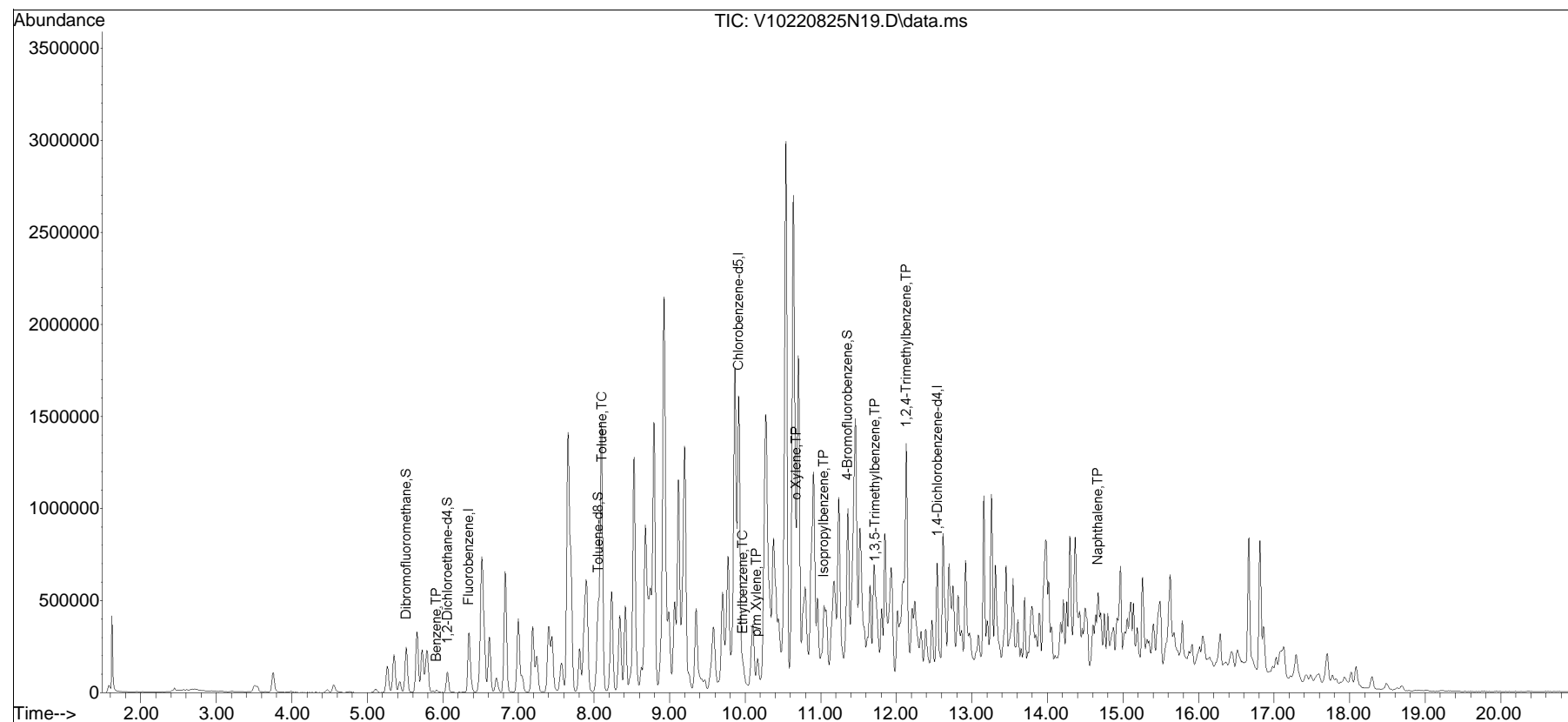


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220825N\  
Data File : V10220825N19.D  
Acq On : 26 Aug 2022 3:23 am  
Operator : VOA110:JC  
Sample : 12245326-09,31h,5.84,5,0.100,,a,r2f  
Misc : WG1680142,ICAL19281  
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Aug 26 11:15:43 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220825N\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list25N\V10220825N01.D•

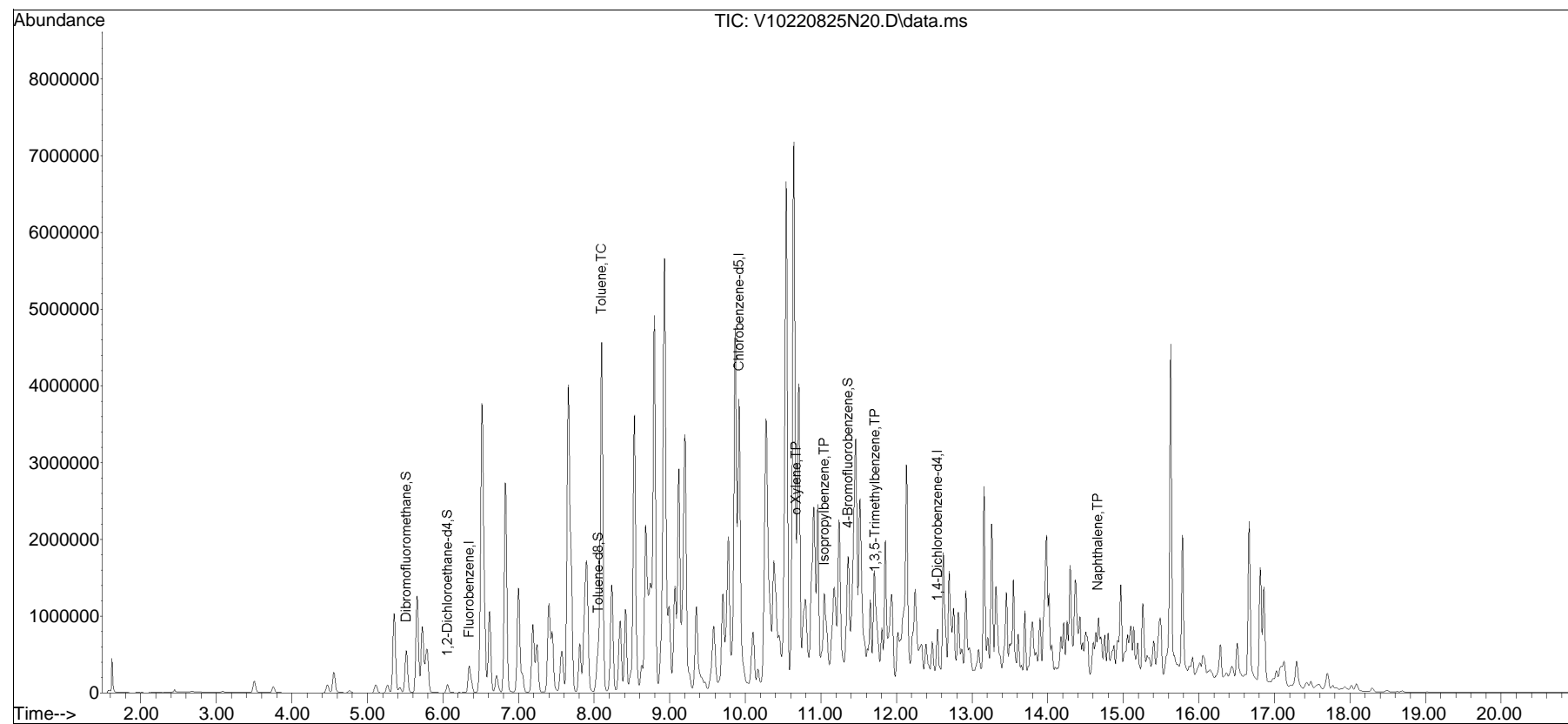


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220825N\  
Data File : V10220825N20.D  
Acq On : 26 Aug 2022 3:51 am  
Operator : VOA110:JC  
Sample : 12245326-11,31h,5.66,5,0.100,,a,r2f  
Misc : WG1680142,ICAL19281  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 26 11:49:59 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220825N\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list25N\V10220825N01.D•

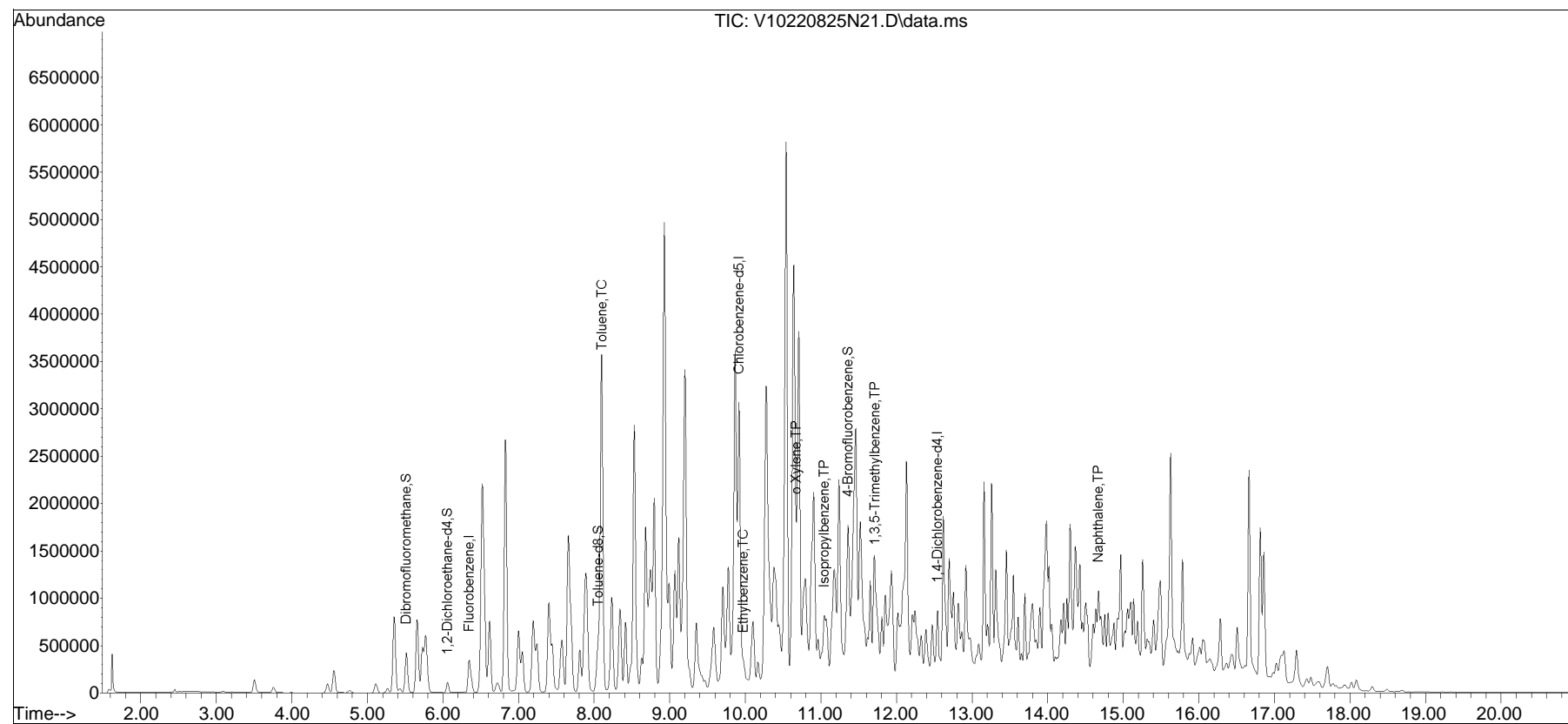


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220825N\  
Data File : V10220825N21.D  
Acq On : 26 Aug 2022 4:18 am  
Operator : VOA110:JC  
Sample : 12245326-13,31h,5.86,5,0.100,,a,r2f  
Misc : WG1680142,ICAL19281  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 26 11:50:21 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220825N\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list25N\V10220825N01.D•

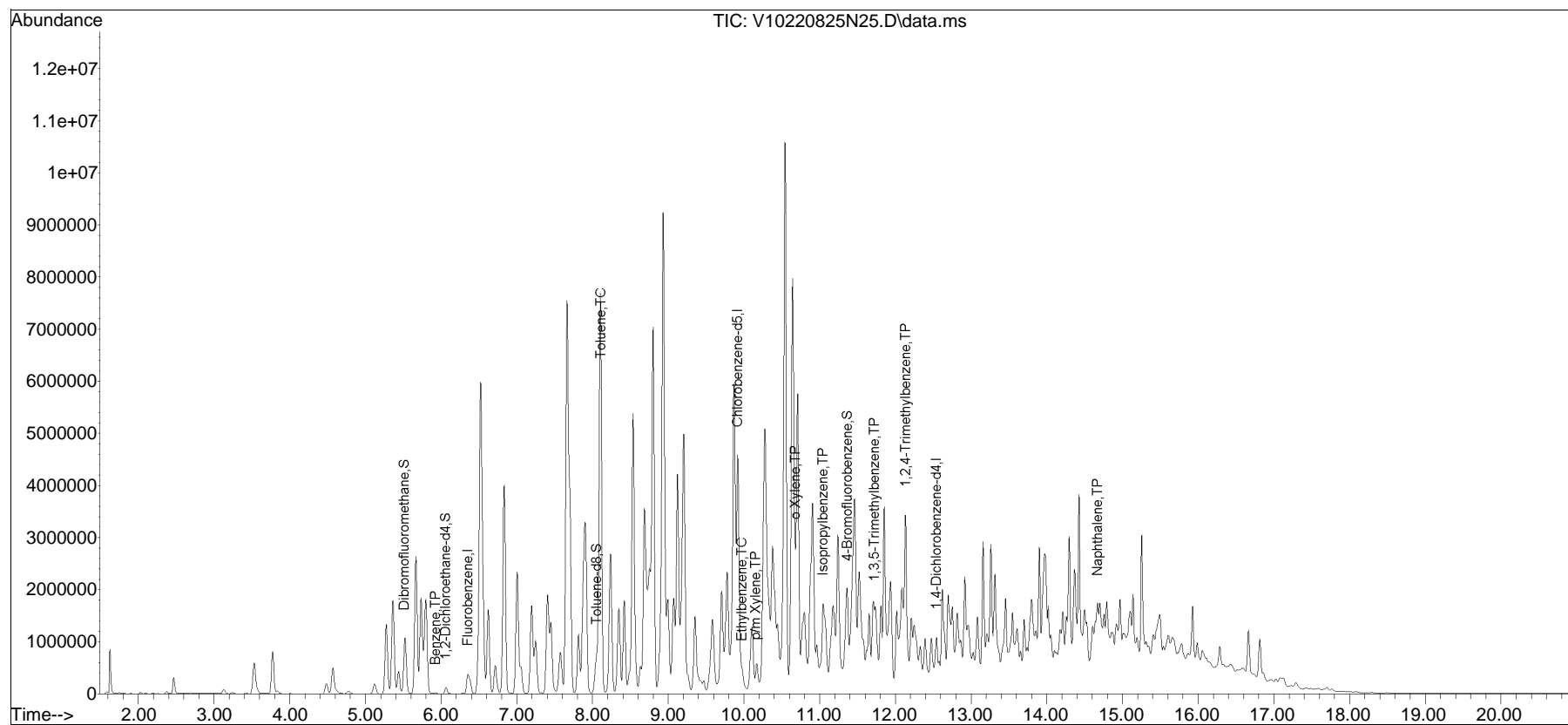


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220825N\  
Data File : V10220825N25.D  
Acq On : 26 Aug 2022 6:06 am  
Operator : VOA110:JC  
Sample : 12245326-15,31,6.31,5,,b,r2f  
Misc : WG1680143,ICAL19281  
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Aug 26 11:51:09 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220825N\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list25N\V10220825N01.D•





## ANALYTICAL REPORT

Lab Number:	L2245659
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/30/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245659

Report Date: 08/30/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2245659-01	302-AI07-C1-VOC	SOIL	PHILADELPHIA, PA	08/23/22 11:00	08/23/22
L2245659-02	302-AI07-C1-COMP	SOIL	PHILADELPHIA, PA	08/23/22 11:00	08/23/22
L2245659-03	302-AI07-C2-VOC	SOIL	PHILADELPHIA, PA	08/23/22 11:10	08/23/22
L2245659-04	302-AI07-C2-COMP	SOIL	PHILADELPHIA, PA	08/23/22 11:10	08/23/22
L2245659-05	302-AI07-C3-VOC	SOIL	PHILADELPHIA, PA	08/23/22 11:20	08/23/22
L2245659-06	302-AI07-C3-COMP	SOIL	PHILADELPHIA, PA	08/23/22 11:20	08/23/22
L2245659-07	302-AI07-C4-VOC	SOIL	PHILADELPHIA, PA	08/23/22 11:30	08/23/22
L2245659-08	302-AI07-C4-COMP	SOIL	PHILADELPHIA, PA	08/23/22 11:30	08/23/22
L2245659-09	302-AI07-C5-VOC	SOIL	PHILADELPHIA, PA	08/23/22 11:40	08/23/22
L2245659-10	302-AI07-C5-COMP	SOIL	PHILADELPHIA, PA	08/23/22 11:40	08/23/22
L2245659-11	302-AH07-C1-VOC	SOIL	PHILADELPHIA, PA	08/23/22 12:00	08/23/22
L2245659-12	302-AH07-C1-COMP	SOIL	PHILADELPHIA, PA	08/23/22 12:00	08/23/22
L2245659-13	302-AH07-C2-VOC	SOIL	PHILADELPHIA, PA	08/23/22 12:10	08/23/22
L2245659-14	302-AH07-C2-COMP	SOIL	PHILADELPHIA, PA	08/23/22 12:10	08/23/22
L2245659-15	302-AH07-C3-VOC	SOIL	PHILADELPHIA, PA	08/23/22 12:20	08/23/22
L2245659-16	302-AH07-C3-COMP	SOIL	PHILADELPHIA, PA	08/23/22 12:20	08/23/22
L2245659-17	302-AH07-C4-VOC	SOIL	PHILADELPHIA, PA	08/23/22 12:30	08/23/22
L2245659-18	302-AH07-C4-COMP	SOIL	PHILADELPHIA, PA	08/23/22 12:30	08/23/22
L2245659-19	302-AH06-C1-VOC	SOIL	PHILADELPHIA, PA	08/23/22 13:00	08/23/22
L2245659-20	302-AH06-C1-COMP	SOIL	PHILADELPHIA, PA	08/23/22 13:00	08/23/22
L2245659-21	302-AH06-C2-VOC	SOIL	PHILADELPHIA, PA	08/23/22 13:10	08/23/22
L2245659-22	302-AH06-C2-COMP	SOIL	PHILADELPHIA, PA	08/23/22 13:10	08/23/22
L2245659-23	302-AH06-C3-VOC	SOIL	PHILADELPHIA, PA	08/23/22 13:20	08/23/22
L2245659-24	302-AH06-C3-COMP	SOIL	PHILADELPHIA, PA	08/23/22 13:20	08/23/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2245659-25	302-AH06-C4-VOC	SOIL	PHILADELPHIA, PA	08/23/22 13:30	08/23/22
L2245659-26	302-AH06-C4-COMP	SOIL	PHILADELPHIA, PA	08/23/22 13:30	08/23/22
L2245659-27	302-AH06-C5-VOC	SOIL	PHILADELPHIA, PA	08/23/22 14:00	08/23/22
L2245659-28	302-AH06-C5-COMP	SOIL	PHILADELPHIA, PA	08/23/22 14:00	08/23/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2245659-07: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (jar) and preserved appropriately.

L2245659-19D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2245659-19D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245659-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (401%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.


L2245659-23: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (143%) and 4-bromofluorobenzene (193%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245659-25: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (145%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2245659-27: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (343%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 08/30/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-01  
 Client ID: 302-AI07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 20:10  
 Analyst: AJK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00082	J	mg/kg	0.0019	0.00020	1
Benzene	0.00032	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-03  
 Client ID: 302-AI07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 20:30  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-05  
 Client ID: 302-AI07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 20:49  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-07  
 Client ID: 302-AI07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:30  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 16:03  
 Analyst: AJK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-09  
 Client ID: 302-AI07-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:40  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 21:29  
 Analyst: AJK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	110		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-11  
 Client ID: 302-AH07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 14:43  
 Analyst: NLK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00075	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00081	1
1,2-Dibromoethane	ND		mg/kg	0.00075	0.00044	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00084	1
o-Xylene	ND		mg/kg	0.0015	0.00044	1
Xylenes, Total	ND		mg/kg	0.0015	0.00044	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-13  
 Client ID: 302-AH07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 21:48  
 Analyst: AJK  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.00020	J	mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00079	0.00020	1
Toluene	ND		mg/kg	0.00079	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	0.00017	J	mg/kg	0.00079	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00044	1
o-Xylene	ND		mg/kg	0.00079	0.00023	1
Xylenes, Total	ND		mg/kg	0.00079	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00079	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.00032	J	mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-15  
 Client ID: 302-AH07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 22:08  
 Analyst: AJK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-17  
 Client ID: 302-AH07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:30  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/25/22 22:28  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00012	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-19 D  
 Client ID: 302-AH06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 09:55  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.41	0.041	4
Benzene	ND		mg/kg	0.10	0.034	4
1,2-Dichloroethane	ND		mg/kg	0.20	0.053	4
Toluene	ND		mg/kg	0.20	0.11	4
1,2-Dibromoethane	ND		mg/kg	0.10	0.060	4
Ethylbenzene	ND		mg/kg	0.20	0.029	4
p/m-Xylene	ND		mg/kg	0.41	0.12	4
o-Xylene	ND		mg/kg	0.20	0.060	4
Xylenes, Total	ND		mg/kg	0.20	0.060	4
Isopropylbenzene	0.27		mg/kg	0.20	0.022	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.41	0.040	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.41	0.069	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-21  
 Client ID: 302-AH06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 10:25  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.014	J	mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.061	0.016	1
Toluene	0.16		mg/kg	0.061	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.021	J	mg/kg	0.061	0.0086	1
p/m-Xylene	0.29		mg/kg	0.12	0.034	1
o-Xylene	0.15		mg/kg	0.061	0.018	1
Xylenes, Total	0.44		mg/kg	0.061	0.018	1
Isopropylbenzene	6.4		mg/kg	0.061	0.0067	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.28		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	85		70-130
4-Bromofluorobenzene	401	Q	70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-23  
 Client ID: 302-AH06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 16:24  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00033	J	mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00081	0.00021	1
Toluene	ND		mg/kg	0.00081	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00024	1
Ethylbenzene	ND		mg/kg	0.00081	0.00011	1
p/m-Xylene	0.0015	J	mg/kg	0.0016	0.00045	1
o-Xylene	0.00046	J	mg/kg	0.00081	0.00024	1
Xylenes, Total	0.0020	J	mg/kg	0.00081	0.00024	1
Isopropylbenzene	0.027		mg/kg	0.00081	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	0.00035	J	mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	143	Q	70-130
4-Bromofluorobenzene	193	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-25  
 Client ID: 302-AH06-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:30  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 16:44  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0037	0.00037	1
Benzene	ND		mg/kg	0.00093	0.00031	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00048	1
Toluene	ND		mg/kg	0.0018	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00093	0.00054	1
Ethylbenzene	ND		mg/kg	0.0018	0.00026	1
p/m-Xylene	ND		mg/kg	0.0037	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00054	1
Xylenes, Total	ND		mg/kg	0.0018	0.00054	1
Isopropylbenzene	0.0068		mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0037	0.00036	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0037	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	145	Q	70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-27  
 Client ID: 302-AH06-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 14:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 17:05  
 Analyst: AJK  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00056	J	mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	0.0018	J	mg/kg	0.0026	0.00072	1
o-Xylene	0.00095	J	mg/kg	0.0013	0.00038	1
Xylenes, Total	0.0028	J	mg/kg	0.0013	0.00038	1
Isopropylbenzene	0.076		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.00047	J	mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	119		70-130
4-Bromofluorobenzene	343	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/25/22 17:52  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,09,13,15,17 Batch: WG1680990-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/26/22 10:46  
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11 Batch: WG1681363-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/30/22 09:26  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 19,21 Batch: WG1681387-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/30/22 12:58  
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,23,25,27 Batch: WG1681568-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	99		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,09,13,15,17 Batch: WG1680990-3 WG1680990-4								
Methyl tert butyl ether	92		86		66-130	7		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	100		95		70-130	5		30
Toluene	83		82		70-130	1		30
1,2-Dibromoethane	95		90		70-130	5		30
Ethylbenzene	89		88		70-130	1		30
p/m-Xylene	89		87		70-130	2		30
o-Xylene	90		88		70-130	2		30
Isopropylbenzene	88		87		70-130	1		30
1,3,5-Trimethylbenzene	90		90		70-130	0		30
1,2,4-Trimethylbenzene	89		88		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	108		107		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	95		98		70-130
Dibromofluoromethane	102		102		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11 Batch: WG1681363-3 WG1681363-4								
Methyl tert butyl ether	89		86		66-130	3		30
Benzene	98		83		70-130	17		30
1,2-Dichloroethane	93		86		70-130	8		30
Toluene	106		88		70-130	19		30
1,2-Dibromoethane	101		97		70-130	4		30
Ethylbenzene	107		89		70-130	18		30
p/m-Xylene	111		91		70-130	20		30
o-Xylene	111		93		70-130	18		30
Isopropylbenzene	107		88		70-130	19		30
1,3,5-Trimethylbenzene	112		92		70-130	20		30
1,2,4-Trimethylbenzene	112		93		70-130	19		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		102		70-130
Toluene-d8	104		103		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	96		98		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 19,21 Batch: WG1681387-3 WG1681387-4								
Methyl tert butyl ether	127		100		66-130	24		30
Benzene	102		97		70-130	5		30
1,2-Dichloroethane	97		93		70-130	4		30
Toluene	98		92		70-130	6		30
1,2-Dibromoethane	102		97		70-130	5		30
Ethylbenzene	100		94		70-130	6		30
p/m-Xylene	105		98		70-130	7		30
o-Xylene	105		99		70-130	6		30
Isopropylbenzene	101		96		70-130	5		30
1,3,5-Trimethylbenzene	103		97		70-130	6		30
1,2,4-Trimethylbenzene	103		97		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	95		96		70-130
Dibromofluoromethane	100		101		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,23,25,27 Batch: WG1681568-3 WG1681568-4								
Methyl tert butyl ether	98		95		66-130	3		30
Benzene	101		97		70-130	4		30
1,2-Dichloroethane	103		100		70-130	3		30
Toluene	93		90		70-130	3		30
1,2-Dibromoethane	100		98		70-130	2		30
Ethylbenzene	100		96		70-130	4		30
p/m-Xylene	99		95		70-130	4		30
o-Xylene	99		96		70-130	3		30
Isopropylbenzene	101		98		70-130	3		30
1,3,5-Trimethylbenzene	101		100		70-130	1		30
1,2,4-Trimethylbenzene	99		97		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	100		100		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-02  
 Client ID: 302-AI07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/29/22 23:30  
 Analyst: LJG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.032	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.053	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.033	J	mg/kg	0.12	0.023	1
Chrysene	0.033	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.045	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.028	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	128	Q	23-120
2-Fluorobiphenyl	105		30-120
4-Terphenyl-d14	121	Q	18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-04  
 Client ID: 302-AI07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 09:49  
 Analyst: SZ  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-06  
 Client ID: 302-AI07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 10:13  
 Analyst: SZ  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.13		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.25		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.14		mg/kg	0.12	0.023	1
Chrysene	0.21		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.28		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.16		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.16		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	99		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-08  
 Client ID: 302-AI07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:30  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/29/22 23:53  
 Analyst: LJG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.043	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.072	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.044	J	mg/kg	0.12	0.022	1
Chrysene	0.040	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.053	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.027	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	149	Q	23-120
2-Fluorobiphenyl	116		30-120
4-Terphenyl-d14	129	Q	18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-10  
 Client ID: 302-AI07-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:40  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/29/22 23:06  
 Analyst: LJG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.052	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.071	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.039	J	mg/kg	0.11	0.021	1
Chrysene	0.037	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.048	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.029	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	107		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-12  
 Client ID: 302-AH07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 01:03  
 Analyst: LJG  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.025	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.042	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.028	J	mg/kg	0.11	0.020	1
Chrysene	0.026	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.036	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.021	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	103		30-120
4-Terphenyl-d14	116		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-14  
 Client ID: 302-AH07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 10:37  
 Analyst: SZ  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.041	J	mg/kg	0.18	0.022	1
Fluorene	0.021	J	mg/kg	0.18	0.017	1
Phenanthrene	0.19		mg/kg	0.11	0.022	1
Anthracene	0.044	J	mg/kg	0.11	0.035	1
Pyrene	0.31		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.18		mg/kg	0.11	0.020	1
Chrysene	0.20		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.26		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.22		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.16		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	132	Q	23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	94		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-16  
 Client ID: 302-AH07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 11:01  
 Analyst: SZ  
 Percent Solids: 96%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.034	J	mg/kg	0.17	0.021	1
Fluorene	0.022	J	mg/kg	0.17	0.016	1
Phenanthrene	0.22		mg/kg	0.10	0.021	1
Anthracene	0.053	J	mg/kg	0.10	0.033	1
Pyrene	0.33		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.20		mg/kg	0.10	0.019	1
Chrysene	0.20		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.24		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.20		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.15		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	131	Q	23-120
2-Fluorobiphenyl	94		30-120
4-Terphenyl-d14	108		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-18  
 Client ID: 302-AH07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:30  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 11:25  
 Analyst: SZ  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.054	J	mg/kg	0.17	0.021	1
Fluorene	0.021	J	mg/kg	0.17	0.017	1
Phenanthrene	0.19		mg/kg	0.10	0.021	1
Anthracene	0.051	J	mg/kg	0.10	0.034	1
Pyrene	0.34		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.23		mg/kg	0.10	0.020	1
Chrysene	0.22		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.27		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.22		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.15		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	131	Q	23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	100		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-20  
 Client ID: 302-AH06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 03:00  
 Analyst: LJG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.026	J	mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	0.063	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.035	J	mg/kg	0.12	0.022	1
Chrysene	0.041	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.065	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.041	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	47		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-22  
 Client ID: 302-AH06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 02:37  
 Analyst: LJJ  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.10	J	mg/kg	0.20	0.019	1
Phenanthrene	0.44		mg/kg	0.12	0.024	1
Anthracene	0.12		mg/kg	0.12	0.039	1
Pyrene	0.32		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.22		mg/kg	0.12	0.022	1
Chrysene	0.23		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.15	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.063	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-24  
 Client ID: 302-AH06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 11:49  
 Analyst: SZ  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.097	J	mg/kg	0.20	0.025	1
Fluorene	0.23		mg/kg	0.20	0.020	1
Phenanthrene	1.1		mg/kg	0.12	0.025	1
Anthracene	0.23		mg/kg	0.12	0.040	1
Pyrene	0.58		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.21		mg/kg	0.12	0.023	1
Chrysene	0.22		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.23		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.18		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	138	Q	23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	95		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-26  
 Client ID: 302-AH06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:30  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/30/22 12:13  
 Analyst: SZ  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	100		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-28  
 Client ID: 302-AH06-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 14:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/29/22 22:43  
 Analyst: LJG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.026	J	mg/kg	0.19	0.018	1
Phenanthrene	0.042	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	89		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 08/29/22 20:45  
Analyst: LJG

Extraction Method: EPA 3546  
Extraction Date: 08/28/22 02:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1680500-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	98		30-120
4-Terphenyl-d14	128	Q	18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28 Batch: WG1680500-2 WG1680500-3								
Naphthalene	94		92		40-140	2		50
Fluorene	99		98		40-140	1		50
Phenanthrene	95		95		40-140	0		50
Anthracene	98		98		40-140	0		50
Pyrene	109		109		35-142	0		50
Benzo(a)anthracene	97		95		40-140	2		50
Chrysene	96		94		40-140	2		50
Benzo(b)fluoranthene	103		99		40-140	4		50
Benzo(a)pyrene	106		99		40-140	7		50
Benzo(ghi)perylene	103		98		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	131	Q	130	Q	23-120
2-Fluorobiphenyl	103		103		30-120
4-Terphenyl-d14	118		123	Q	18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-02  
 Client ID: 302-AI07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	62.6		mg/kg	2.46	0.132	1	08/24/22 17:56	08/25/22 19:57	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-04

Date Collected: 08/23/22 11:10

Client ID: 302-AI07-C2-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	72.8		mg/kg	2.43	0.130	1	08/24/22 17:56	08/25/22 20:02	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-06

Date Collected: 08/23/22 11:20

Client ID: 302-AI07-C3-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	22.0		mg/kg	2.39	0.128	1	08/24/22 17:56	08/25/22 20:07	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-08

Date Collected: 08/23/22 11:30

Client ID: 302-AI07-C4-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	28.1		mg/kg	4.70	0.252	2	08/24/22 17:56	08/29/22 10:41	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-10

Date Collected: 08/23/22 11:40

Client ID: 302-AI07-C5-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.24		mg/kg	4.49	0.240	2	08/24/22 17:56	08/29/22 10:47	EPA 3050B	1,6010D	ZK





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-12

Date Collected: 08/23/22 12:00

Client ID: 302-AH07-C1-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	20.6		mg/kg	2.17	0.116	1	08/24/22 17:56	08/25/22 22:12	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-14  
 Client ID: 302-AH07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	61.4		mg/kg	2.14	0.115	1	08/24/22 17:56	08/25/22 22:17	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-16

Date Collected: 08/23/22 12:20

Client ID: 302-AH07-C3-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.22		mg/kg	2.04	0.109	1	08/24/22 17:56	08/25/22 22:22	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-18

Date Collected: 08/23/22 12:30

Client ID: 302-AH07-C4-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	32.2		mg/kg	2.02	0.108	1	08/24/22 17:56	08/25/22 22:27	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-20  
 Client ID: 302-AH06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.15		mg/kg	2.24	0.120	1	08/25/22 02:15	08/26/22 11:42	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-22  
 Client ID: 302-AH06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	27.2		mg/kg	2.30	0.123	1	08/25/22 02:15	08/26/22 11:46	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-24  
 Client ID: 302-AH06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.86		mg/kg	2.35	0.126	1	08/25/22 02:15	08/26/22 11:49	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-26

Date Collected: 08/23/22 13:30

Client ID: 302-AH06-C4-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.59		mg/kg	2.24	0.120	1	08/25/22 02:15	08/26/22 11:53	EPA 3050B	1,6010D	JF





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-28  
 Client ID: 302-AH06-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 14:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.24		mg/kg	2.21	0.118	1	08/25/22 02:15	08/26/22 11:56	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1679109-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/24/22 17:56	08/25/22 15:51	1,6010D	ZK

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 20,22,24,26,28 Batch: WG1679119-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/25/22 02:15	08/26/22 09:15	1,6010D	JF

### Prep Information

Digestion Method: EPA 3050B

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1679109-2 SRM Lot Number: D113-540								
Lead, Total	85		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 20,22,24,26,28 Batch: WG1679119-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1679109-3 QC Sample: L2245688-01 Client ID: MS Sample												
Lead, Total	3.41J	42.6	31.3	73	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 20,22,24,26,28 QC Batch ID: WG1679119-3 QC Sample: L2200081-80 Client ID: MS Sample												
Lead, Total	2.08J	42.1	40.8	97		-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1679109-4 QC Sample: L2245688-01 Client ID: DUP Sample						
Lead, Total	3.41J	3.88J	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 20,22,24,26,28 QC Batch ID: WG1679119-4 QC Sample: L2200081-80 Client ID: DUP Sample						
Lead, Total	2.08J	4.11	mg/kg	NC		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-01

Date Collected: 08/23/22 11:00

Client ID: 302-AI07-C1-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-02  
 Client ID: 302-AI07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-03

Date Collected: 08/23/22 11:10

Client ID: 302-AI07-C2-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.3		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

**Lab ID:** L2245659-04  
**Client ID:** 302-AI07-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/23/22 11:10  
**Date Received:** 08/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-05  
 Client ID: 302-AI07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.2		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-06  
 Client ID: 302-AI07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 11:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.9		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-07

Date Collected: 08/23/22 11:30

Client ID: 302-AI07-C4-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.4		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

**Lab ID:** L2245659-08  
**Client ID:** 302-AI07-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/23/22 11:30  
**Date Received:** 08/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-09

Date Collected: 08/23/22 11:40

Client ID: 302-AI07-C5-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.8		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

## SAMPLE RESULTS

Lab ID: L2245659-10

Date Collected: 08/23/22 11:40

Client ID: 302-AI07-C5-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.2		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-11

Date Collected: 08/23/22 12:00

Client ID: 302-AH07-C1-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.0		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

## SAMPLE RESULTS

Lab ID: L2245659-12

Date Collected: 08/23/22 12:00

Client ID: 302-AH07-C1-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.4		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

## SAMPLE RESULTS

Lab ID: L2245659-13

Date Collected: 08/23/22 12:10

Client ID: 302-AH07-C2-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.0		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-14  
 Client ID: 302-AH07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:10  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.2		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

**Lab ID:** L2245659-15  
**Client ID:** 302-AH07-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/23/22 12:20  
**Date Received:** 08/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.1		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-16  
 Client ID: 302-AH07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 12:20  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.4		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-17

Date Collected: 08/23/22 12:30

Client ID: 302-AH07-C4-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.6		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

## SAMPLE RESULTS

Lab ID: L2245659-18

Date Collected: 08/23/22 12:30

Client ID: 302-AH07-C4-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.4		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-19  
 Client ID: 302-AH06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 13:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245659

Project Number: 200.00135.006

Report Date: 08/30/22

## SAMPLE RESULTS

Lab ID: L2245659-20

Date Collected: 08/23/22 13:00

Client ID: 302-AH06-C1-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	08/24/22 10:37	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-21

Date Collected: 08/23/22 13:10

Client ID: 302-AH06-C2-VOC

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-22

Date Collected: 08/23/22 13:10

Client ID: 302-AH06-C2-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

**Lab ID:** L2245659-23  
**Client ID:** 302-AH06-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/23/22 13:20  
**Date Received:** 08/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-24

Date Collected: 08/23/22 13:20

Client ID: 302-AH06-C3-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.7		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

**Lab ID:** L2245659-25  
**Client ID:** 302-AH06-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/23/22 13:30  
**Date Received:** 08/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**SAMPLE RESULTS**

Lab ID: L2245659-26

Date Collected: 08/23/22 13:30

Client ID: 302-AH06-C4-COMP

Date Received: 08/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

**Lab ID:** L2245659-27  
**Client ID:** 302-AH06-C5-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/23/22 14:00  
**Date Received:** 08/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.6		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

**SAMPLE RESULTS**

Lab ID: L2245659-28  
 Client ID: 302-AH06-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/23/22 14:00  
 Date Received: 08/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	08/24/22 10:46	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245659

Report Date: 08/30/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1679059-1 QC Sample: L2245659-01 Client ID: 302-AI07-C1-VOC						
Solids, Total	86.8	88.6	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 21-28 QC Batch ID: WG1679060-1 QC Sample: L2245693-01 Client ID: DUP Sample						
Solids, Total	88.9	89.1	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245659-01A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2245659-01B	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-01C	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-01D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2245659-02A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2245659-02B	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2245659-03A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2245659-03B	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-03C	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-03D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2245659-04A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2245659-04B	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2245659-05A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2245659-05B	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-05C	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-05D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2245659-06A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2245659-06B	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2245659-07A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2245659-07B	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-07C	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-07D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245659-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2245659-08B	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2245659-09A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2245659-09B	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-09C	Vial water preserved	B	NA		3.1	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-09D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2245659-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2245659-10B	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2245659-11A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-11B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-11C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-11D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-12B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-13A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-13B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-13C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-13D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-14B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-15A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-15B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-15C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-15D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-16B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-17A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-17B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245659**Project Number:** 200.00135.006**Report Date:** 08/30/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245659-17C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-17D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-18B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-19A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-19B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-19C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-19D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-20B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-21A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-21B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-21C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-21D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-22B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-23A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-23B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-23C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-23D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-24B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)
L2245659-25A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-25B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-25C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-25D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-26B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08302219:15  
**Lab Number:** L2245659  
**Report Date:** 08/30/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245659-27A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2245659-27B	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-27C	Vial water preserved	A	NA		3.0	Y	Absent	24-AUG-22 08:41	PA-8260HLW(14)
L2245659-27D	Plastic 2oz unpreserved for TS	A	NA		3.0	Y	Absent		TS(7)
L2245659-28A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		PB-TI(180)
L2245659-28B	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245659  
**Report Date:** 08/30/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245659

**Project Number:** 200.00135.006

**Report Date:** 08/30/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 3



Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax: \_\_\_\_\_  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 8/24/22

ALPHA Job #: 12245659

### Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client Info PG #: 3502

### Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

### ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Other Analytes										TOTAL # BOTTLES			
		Date	Time						1	2	3	4	5	6	7	8	9	10		11	12	
45659-01	302-AI07-C1-VOC	8/23	1400	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-02	302-AI07-C1-COMP		1100			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AI07-C2-VOC		1110			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AI07-C2-COMP		1110			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AI07-C3-VOC		1120			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AI07-C3-COMP		1120			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AI07-C4-VOC		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AI07-C4-COMP		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-09	302-AI07-C5-VOC		1140			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AI07-C5-COMP		1140			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
45659-01	302-AI07-C1-VOC	8/23	1400	S	TS
-02	302-AI07-C1-COMP		1100		
-03	302-AI07-C2-VOC		1110		
-04	302-AI07-C2-COMP		1110		
-05	302-AI07-C3-VOC		1120		
-06	302-AI07-C3-COMP		1120		
-07	302-AI07-C4-VOC		1130		
-08	302-AI07-C4-COMP		1130		
-09	302-AI07-C5-VOC		1140		
-10	302-AI07-C5-COMP		1140		

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

8/24/22 0320

Relinquished By:

Date/Time

Received By:

Date/Time

STONES AAL

8/23/22

Paul Maggella

8/23/22 1452

8/23/22 1723

2230

# CHAIN OF CUSTODY

PAGE 2 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-698-9220 TEL: 508-822-9300  
 FAX: 508-698-9193 FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and ljeray@hllcoglobal.com

Date Rec'd in Lab: 8/24/22

ALPHA Job #: L2245659

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											
45659-11	302-AH07-C1-VOC	8/23	1200	5	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-12	302-AH07-C1-Comp		1200			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	302-AH07-C2-VOC		1210			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-14	302-AH07-C2-Comp		1210			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-15	302-AH07-C3-VOC		1220			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-16	302-AH07-C3-Comp		1220			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-17	302-AH07-C4-VOC		1230			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-18	302-AH07-C4-Comp		1230			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-19	302-AH06-C1-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-20	302-AH06-C1-Comp		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
45659-11	302-AH07-C1-VOC	8/23	1200	5	TS
-12	302-AH07-C1-Comp		1200		
13	302-AH07-C2-VOC		1210		
-14	302-AH07-C2-Comp		1210		
-15	302-AH07-C3-VOC		1220		
-16	302-AH07-C3-Comp		1220		
-17	302-AH07-C4-VOC		1230		
-18	302-AH07-C4-Comp		1230		
-19	302-AH06-C1-VOC		1300		
-20	302-AH06-C1-Comp		1300		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

8/24/22 0520  
 [Signature]  
 8/24/22 0520

Relinquished By:	Date/Time	Received By:	Date/Time
[Signature]	8/23 186	[Signature]	8/23 186
Paul Marsella	8/23	Paul Marsella	8/23 172

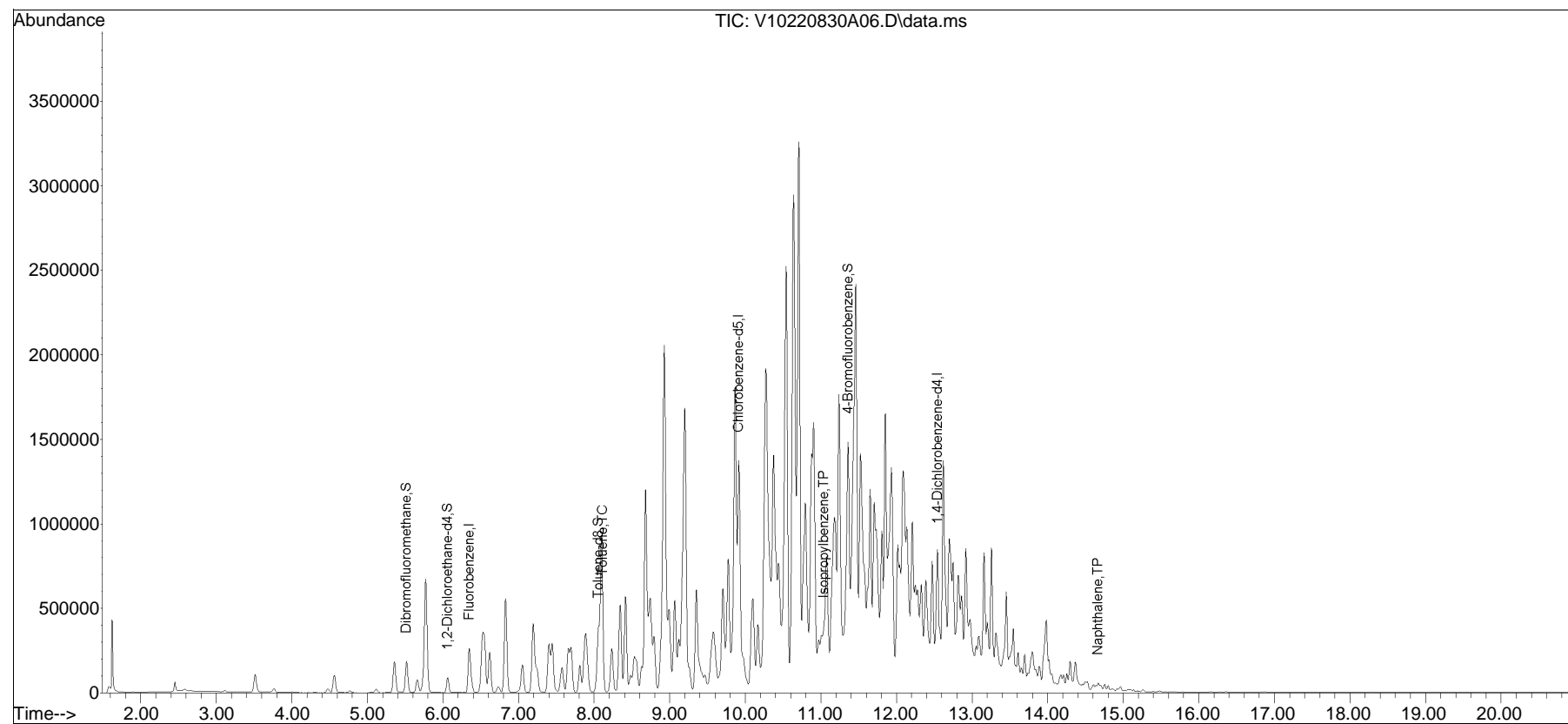


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220830A\  
Data File : V10220830A06.D  
Acq On : 30 Aug 2022 9:55 am  
Operator : VOA110:NLK  
Sample : 12245659-19d,31h,6.94,5,0.025,,a,r2f  
Misc : WG1681387,ICAL19281  
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 30 11:31:19 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220830A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V10220830A01.D•



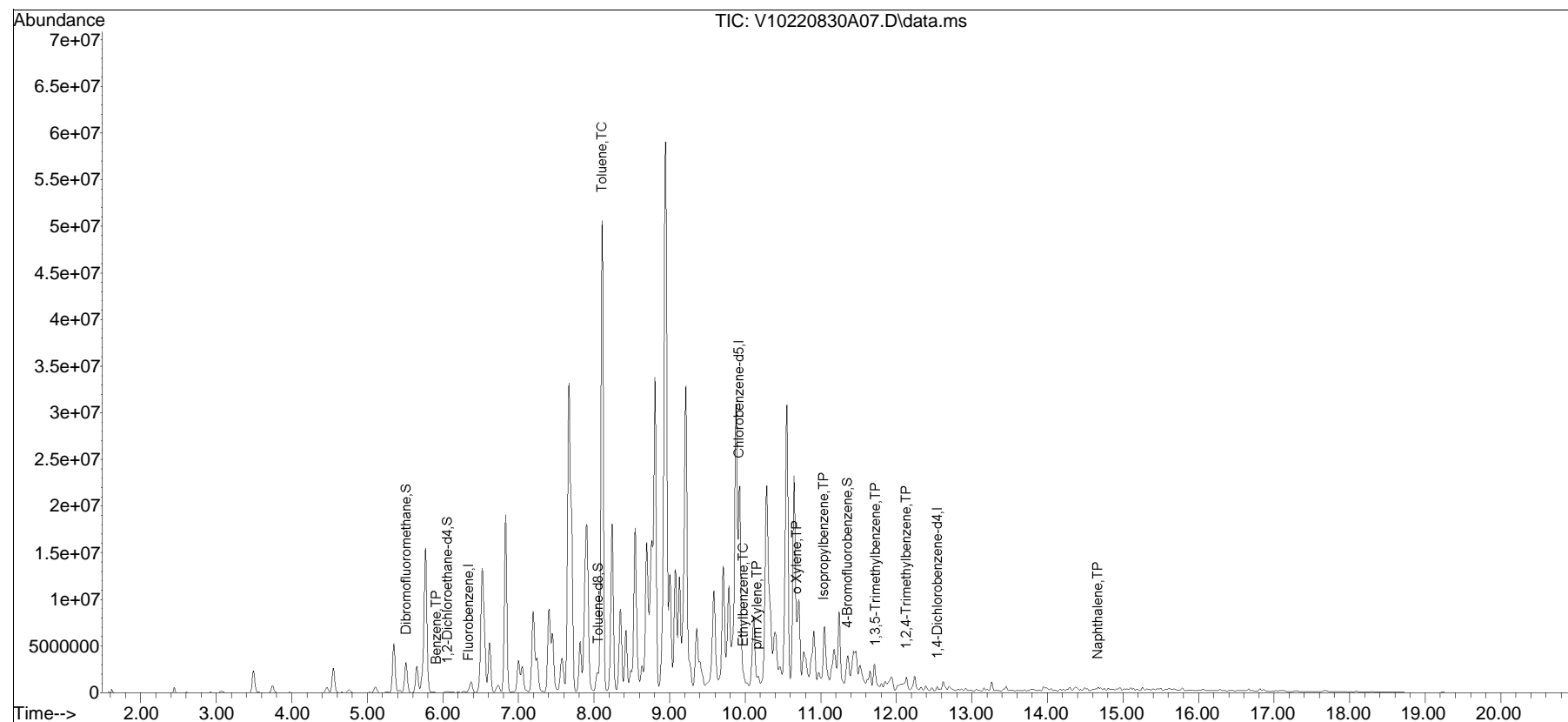


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220830A\  
 Data File : V10220830A07.D  
 Acq On : 30 Aug 2022 10:25 am  
 Operator : VOA110:NLK  
 Sample : 12245659-21,31h,5.75,5,0.100,,a,r2f  
 Misc : WG1681387,ICAL19281  
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 30 11:31:55 2022  
 Quant Method : I:\VOLATILES\VOA110\2022\220830A\V110\_220822N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Tue Aug 23 09:34:28 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V10220830A01.D•

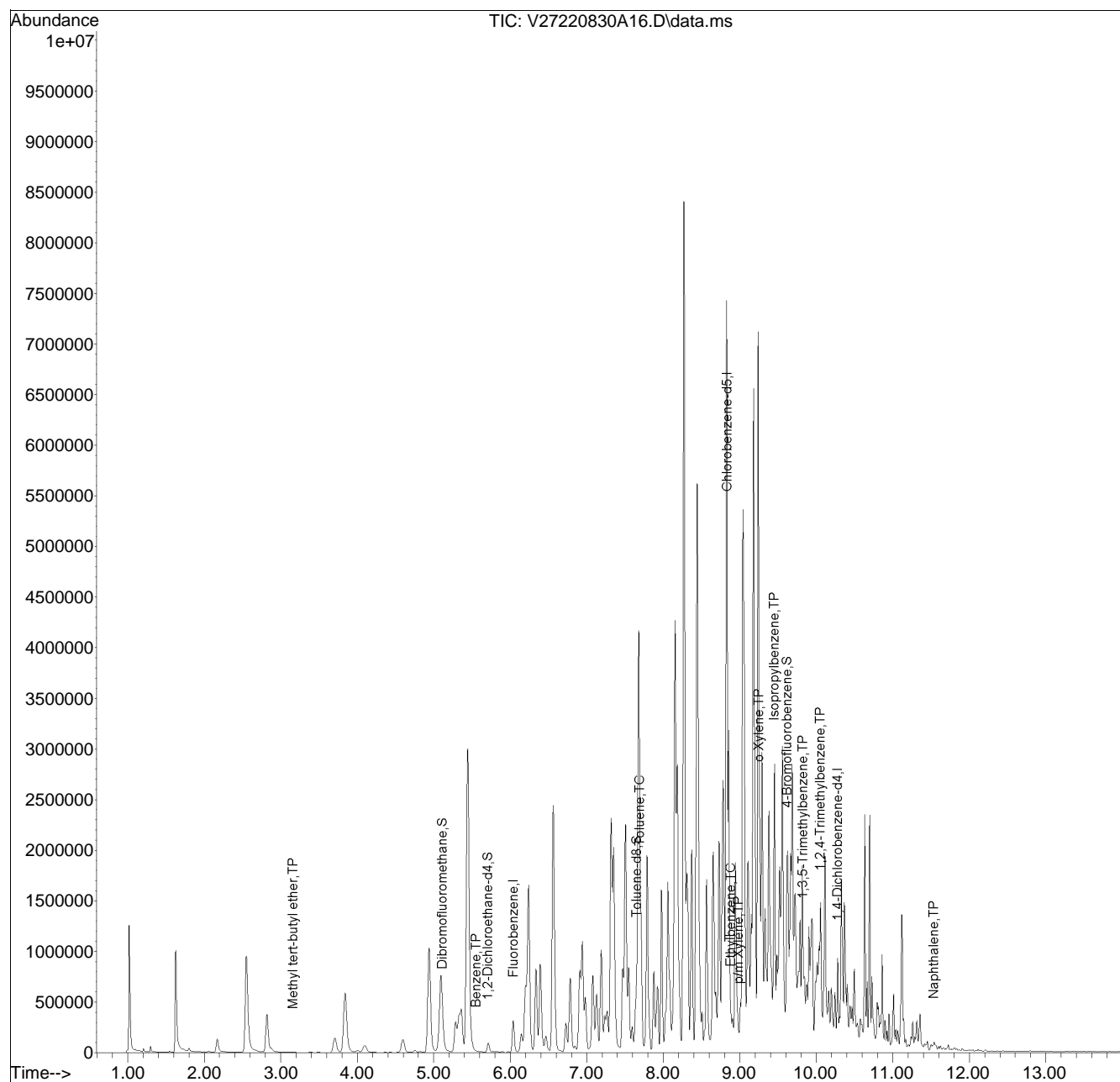


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220830A\  
 Data File : V27220830A16.D  
 Acq On : 30 Aug 2022 04:24 pm  
 Operator : VOA127:AJK  
 Sample : L2245659-23,31,7.48,5,,C,R2F  
 Misc : WG1681568,ICAL19153  
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Aug 30 16:42:45 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220830A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V27220830A01.D•



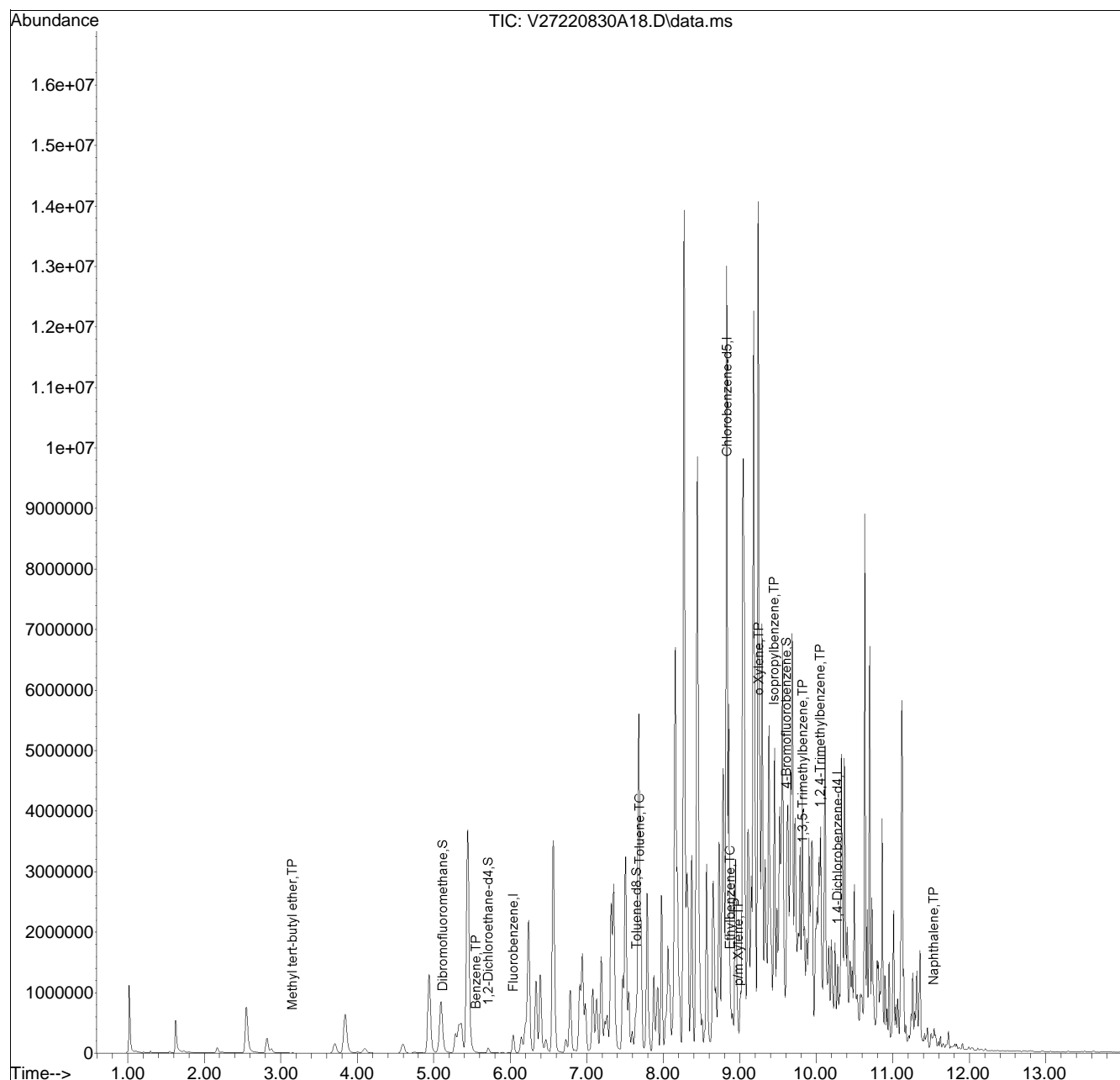


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220830A\  
 Data File : V27220830A18.D  
 Acq On : 30 Aug 2022 05:05 pm  
 Operator : VOA127:AJK  
 Sample : L2245659-27,31,5.19,5,,C,R2F  
 Misc : WG1681568,ICAL19153  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 30 17:21:53 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220830A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V27220830A01.D•





## ANALYTICAL REPORT

Lab Number:	L2245926
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	08/31/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245926

Report Date: 08/31/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2245926-01	302-AJ07-C1-VOC	SOIL	PHILADELPHIA, PA	08/24/22 10:40	08/24/22
L2245926-02	302-AJ07-C1-COMP	SOIL	PHILADELPHIA, PA	08/24/22 10:40	08/24/22
L2245926-03	302-AJ07-C2-VOC	SOIL	PHILADELPHIA, PA	08/24/22 10:50	08/24/22
L2245926-04	302-AJ07-C2-COMP	SOIL	PHILADELPHIA, PA	08/24/22 10:50	08/24/22
L2245926-05	302-AJ07-C3-VOC	SOIL	PHILADELPHIA, PA	08/24/22 11:00	08/24/22
L2245926-06	302-AJ07-C3-COMP	SOIL	PHILADELPHIA, PA	08/24/22 11:00	08/24/22
L2245926-07	302-AJ07-C4-VOC	SOIL	PHILADELPHIA, PA	08/24/22 11:10	08/24/22
L2245926-08	302-AJ07-C4-COMP	SOIL	PHILADELPHIA, PA	08/24/22 11:10	08/24/22
L2245926-09	302-AJ08-C1-VOC	SOIL	PHILADELPHIA, PA	08/24/22 12:10	08/24/22
L2245926-10	302-AJ08-C1-COMP	SOIL	PHILADELPHIA, PA	08/24/22 12:10	08/24/22
L2245926-11	302-AJ08-C2-VOC	SOIL	PHILADELPHIA, PA	08/24/22 12:20	08/24/22
L2245926-12	302-AJ08-C2-COMP	SOIL	PHILADELPHIA, PA	08/24/22 12:20	08/24/22
L2245926-13	302-AJ08-C3-VOC	SOIL	PHILADELPHIA, PA	08/24/22 12:30	08/24/22
L2245926-14	302-AJ08-C3-COMP	SOIL	PHILADELPHIA, PA	08/24/22 12:30	08/24/22
L2245926-15	302-AI06-C1-VOC	SOIL	PHILADELPHIA, PA	08/24/22 13:20	08/24/22
L2245926-16	302-AI06-C1-COMP	SOIL	PHILADELPHIA, PA	08/24/22 13:20	08/24/22
L2245926-17	302-AI06-C2-VOC	SOIL	PHILADELPHIA, PA	08/24/22 13:30	08/24/22
L2245926-18	302-AI06-C2COMP	SOIL	PHILADELPHIA, PA	08/24/22 13:30	08/24/22
L2245926-19	302-AI06-C3-VOC	SOIL	PHILADELPHIA, PA	08/24/22 13:40	08/24/22
L2245926-20	302-AI06-C3-COMP	SOIL	PHILADELPHIA, PA	08/24/22 13:40	08/24/22
L2245926-21	302-AI06-C4-VOC	SOIL	PHILADELPHIA, PA	08/24/22 14:00	08/24/22
L2245926-22	302-AI06-C4-COMP	SOIL	PHILADELPHIA, PA	08/24/22 14:00	08/24/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

### Case Narrative (continued)

#### Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2245926-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (695%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 08/31/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-01  
 Client ID: 302-AJ07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 10:40  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 16:17  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-03  
 Client ID: 302-AJ07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 10:50  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 16:44  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-05  
 Client ID: 302-AJ07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 11:00  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 17:10  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0025	0.00069	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-07  
 Client ID: 302-AJ07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 11:10  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 17:36  
 Analyst: NLK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-09  
 Client ID: 302-AJ08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:10  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 18:02  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	0.00018	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-11  
 Client ID: 302-AJ08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:20  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 18:28  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-13  
 Client ID: 302-AJ08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:30  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 18:55  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00059		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-15  
 Client ID: 302-AI06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 13:20  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 19:21  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00050	J	mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	0.00066	J	mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.0063		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	0.0011		mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0011		mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.24		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	695	Q	70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-17  
 Client ID: 302-AI06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 13:30  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 19:47  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00075		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	0.00070	J	mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	0.00070	J	mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.0030		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-19  
 Client ID: 302-AI06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 13:40  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 20:13  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00022	J	mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.0028		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-21  
 Client ID: 302-AI06-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 14:00  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/26/22 20:40  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00027	J	mg/kg	0.0020	0.00021	1
Benzene	0.00057		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.017		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00031	J	mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/26/22 13:40  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15,17,19,21 Batch: WG1681449-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21 Batch: WG1681449-3 WG1681449-4								
Methyl tert butyl ether	106		107		66-130	1		30
Benzene	111		111		70-130	0		30
1,2-Dichloroethane	107		108		70-130	1		30
Toluene	106		105		70-130	1		30
1,2-Dibromoethane	108		109		70-130	1		30
Ethylbenzene	112		110		70-130	2		30
p/m-Xylene	112		111		70-130	1		30
o-Xylene	111		110		70-130	1		30
Isopropylbenzene	111		111		70-130	0		30
1,3,5-Trimethylbenzene	110		110		70-130	0		30
1,2,4-Trimethylbenzene	110		110		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	100		102		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	99		102		70-130



# SEMIVOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-02  
 Client ID: 302-AJ07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 10:40  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 16:00  
 Analyst: JG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.021	J	mg/kg	0.20	0.019	1
Phenanthrene	0.12		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.22		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.15		mg/kg	0.12	0.022	1
Chrysene	0.21		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.23		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.16		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-04  
 Client ID: 302-AJ07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 10:50  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 15:11  
 Analyst: JG  
 Percent Solids: 73%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.23	0.028	1
Fluorene	0.030	J	mg/kg	0.23	0.022	1
Phenanthrene	0.34		mg/kg	0.14	0.027	1
Anthracene	0.11	J	mg/kg	0.14	0.044	1
Pyrene	0.39		mg/kg	0.14	0.022	1
Benzo(a)anthracene	0.28		mg/kg	0.14	0.025	1
Chrysene	0.24		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	0.22		mg/kg	0.14	0.038	1
Benzo(a)pyrene	0.21		mg/kg	0.18	0.055	1
Benzo(ghi)perylene	0.082	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-06  
 Client ID: 302-AJ07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 11:00  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 15:36  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.033	J	mg/kg	0.19	0.023	1
Fluorene	0.018	J	mg/kg	0.19	0.018	1
Phenanthrene	0.078	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.075	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.032	J	mg/kg	0.11	0.021	1
Chrysene	0.031	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.033	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-08  
 Client ID: 302-AJ07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 11:10  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 16:03  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.025	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.041	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.037	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.021	J	mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	98		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-10  
 Client ID: 302-AJ08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:10  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 15:17  
 Analyst: JG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-12  
 Client ID: 302-AJ08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:20  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 15:41  
 Analyst: JG  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.056	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.033	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.021	J	mg/kg	0.10	0.020	1
Chrysene	0.031	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	99		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-14  
 Client ID: 302-AJ08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:30  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 13:20  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-16  
 Client ID: 302-AI06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 13:20  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 13:44  
 Analyst: JG  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	87		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-18  
 Client ID: 302-AI06-C2COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 13:30  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 14:07  
 Analyst: JG  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.030	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.16		mg/kg	0.11	0.023	1
Anthracene	0.038	J	mg/kg	0.11	0.036	1
Pyrene	0.21		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.021	1
Chrysene	0.13		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.079	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	89		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-20  
 Client ID: 302-AI06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 13:40  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 14:30  
 Analyst: JG  
 Percent Solids: 72%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.42		mg/kg	0.23	0.028	1
Fluorene	0.69		mg/kg	0.23	0.022	1
Phenanthrene	3.2		mg/kg	0.14	0.028	1
Anthracene	0.90		mg/kg	0.14	0.044	1
Pyrene	4.6		mg/kg	0.14	0.022	1
Benzo(a)anthracene	2.9		mg/kg	0.14	0.025	1
Chrysene	2.9		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	3.9		mg/kg	0.14	0.038	1
Benzo(a)pyrene	3.5		mg/kg	0.18	0.055	1
Benzo(ghi)perylene	1.8		mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	98		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-22  
 Client ID: 302-AI06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 14:00  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 14:54  
 Analyst: JG  
 Percent Solids: 73%

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.028	1
Fluorene	ND		mg/kg	0.22	0.022	1
Phenanthrene	ND		mg/kg	0.14	0.027	1
Anthracene	ND		mg/kg	0.14	0.044	1
Pyrene	ND		mg/kg	0.14	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.025	1
Chrysene	ND		mg/kg	0.14	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.038	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.055	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 08/31/22 13:59  
 Analyst: JG

Extraction Method: EPA 3546  
 Extraction Date: 08/31/22 02:13

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1681698-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	75		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2245926

Project Number: 200.00135.006

Report Date: 08/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1681698-2 WG1681698-3								
Naphthalene	57		49		40-140	15		50
Fluorene	58		50		40-140	15		50
Phenanthrene	55		47		40-140	16		50
Anthracene	55		50		40-140	10		50
Pyrene	52		47		35-142	10		50
Benzo(a)anthracene	56		49		40-140	13		50
Chrysene	56		49		40-140	13		50
Benzo(b)fluoranthene	51		43		40-140	17		50
Benzo(a)pyrene	54		46		40-140	16		50
Benzo(ghi)perylene	48		41		40-140	16		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	68		57		23-120
2-Fluorobiphenyl	56		50		30-120
4-Terphenyl-d14	54		48		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-02

Date Collected: 08/24/22 10:40

Client ID: 302-AJ07-C1-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	63.9		mg/kg	2.31	0.124	1	08/26/22 01:05	08/29/22 16:09	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-04

Date Collected: 08/24/22 10:50

Client ID: 302-AJ07-C2-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.8		mg/kg	2.67	0.143	1	08/26/22 01:05	08/29/22 16:12	EPA 3050B	1,6010D	WP





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-06  
 Client ID: 302-AJ07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 11:00  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.6		mg/kg	2.19	0.118	1	08/26/22 01:05	08/29/22 16:16	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-08

Date Collected: 08/24/22 11:10

Client ID: 302-AJ07-C4-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	156		mg/kg	2.24	0.120	1	08/26/22 01:05	08/29/22 16:19	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-10

Date Collected: 08/24/22 12:10

Client ID: 302-AJ08-C1-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	123		mg/kg	2.23	0.119	1	08/26/22 01:05	08/29/22 16:23	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-12  
 Client ID: 302-AJ08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:20  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.4		mg/kg	2.13	0.114	1	08/26/22 01:05	08/29/22 16:59	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-14  
 Client ID: 302-AJ08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:30  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.02		mg/kg	2.18	0.117	1	08/26/22 01:05	08/29/22 17:03	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-16

Date Collected: 08/24/22 13:20

Client ID: 302-AI06-C1-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	31.4		mg/kg	2.63	0.141	1	08/26/22 01:05	08/29/22 17:06	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-18

Date Collected: 08/24/22 13:30

Client ID: 302-AI06-C2COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	39.5		mg/kg	2.17	0.116	1	08/26/22 01:05	08/29/22 17:10	EPA 3050B	1,6010D	WP



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-20

Date Collected: 08/24/22 13:40

Client ID: 302-AI06-C3-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	117		mg/kg	2.72	0.146	1	08/26/22 01:05	08/29/22 17:13	EPA 3050B	1,6010D	WP





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-22  
 Client ID: 302-AI06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 14:00  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.87		mg/kg	2.69	0.144	1	08/26/22 01:05	08/29/22 17:17	EPA 3050B	1,6010D	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245926

Project Number: 200.00135.006

Report Date: 08/31/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1679804-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/26/22 01:05	08/29/22 15:13	1,6010D	WP

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1679804-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22    QC Batch ID: WG1679804-3 WG1679804-4    QC Sample: L2246011-08    Client ID: MS Sample												
Lead, Total	2.00J	43.3	41.4	96		44.0	101		75-125	6		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-01

Date Collected: 08/24/22 10:40

Client ID: 302-AJ07-C1-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.2		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-02

Date Collected: 08/24/22 10:40

Client ID: 302-AJ07-C1-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-03

Date Collected: 08/24/22 10:50

Client ID: 302-AJ07-C2-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.2		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-04

Date Collected: 08/24/22 10:50

Client ID: 302-AJ07-C2-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.8		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2245926

Project Number: 200.00135.006

Report Date: 08/31/22

## SAMPLE RESULTS

Lab ID: L2245926-05

Date Collected: 08/24/22 11:00

Client ID: 302-AJ07-C3-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-06

Date Collected: 08/24/22 11:00

Client ID: 302-AJ07-C3-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-07

Date Collected: 08/24/22 11:10

Client ID: 302-AJ07-C4-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.1		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-08

Date Collected: 08/24/22 11:10

Client ID: 302-AJ07-C4-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.0		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-09

Date Collected: 08/24/22 12:10

Client ID: 302-AJ08-C1-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

**SAMPLE RESULTS**

Lab ID: L2245926-10  
 Client ID: 302-AJ08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/24/22 12:10  
 Date Received: 08/24/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-11

Date Collected: 08/24/22 12:20

Client ID: 302-AJ08-C2-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.2		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-12

Date Collected: 08/24/22 12:20

Client ID: 302-AJ08-C2-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.3		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-13

Date Collected: 08/24/22 12:30

Client ID: 302-AJ08-C3-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.9		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-14

Date Collected: 08/24/22 12:30

Client ID: 302-AJ08-C3-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-15

Date Collected: 08/24/22 13:20

Client ID: 302-AI06-C1-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-16

Date Collected: 08/24/22 13:20

Client ID: 302-AI06-C1-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.9		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-17

Date Collected: 08/24/22 13:30

Client ID: 302-AI06-C2-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.8		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-18

Date Collected: 08/24/22 13:30

Client ID: 302-AI06-C2COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.5		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-19

Date Collected: 08/24/22 13:40

Client ID: 302-AI06-C3-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-20

Date Collected: 08/24/22 13:40

Client ID: 302-AI06-C3-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	71.6		%	0.100	NA	1	-	08/25/22 16:37	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-21

Date Collected: 08/24/22 14:00

Client ID: 302-AI06-C4-VOC

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/25/22 17:04	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**SAMPLE RESULTS**

Lab ID: L2245926-22

Date Collected: 08/24/22 14:00

Client ID: 302-AI06-C4-COMP

Date Received: 08/24/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.8		%	0.100	NA	1	-	08/25/22 17:04	121,2540G	MF



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2245926

Report Date: 08/31/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1679775-1 QC Sample: L2245926-01 Client ID: 302-AJ07-C1-VOC						
Solids, Total	89.2	88.9	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1679786-1 QC Sample: L2245447-01 Client ID: DUP Sample						
Solids, Total	94.6	94.4	%	0		20

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08312217:12  
**Lab Number:** L2245926  
**Report Date:** 08/31/22

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245926-01A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-01B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-01C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-01D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-02B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-03A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-03B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-03C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-03D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-04B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-05A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-05B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-05C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-05D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-06B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-07A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-07B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-07C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-07D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2245926**Project Number:** 200.00135.006**Report Date:** 08/31/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245926-08B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-09A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-09B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-09C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-09D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-10B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-11A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-11B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-11C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-11D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-12B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-13A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-13B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-13C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-13D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-14B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-15A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-15B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-15C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-15D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-16B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-17A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-17B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-17C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:08312217:12  
**Lab Number:** L2245926  
**Report Date:** 08/31/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2245926-17D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-18B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-19A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-19B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-19C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-19D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-20B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)
L2245926-21A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2245926-21B	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-21C	Vial water preserved	A	NA		5.4	Y	Absent	25-AUG-22 15:01	PA-8260HLW(14)
L2245926-21D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2245926-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2245926-22B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2245926  
**Report Date:** 08/31/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2245926

**Project Number:** 200.00135.006

**Report Date:** 08/31/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 3

Westborough, MA    Mansfield, MA  
 TEL: 508-898-8220    TEL: 508-822-9300  
 FAX: 508-898-8193    FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974  
 Fax:  
 Email: William.Schmidt@ransomenv.com  
 These samples have been Previously analyzed by Alpha

### Project Information

Project Name: Philadelphia Refinery  
 Project Location: Philadelphia, PA  
 Project #: 200.00135.006  
 Project Manager: William Schmidt  
 ALPHA Quote #: ~~12151~~ ~~1783~~ 18559

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)  
 Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/25/02    ALPHA Job #: L2245926

**Report Information**    **Data Deliverables**    **Billing Information**  
 FAX     EMAIL     Same as Client Info    PO #: 3562  
 ADEX     Add'l Deliverables

**Regulatory Requirements/Report Limits**  
 State/Fed Program    Criteria

### ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Other Analytes										TOTAL # BOTTLES		
		Date	Time						1	2	3	4	5	6	7	8	9	10			
45926-01	302-AJ07-C1-VOC	8/24	1040	S	JS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
02	302-AJ07-C1-COMP		1040			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
03	302-AJ07-C2-VOC		1050			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
04	302-AJ07-C2-COMP		1050			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
05	302-AJ07-C3-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
06	302-AJ07-C3-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
07	302-AJ07-C4-VOC		1110			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
08	302-AJ07-C4-COMP		1110			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
09	302-AJ08-C1-VOC		1210			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
10	302-AJ08-C1-COMP		1210			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Relinquished By: *Tom Cloutier*    Date/Time: 8/24/02 1500  
 Received By: *Paul Mazzella*    Date/Time: 8/24/02 1500  
*Paul Mazzella*    8/24/02

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha Payment Terms.



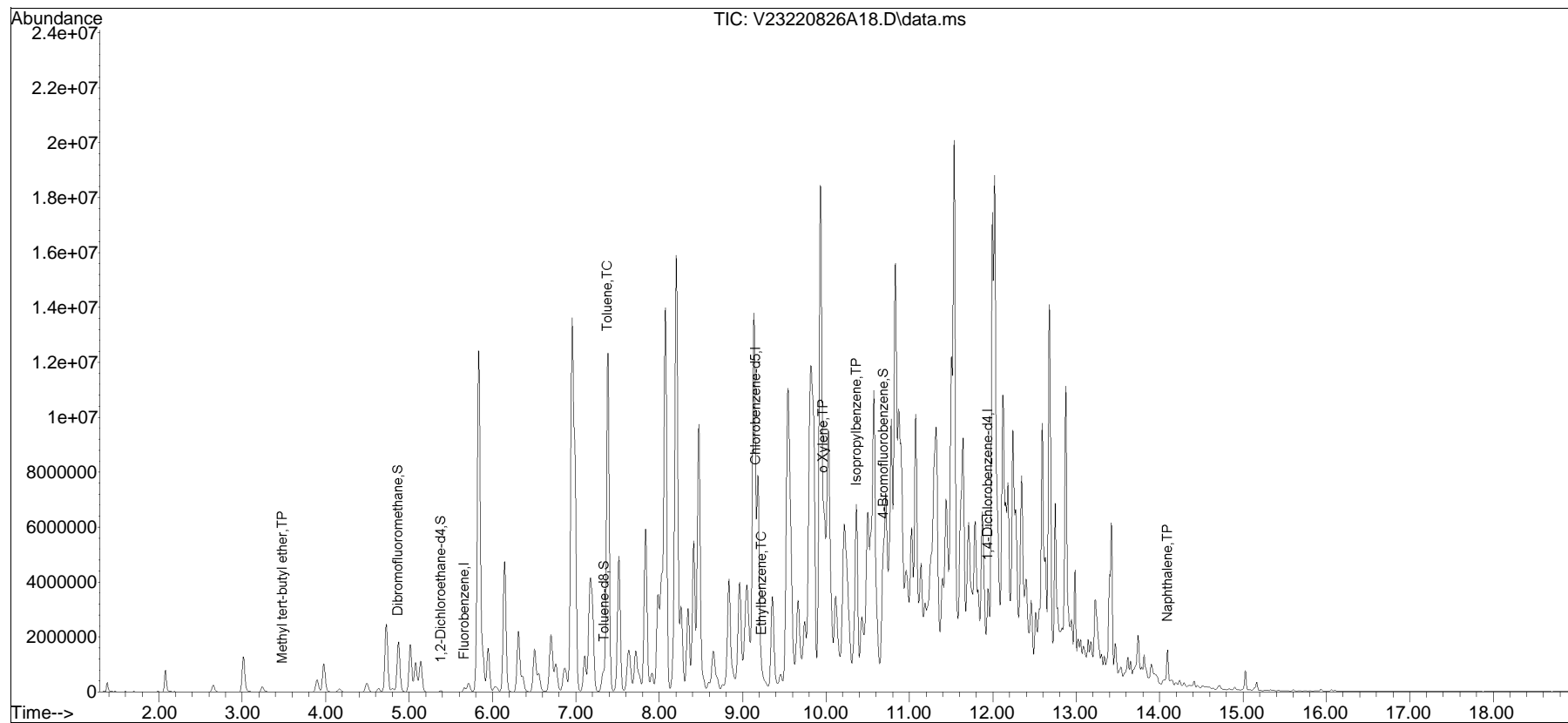


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220826A\  
Data File : V23220826A18.D  
Acq On : 26 Aug 2022 07:21 pm  
Operator : VOA123:NLK  
Sample : L2245926-15,31,6.32,5,,C,R2F  
Misc : WG1681449,ICAL19289  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 30 11:04:13 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220826A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220826A02.D•







## ANALYTICAL REPORT

Lab Number:	L2246306
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/13/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2246306

Report Date: 09/13/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2246306-01	302-AK05-C1-VOC	SOIL	PHILADELPHIA, PA	08/25/22 10:30	08/25/22
L2246306-02	302-AK05-C1-COMP	SOIL	PHILADELPHIA, PA	08/25/22 10:30	08/25/22
L2246306-03	302-AK05-C2-VOC	SOIL	PHILADELPHIA, PA	08/25/22 10:40	08/25/22
L2246306-04	302-AK05-C2-COMP	SOIL	PHILADELPHIA, PA	08/25/22 10:40	08/25/22
L2246306-05	302-AK05-C3-VOC	SOIL	PHILADELPHIA, PA	08/25/22 10:50	08/25/22
L2246306-06	302-AK05-C3-COMP	SOIL	PHILADELPHIA, PA	08/25/22 10:50	08/25/22
L2246306-07	302-AK05-C4-VOC	SOIL	PHILADELPHIA, PA	08/25/22 11:00	08/25/22
L2246306-08	302-AK05-C4-COMP	SOIL	PHILADELPHIA, PA	08/25/22 11:00	08/25/22
L2246306-09	302-AK05-C5-VOC	SOIL	PHILADELPHIA, PA	08/25/22 11:10	08/25/22
L2246306-10	302-AK05-C5-COMP	SOIL	PHILADELPHIA, PA	08/25/22 11:10	08/25/22
L2246306-11	302-AL05-C1-VOC	SOIL	PHILADELPHIA, PA	08/25/22 12:00	08/25/22
L2246306-12	302-AL05-C1-COMP	SOIL	PHILADELPHIA, PA	08/25/22 12:00	08/25/22
L2246306-13	302-AL05-C2-VOC	SOIL	PHILADELPHIA, PA	08/25/22 12:10	08/25/22
L2246306-14	302-AL05-C2-COMP	SOIL	PHILADELPHIA, PA	08/25/22 12:10	08/25/22
L2246306-15	302-AL05-C3-VOC	SOIL	PHILADELPHIA, PA	08/25/22 12:20	08/25/22
L2246306-16	302-AL05-C3-COMP	SOIL	PHILADELPHIA, PA	08/25/22 12:20	08/25/22
L2246306-17	302-AL05-C4-VOC	SOIL	PHILADELPHIA, PA	08/25/22 12:30	08/25/22
L2246306-18	302-AL05-C4-COMP	SOIL	PHILADELPHIA, PA	08/25/22 12:30	08/25/22
L2246306-19	302-AM03-C1-VOC	SOIL	PHILADELPHIA, PA	08/25/22 13:30	08/25/22
L2246306-20	302-AM03-C1-COMP	SOIL	PHILADELPHIA, PA	08/25/22 13:30	08/25/22
L2246306-21	302-AM03-C2-VOC	SOIL	PHILADELPHIA, PA	08/25/22 13:40	08/25/22
L2246306-22	302-AM03-C2-COMP	SOIL	PHILADELPHIA, PA	08/25/22 13:40	08/25/22
L2246306-23	302-AM03-C3-VOC	SOIL	PHILADELPHIA, PA	08/25/22 13:50	08/25/22
L2246306-24	302-AM03-C3-COMP	SOIL	PHILADELPHIA, PA	08/25/22 13:50	08/25/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2246306-25	302-AM03-C4-VOC	SOIL	PHILADELPHIA, PA	08/25/22 14:00	08/25/22
L2246306-26	302-AM03-C4-COMP	SOIL	PHILADELPHIA, PA	08/25/22 14:00	08/25/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

### Case Narrative (continued)

#### Report Revision

September 13, 2022: The Client ID was amended on L2246306-04.

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2246306-07 and -23: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2246306-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (151%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246306-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (215%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246306-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (176%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246306-23: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (154%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246306-25D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2246306-25D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (137%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 09/13/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-01  
 Client ID: 302-AK05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 12:57  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-03  
 Client ID: 302-AK05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:40  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 13:23  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0062	0.00062	1
Benzene	ND		mg/kg	0.0015	0.00051	1
1,2-Dichloroethane	ND		mg/kg	0.0031	0.00079	1
Toluene	ND		mg/kg	0.0031	0.0017	1
1,2-Dibromoethane	ND		mg/kg	0.0015	0.00090	1
Ethylbenzene	ND		mg/kg	0.0031	0.00043	1
p/m-Xylene	ND		mg/kg	0.0062	0.0017	1
o-Xylene	ND		mg/kg	0.0031	0.00090	1
Xylenes, Total	ND		mg/kg	0.0031	0.00090	1
Isopropylbenzene	ND		mg/kg	0.0031	0.00034	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0062	0.00059	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0062	0.0010	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-05  
 Client ID: 302-AK05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:50  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 23:18  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00078	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00080	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-07  
 Client ID: 302-AK05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 11:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 22:51  
 Analyst: JC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.016	1
Toluene	0.052	J	mg/kg	0.060	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	0.23		mg/kg	0.060	0.0085	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.060	0.018	1
Xylenes, Total	ND		mg/kg	0.060	0.018	1
Isopropylbenzene	1.1		mg/kg	0.060	0.0066	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	151	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-09  
 Client ID: 302-AK05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 11:10  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 14:42  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00019	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.0032		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	0.00031	J	mg/kg	0.00089	0.00026	1
Xylenes, Total	0.00031	J	mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.016		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.00039	J	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	215	Q	70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-11  
 Client ID: 302-AL05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 15:09  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00049	J	mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-13  
 Client ID: 302-AL05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:10  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 15:35  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-15  
 Client ID: 302-AL05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:20  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 16:02  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-17  
 Client ID: 302-AL05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 16:28  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-19  
 Client ID: 302-AM03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 16:54  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-21  
 Client ID: 302-AM03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:40  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 17:21  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	176	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-23  
 Client ID: 302-AM03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:50  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 17:07  
 Analyst: JC  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.098	0.0098	1
Benzene	ND		mg/kg	0.024	0.0081	1
1,2-Dichloroethane	ND		mg/kg	0.049	0.012	1
Toluene	ND		mg/kg	0.049	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	ND		mg/kg	0.049	0.0069	1
p/m-Xylene	ND		mg/kg	0.098	0.027	1
o-Xylene	ND		mg/kg	0.049	0.014	1
Xylenes, Total	ND		mg/kg	0.049	0.014	1
Isopropylbenzene	1.0		mg/kg	0.049	0.0053	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.098	0.0094	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.098	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	154	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-25 D  
 Client ID: 302-AM03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 14:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/30/22 18:14  
 Analyst: AJK  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	1.9	0.19	10
Benzene	ND		mg/kg	0.48	0.16	10
1,2-Dichloroethane	ND		mg/kg	0.97	0.25	10
Toluene	ND		mg/kg	0.97	0.52	10
1,2-Dibromoethane	ND		mg/kg	0.48	0.28	10
Ethylbenzene	ND		mg/kg	0.97	0.14	10
p/m-Xylene	ND		mg/kg	1.9	0.54	10
o-Xylene	ND		mg/kg	0.97	0.28	10
Xylenes, Total	ND		mg/kg	0.97	0.28	10
Isopropylbenzene	13.		mg/kg	0.97	0.10	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.9	0.19	10
1,2,4-Trimethylbenzene	ND		mg/kg	1.9	0.32	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	137	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/30/22 09:00  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,09,11,13,15,17,19,21 Batch: WG1681410-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/30/22 09:00  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 25 Batch: WG1681613-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/31/22 16:44  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07 Batch: WG1682384-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/31/22 16:44  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1682386-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	94		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/31/22 08:50  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 23 Batch: WG1682404-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,09,11,13,15,17,19,21 Batch: WG1681410-3 WG1681410-4								
Methyl tert butyl ether	106		104		66-130	2		30
Benzene	111		104		70-130	7		30
1,2-Dichloroethane	111		106		70-130	5		30
Toluene	104		99		70-130	5		30
1,2-Dibromoethane	106		105		70-130	1		30
Ethylbenzene	111		105		70-130	6		30
p/m-Xylene	110		105		70-130	5		30
o-Xylene	111		106		70-130	5		30
Isopropylbenzene	108		103		70-130	5		30
1,3,5-Trimethylbenzene	109		104		70-130	5		30
1,2,4-Trimethylbenzene	108		103		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		104		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	92		94		70-130
Dibromofluoromethane	101		98		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 25 Batch: WG1681613-3 WG1681613-4								
Methyl tert butyl ether	106		104		66-130	2		30
Benzene	111		104		70-130	7		30
1,2-Dichloroethane	111		106		70-130	5		30
Toluene	104		99		70-130	5		30
1,2-Dibromoethane	106		105		70-130	1		30
Ethylbenzene	111		105		70-130	6		30
p/m-Xylene	110		105		70-130	5		30
o-Xylene	111		106		70-130	5		30
Isopropylbenzene	108		103		70-130	5		30
1,3,5-Trimethylbenzene	109		104		70-130	5		30
1,2,4-Trimethylbenzene	108		103		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		104		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	92		94		70-130
Dibromofluoromethane	101		99		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2246306

Project Number: 200.00135.006

Report Date: 09/13/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07 Batch: WG1682384-3 WG1682384-4									
Methyl tert butyl ether	100		96		66-130		4		30
Benzene	104		94		70-130		10		30
1,2-Dichloroethane	104		98		70-130		6		30
Toluene	99		90		70-130		10		30
1,2-Dibromoethane	101		98		70-130		3		30
Ethylbenzene	105		95		70-130		10		30
p/m-Xylene	105		95		70-130		10		30
o-Xylene	104		96		70-130		8		30
Isopropylbenzene	106		95		70-130		11		30
1,3,5-Trimethylbenzene	105		96		70-130		9		30
1,2,4-Trimethylbenzene	104		96		70-130		8		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		104		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	99		97		70-130

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1682386-3 WG1682386-4								
Methyl tert butyl ether	100		96		66-130	4		30
Benzene	104		94		70-130	10		30
1,2-Dichloroethane	104		98		70-130	6		30
Toluene	99		90		70-130	10		30
1,2-Dibromoethane	101		98		70-130	3		30
Ethylbenzene	105		95		70-130	10		30
p/m-Xylene	105		95		70-130	10		30
o-Xylene	104		96		70-130	8		30
Isopropylbenzene	106		95		70-130	11		30
1,3,5-Trimethylbenzene	105		96		70-130	9		30
1,2,4-Trimethylbenzene	104		96		70-130	8		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	106		104		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	99		97		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 23 Batch: WG1682404-3 WG1682404-4								
Methyl tert butyl ether	86		89		66-130	3		30
Benzene	97		99		70-130	2		30
1,2-Dichloroethane	90		92		70-130	2		30
Toluene	103		105		70-130	2		30
1,2-Dibromoethane	100		102		70-130	2		30
Ethylbenzene	105		107		70-130	2		30
p/m-Xylene	108		111		70-130	3		30
o-Xylene	107		110		70-130	3		30
Isopropylbenzene	104		108		70-130	4		30
1,3,5-Trimethylbenzene	106		110		70-130	4		30
1,2,4-Trimethylbenzene	106		109		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		95		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	97		98		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-02  
 Client ID: 302-AK05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 13:10  
 Analyst: JG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.19	0.023	1
Fluorene	0.039	J	mg/kg	0.19	0.018	1
Phenanthrene	0.35		mg/kg	0.11	0.023	1
Anthracene	0.089	J	mg/kg	0.11	0.036	1
Pyrene	0.37		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.28		mg/kg	0.11	0.021	1
Chrysene	0.26		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.31		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.29		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	76		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-04  
 Client ID: 302-AK05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:40  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 13:34  
 Analyst: JG  
 Percent Solids: 72%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.23	0.028	1
Fluorene	0.022	J	mg/kg	0.23	0.022	1
Phenanthrene	0.23		mg/kg	0.14	0.028	1
Anthracene	0.079	J	mg/kg	0.14	0.045	1
Pyrene	0.26		mg/kg	0.14	0.023	1
Benzo(a)anthracene	0.20		mg/kg	0.14	0.026	1
Chrysene	0.19		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	0.24		mg/kg	0.14	0.039	1
Benzo(a)pyrene	0.22		mg/kg	0.18	0.056	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-06  
 Client ID: 302-AK05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:50  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 13:57  
 Analyst: JG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.12		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.16		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.16		mg/kg	0.12	0.023	1
Chrysene	0.15		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.21		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.20		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-08  
 Client ID: 302-AK05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 11:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 14:21  
 Analyst: JG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.2		mg/kg	0.19	0.023	1
Fluorene	1.6		mg/kg	0.19	0.018	1
Phenanthrene	2.9		mg/kg	0.11	0.023	1
Anthracene	0.42		mg/kg	0.11	0.036	1
Pyrene	0.53		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.31		mg/kg	0.11	0.021	1
Chrysene	0.28		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.32		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.30		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.15		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-10  
 Client ID: 302-AK05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 11:10  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 14:45  
 Analyst: JG  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.48		mg/kg	0.21	0.025	1
Fluorene	0.18	J	mg/kg	0.21	0.020	1
Phenanthrene	0.36		mg/kg	0.12	0.025	1
Anthracene	0.12		mg/kg	0.12	0.041	1
Pyrene	0.17		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.15		mg/kg	0.12	0.023	1
Chrysene	0.13		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.22		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.24		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-12  
 Client ID: 302-AL05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 15:09  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.047	J	mg/kg	0.19	0.023	1
Fluorene	0.16	J	mg/kg	0.19	0.018	1
Phenanthrene	1.2		mg/kg	0.11	0.023	1
Anthracene	0.35		mg/kg	0.11	0.036	1
Pyrene	1.1		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.79		mg/kg	0.11	0.021	1
Chrysene	0.67		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.70		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.63		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.26		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-14  
 Client ID: 302-AL05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:10  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 15:33  
 Analyst: JG  
 Percent Solids: 68%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.19	J	mg/kg	0.25	0.030	1
Fluorene	0.35		mg/kg	0.25	0.024	1
Phenanthrene	2.7		mg/kg	0.15	0.030	1
Anthracene	0.79		mg/kg	0.15	0.048	1
Pyrene	3.4		mg/kg	0.15	0.024	1
Benzo(a)anthracene	2.4		mg/kg	0.15	0.028	1
Chrysene	2.2		mg/kg	0.15	0.026	1
Benzo(b)fluoranthene	2.8		mg/kg	0.15	0.042	1
Benzo(a)pyrene	2.6		mg/kg	0.20	0.060	1
Benzo(ghi)perylene	1.3		mg/kg	0.20	0.029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-16  
 Client ID: 302-AL05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:20  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 15:57  
 Analyst: JG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-18  
 Client ID: 302-AL05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 14:02  
 Analyst: WR  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.27		mg/kg	0.18	0.022	1
Fluorene	0.044	J	mg/kg	0.18	0.017	1
Phenanthrene	0.45		mg/kg	0.11	0.022	1
Anthracene	0.17		mg/kg	0.11	0.034	1
Pyrene	0.87		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.63		mg/kg	0.11	0.020	1
Chrysene	0.68		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	1.0		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.79		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.67		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	63		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-20  
 Client ID: 302-AM03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 14:26  
 Analyst: WR  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.046	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.073	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.052	J	mg/kg	0.11	0.020	1
Chrysene	0.050	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.066	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.055	J	mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.035	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-22  
 Client ID: 302-AM03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:40  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 14:50  
 Analyst: WR  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.16	J	mg/kg	0.18	0.023	1
Fluorene	0.42		mg/kg	0.18	0.018	1
Phenanthrene	2.8		mg/kg	0.11	0.023	1
Anthracene	0.93		mg/kg	0.11	0.036	1
Pyrene	2.7		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.6		mg/kg	0.11	0.021	1
Chrysene	1.4		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.6		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.3		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.62		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-24  
 Client ID: 302-AM03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:50  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 15:14  
 Analyst: WR  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.056	J	mg/kg	0.22	0.027	1
Fluorene	0.26		mg/kg	0.22	0.021	1
Phenanthrene	0.55		mg/kg	0.13	0.027	1
Anthracene	0.088	J	mg/kg	0.13	0.043	1
Pyrene	0.13		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.064	J	mg/kg	0.13	0.025	1
Chrysene	0.061	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.054	J	mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.054	1
Benzo(ghi)perylene	0.026	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-26  
 Client ID: 302-AM03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 14:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 15:38  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 09/01/22 10:46  
 Analyst: JG

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1682213-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	68		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1682213-2 WG1682213-3								
Naphthalene	65		62		40-140	5		50
Fluorene	70		64		40-140	9		50
Phenanthrene	66		62		40-140	6		50
Anthracene	66		64		40-140	3		50
Pyrene	62		58		35-142	7		50
Benzo(a)anthracene	68		61		40-140	11		50
Chrysene	68		63		40-140	8		50
Benzo(b)fluoranthene	67		60		40-140	11		50
Benzo(a)pyrene	66		60		40-140	10		50
Benzo(ghi)perylene	62		55		40-140	12		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	74		76		23-120
2-Fluorobiphenyl	65		62		30-120
4-Terphenyl-d14	63		60		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-02  
 Client ID: 302-AK05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 10:30  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	33.2		mg/kg	2.24	0.120	1	08/27/22 02:17	08/30/22 14:59	EPA 3050B	1,6010D	ZK





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-04

Date Collected: 08/25/22 10:40

Client ID: 302-AK05-C2-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	80.7		mg/kg	2.68	0.144	1	08/27/22 02:17	08/30/22 15:04	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-06

Date Collected: 08/25/22 10:50

Client ID: 302-AK05-C3-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	74.5		mg/kg	2.42	0.130	1	08/27/22 02:17	08/30/22 15:08	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-08  
 Client ID: 302-AK05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 11:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	147		mg/kg	2.30	0.123	1	08/27/22 02:17	08/30/22 15:13	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-10  
 Client ID: 302-AK05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 11:10  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	330		mg/kg	2.50	0.134	1	08/27/22 02:17	08/30/22 15:17	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-12  
 Client ID: 302-AL05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 12:00  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	480		mg/kg	2.18	0.117	1	08/27/22 02:17	08/30/22 15:22	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-14

Date Collected: 08/25/22 12:10

Client ID: 302-AL05-C2-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 68%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	380		mg/kg	2.93	0.157	1	08/27/22 02:17	08/30/22 19:07	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-16

Date Collected: 08/25/22 12:20

Client ID: 302-AL05-C3-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	19.5		mg/kg	2.24	0.120	1	08/27/22 02:17	08/30/22 15:56	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-18

Date Collected: 08/25/22 12:30

Client ID: 302-AL05-C4-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	41.2		mg/kg	2.17	0.116	1	08/27/22 02:17	08/30/22 16:00	EPA 3050B	1,6010D	ZK





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-20

Date Collected: 08/25/22 13:30

Client ID: 302-AM03-C1-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	77.5		mg/kg	2.14	0.115	1	08/27/22 02:17	08/30/22 16:05	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-22  
 Client ID: 302-AM03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/25/22 13:40  
 Date Received: 08/25/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	29.2		mg/kg	2.20	0.118	1	08/27/22 02:17	08/30/22 16:09	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-24

Date Collected: 08/25/22 13:50

Client ID: 302-AM03-C3-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.84		mg/kg	2.63	0.141	1	08/27/22 02:17	08/30/22 16:14	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

**SAMPLE RESULTS**

Lab ID: L2246306-26

Date Collected: 08/25/22 14:00

Client ID: 302-AM03-C4-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	32.6		mg/kg	2.39	0.128	1	08/27/22 02:17	08/30/22 16:18	EPA 3050B	1,6010D	ZK



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246306

Project Number: 200.00135.006

Report Date: 09/13/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1680280-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/27/22 02:17	08/30/22 14:41	1,6010D	ZK

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1680280-2 SRM Lot Number: D113-540								
Lead, Total	80		-		72-128			-



**Matrix Spike Analysis**  
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2246306

Project Number: 200.00135.006

Report Date: 09/13/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26    QC Batch ID: WG1680280-3    QC Sample: L2246112-01    Client ID: MS Sample												
Lead, Total	38.6	44.5	77.6	88	-	-	-	-	75-125	-	-	20

### Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2246306

**Report Date:** 09/13/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 QC Batch ID: WG1680280-4 QC Sample: L2246112-01 Client ID: DUP Sample						
Lead, Total	38.6	34.0	mg/kg	13		20





# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-01

Date Collected: 08/25/22 10:30

Client ID: 302-AK05-C1-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.1		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-02

Date Collected: 08/25/22 10:30

Client ID: 302-AK05-C1-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-03

Date Collected: 08/25/22 10:40

Client ID: 302-AK05-C2-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.3		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-04

Date Collected: 08/25/22 10:40

Client ID: 302-AK05-C2-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	71.6		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-05

Date Collected: 08/25/22 10:50

Client ID: 302-AK05-C3-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-06

Date Collected: 08/25/22 10:50

Client ID: 302-AK05-C3-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-07

Date Collected: 08/25/22 11:00

Client ID: 302-AK05-C4-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.7		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-08

Date Collected: 08/25/22 11:00

Client ID: 302-AK05-C4-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.7		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-09

Date Collected: 08/25/22 11:10

Client ID: 302-AK05-C5-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.4		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

**SAMPLE RESULTS**

**Lab ID:** L2246306-10  
**Client ID:** 302-AK05-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/25/22 11:10  
**Date Received:** 08/25/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.3		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-11

Date Collected: 08/25/22 12:00

Client ID: 302-AL05-C1-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246306

Project Number: 200.00135.006

Report Date: 09/13/22

## SAMPLE RESULTS

Lab ID: L2246306-12

Date Collected: 08/25/22 12:00

Client ID: 302-AL05-C1-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-13

Date Collected: 08/25/22 12:10

Client ID: 302-AL05-C2-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246306

Project Number: 200.00135.006

Report Date: 09/13/22

## SAMPLE RESULTS

Lab ID: L2246306-14

Date Collected: 08/25/22 12:10

Client ID: 302-AL05-C2-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	67.5		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-15

Date Collected: 08/25/22 12:20

Client ID: 302-AL05-C3-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.0		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-16

Date Collected: 08/25/22 12:20

Client ID: 302-AL05-C3-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-17

Date Collected: 08/25/22 12:30

Client ID: 302-AL05-C4-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-18

Date Collected: 08/25/22 12:30

Client ID: 302-AL05-C4-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.4		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-19

Date Collected: 08/25/22 13:30

Client ID: 302-AM03-C1-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.0		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-20

Date Collected: 08/25/22 13:30

Client ID: 302-AM03-C1-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.7		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-21

Date Collected: 08/25/22 13:40

Client ID: 302-AM03-C2-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-22

Date Collected: 08/25/22 13:40

Client ID: 302-AM03-C2-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.8		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-23

Date Collected: 08/25/22 13:50

Client ID: 302-AM03-C3-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.3		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-24

Date Collected: 08/25/22 13:50

Client ID: 302-AM03-C3-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.3		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-25

Date Collected: 08/25/22 14:00

Client ID: 302-AM03-C4-VOC

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.1		%	0.100	NA	1	-	08/26/22 19:51	121,2540G	TR



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**SAMPLE RESULTS**

Lab ID: L2246306-26

Date Collected: 08/25/22 14:00

Client ID: 302-AM03-C4-COMP

Date Received: 08/25/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.9		%	0.100	NA	1	-	08/28/22 16:40	121,2540G	MF



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2246306

Report Date: 09/13/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21,23,25 QC Batch ID: WG1680268-1 QC Sample: L2246343-02 Client ID: DUP Sample						
Solids, Total	83.0	82.3	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 QC Batch ID: WG1680667-1 QC Sample: L2244140-01 Client ID: DUP Sample						
Solids, Total	92.4	92.0	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246306-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2246306-01B	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-01C	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-01D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2246306-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2246306-02B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2246306-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2246306-03B	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-03C	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-03D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2246306-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2246306-04B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2246306-05A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-05B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-05C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-05D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-06A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-06B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2246306-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2246306-07B	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-07C	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-07D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246306-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2246306-08B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2246306-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2246306-09B	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-09C	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-09D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2246306-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2246306-10B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2246306-11A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2246306-11B	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-11C	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-11D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2246306-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2246306-12B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2246306-13A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-13B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-13C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-13D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-14B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2246306-15A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-15B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-15C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-15D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2246306-16B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2246306-17A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2246306-17B	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246306**Project Number:** 200.00135.006**Report Date:** 09/13/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246306-17C	Vial water preserved	A	NA		3.2	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-17D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2246306-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-18B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2246306-19A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-19B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-19C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-19D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-20B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2246306-21A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-21B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-21C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-21D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-22B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2246306-23A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-23B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-23C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-23D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-24A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-24B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2246306-25A	Vial MeOH preserved	B	NA		3.3	Y	Absent		PA-8260HLW(14)
L2246306-25B	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-25C	Vial water preserved	B	NA		3.3	Y	Absent	26-AUG-22 18:06	PA-8260HLW(14)
L2246306-25D	Plastic 2oz unpreserved for TS	B	NA		3.3	Y	Absent		TS(7)
L2246306-26A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.3	Y	Absent		PB-TI(180)
L2246306-26B	Glass 120ml/4oz unpreserved	B	NA		3.3	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09132210:54  
**Lab Number:** L2246306  
**Report Date:** 09/13/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246306  
**Report Date:** 09/13/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246306

**Project Number:** 200.00135.006

**Report Date:** 09/13/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 3



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1251~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been previously analyzed by Alpha.

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/26/22

ALPHA Job #: L2246306

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead														
46306-01	302-AK05-C1-VOC	8/25	1030	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02	302-AK05-C1-COMP		1030			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03	302-AK05-C2-VOC		1040			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04	302-AK05-C2-COMP		1040			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05	302-AK05-C3-VOC		1050			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06	302-AK05-C3-COMP		1050			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07	302-AK05-C4-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
08	302-AK05-C4-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
09	302-AK05-C5-VOC		1110			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	302-AK05-C5-COMP		1110			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
46306-01	302-AK05-C1-VOC	8/25	1030	S	TS
02	302-AK05-C1-COMP		1030		
03	302-AK05-C2-VOC		1040		
04	302-AK05-C2-COMP		1040		
05	302-AK05-C3-VOC		1050		
06	302-AK05-C3-COMP		1050		
07	302-AK05-C4-VOC		1100		
08	302-AK05-C4-COMP		1100		
09	302-AK05-C5-VOC		1110		
10	302-AK05-C5-COMP		1110		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]*  
 Date/Time: 8/25/22 0230  
 Received By: *[Signature]*  
 Date/Time: 8/25/22 0230

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/25 ASD	<i>[Signature]</i>	8/25/22 1450
<i>[Signature]</i>	8/25/22 1450	<i>[Signature]</i>	8/25/22 1830
<i>[Signature]</i>	8/25/22 1830	<i>[Signature]</i>	8/25/22 2145

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1761~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3266

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/26/22

ALPHA Job #: L2246306

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SAMPLE HANDLING:  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead														
		Date	Time																			
46306-21	302-AM03-C2-VOC	8/25	1340	S	JS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
22	302-AM03-C2-Comp		1340			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
23	302-AM03-C3-VOC		1350			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
24	302-AM03-C3-Comp		1350			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
25	302-AM03-C4-VOC		1400			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
26	302-AM03-C4-Comp		1400			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Refringished By: [Signature] Date/Time: 8/25/22  
 Received By: [Signature] Date/Time: 8/25/22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

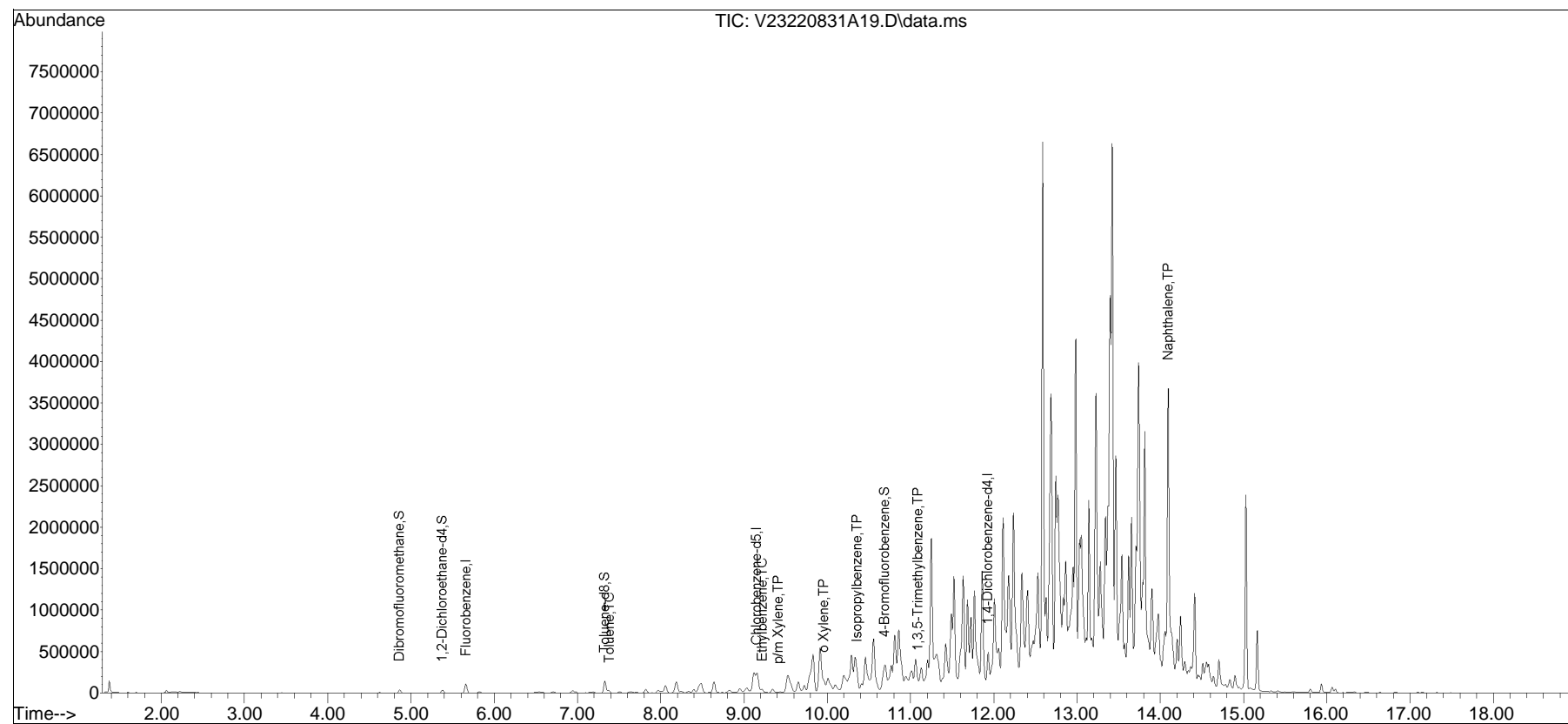


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220831A\  
 Data File : V23220831A19.D  
 Acq On : 31 Aug 2022 10:51 pm  
 Operator : VOA123:JC  
 Sample : L2246306-07,31H,6.39,5,0.100,,A,R2F  
 Misc : WG1682384,ICAL19289  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Sep 01 06:39:54 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\220831A\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list31A\V23220831A01.D•

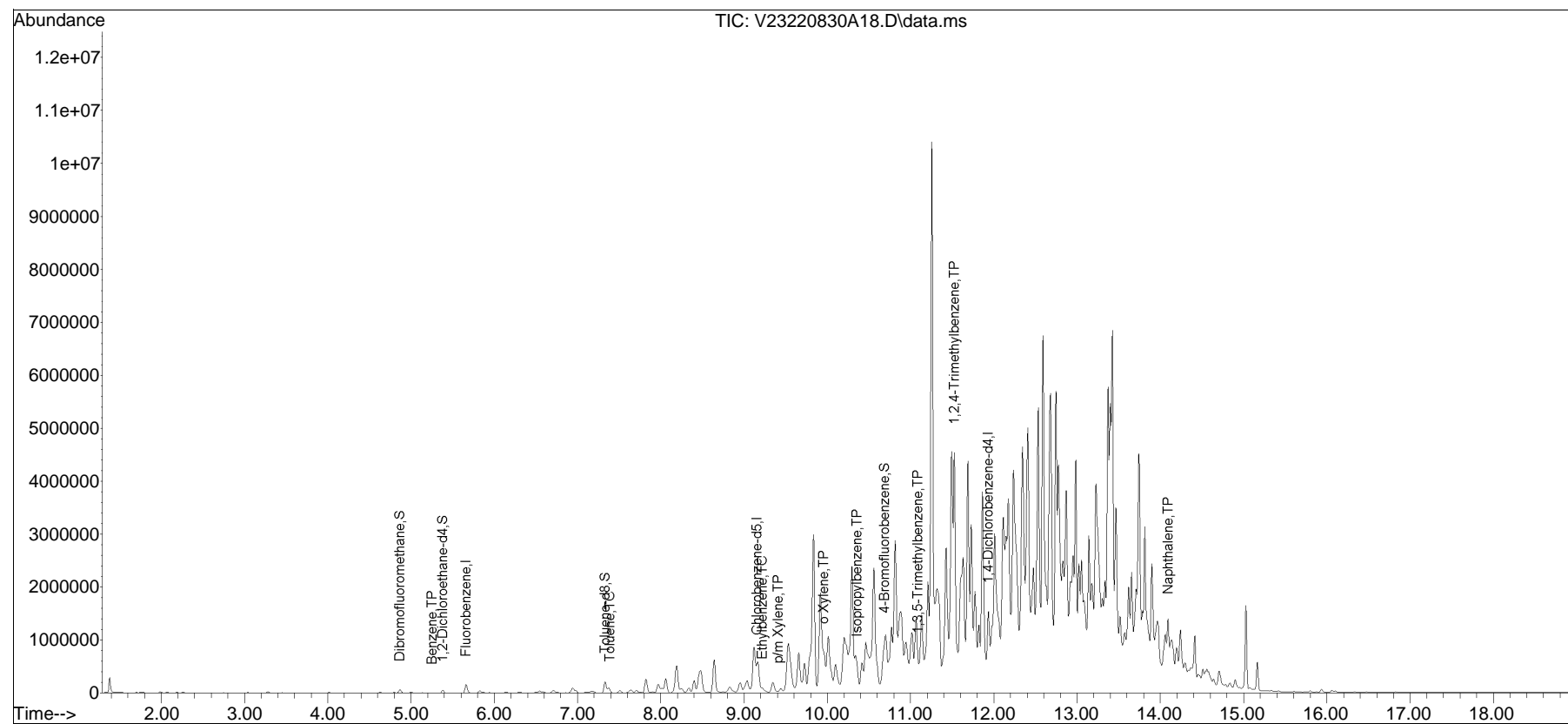


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220830A\  
 Data File : V23220830A18.D  
 Acq On : 30 Aug 2022 02:42 pm  
 Operator : VOA123:AJK  
 Sample : L2246306-09,31,6.48,5,,C,R2F  
 Misc : WG1681410,ICAL19289  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 30 19:56:45 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\220830A\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V23220830A01.D•

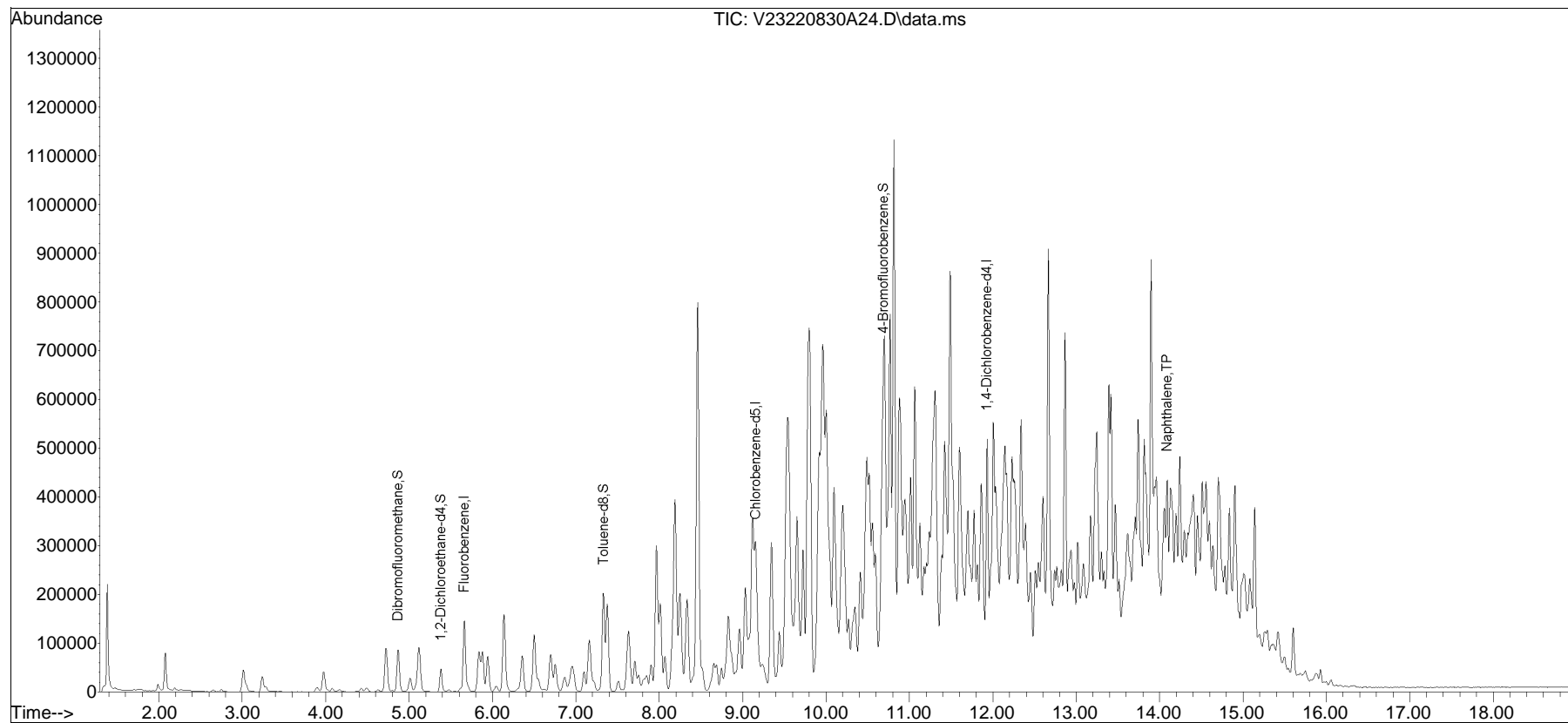


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220830A\  
Data File : V23220830A24.D  
Acq On : 30 Aug 2022 05:21 pm  
Operator : VOA123:AJK  
Sample : L2246306-21,31,6.50,5,,B,R2F  
Misc : WG1681410,ICAL19289  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Aug 30 19:54:03 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220830A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V23220830A01.D•

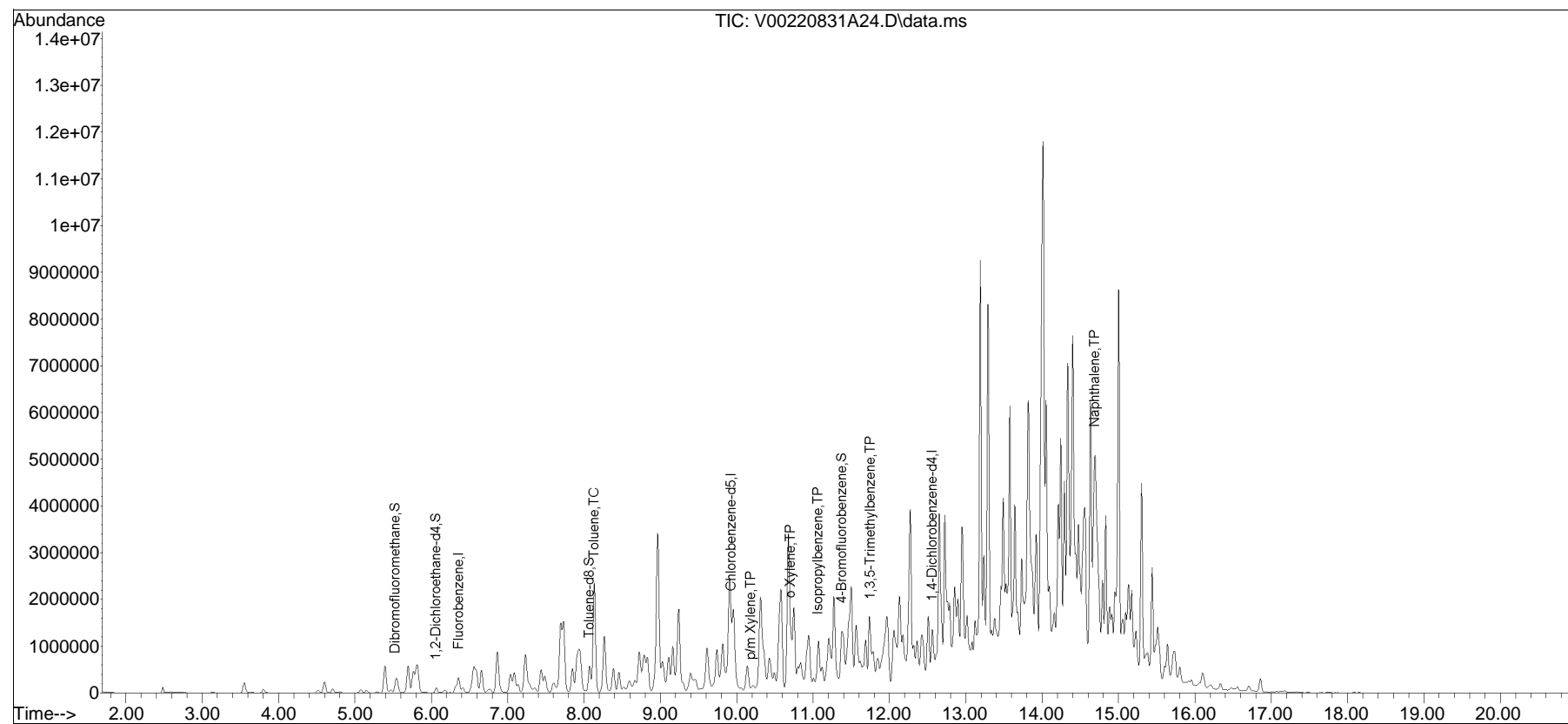


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220831A\  
Data File : V00220831A24.D  
Acq On : 31 Aug 2022 5:07 pm  
Operator : VOA100:JC  
Sample : 12246306-23,31h,6.69,5,0.100,,a,r2f  
Misc : WG1682404,ICAL19219  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 01 06:24:49 2022  
Quant Method : I:\VOLATILES\VOA100\2022\220831A\V100\_220802N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Aug 03 07:08:57 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list31A\V00220831A01.D•

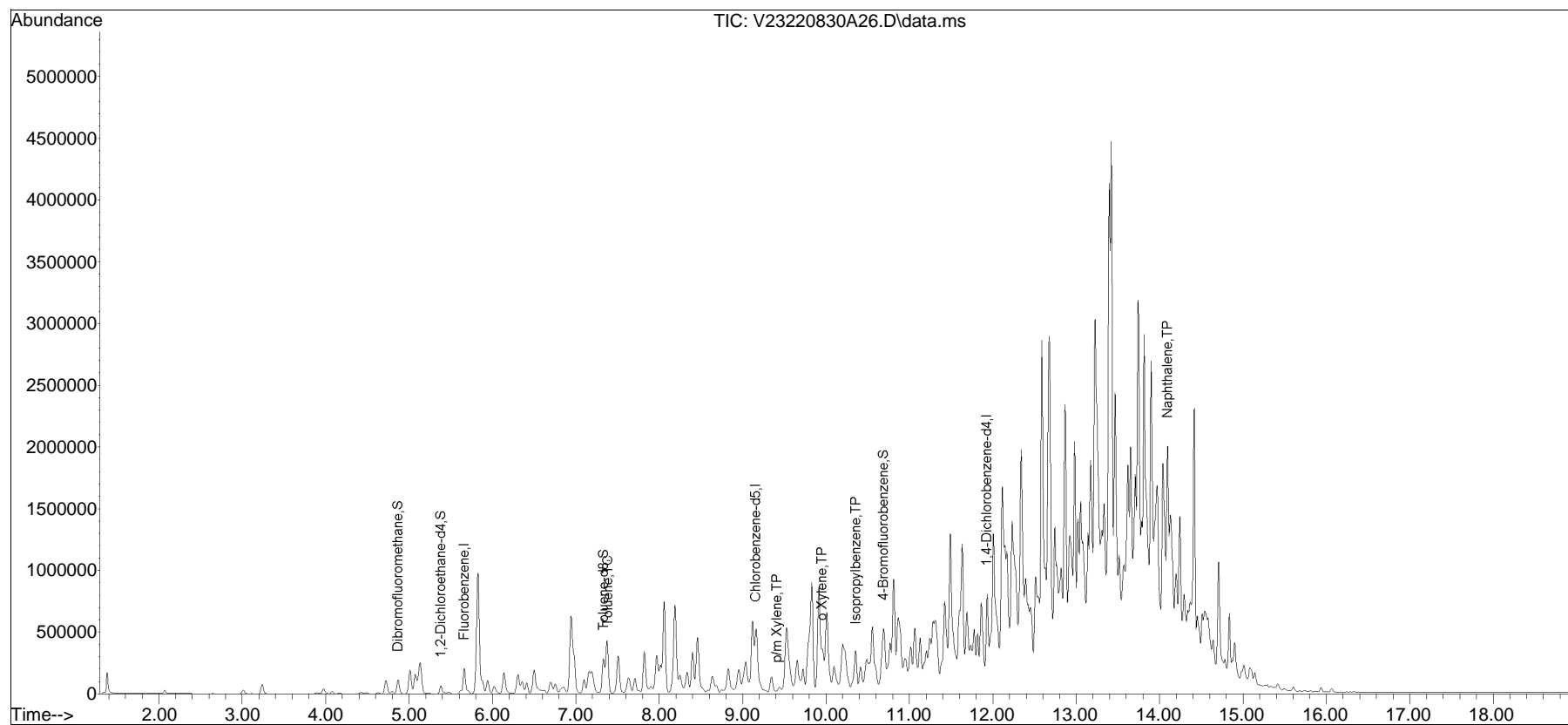


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220830A\  
Data File : V23220830A26.D  
Acq On : 30 Aug 2022 06:14 pm  
Operator : VOA123:AJK  
Sample : L2246306-25D,31H,3.96,5,0.01,,A,R2F  
Misc : WG1681613,ICAL19289  
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Aug 30 19:58:30 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220830A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list30A\V23220830A01.D•





## ANALYTICAL REPORT

Lab Number:	L2246450
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/15/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2246450-01	302-AE06-C1-VOC	SOIL	PHILADELPHIA, PA	08/26/22 12:00	08/26/22
L2246450-02	302-AE06-C1-COMP	SOIL	PHILADELPHIA, PA	08/26/22 12:00	08/26/22
L2246450-03	302-AE06-C2-VOC	SOIL	PHILADELPHIA, PA	08/26/22 12:10	08/26/22
L2246450-04	302-AE06-C2-COMP	SOIL	PHILADELPHIA, PA	08/26/22 12:10	08/26/22
L2246450-05	302-AE06-C3-VOC	SOIL	PHILADELPHIA, PA	08/26/22 12:20	08/26/22
L2246450-06	302-AE06-C3-COMP	SOIL	PHILADELPHIA, PA	08/26/22 12:20	08/26/22
L2246450-07	302-AE06-C4-VOC	SOIL	PHILADELPHIA, PA	08/26/22 12:30	08/26/22
L2246450-08	302-AE06-C4-COMP	SOIL	PHILADELPHIA, PA	08/26/22 12:30	08/26/22
L2246450-09	302-AE07-C1-VOC	SOIL	PHILADELPHIA, PA	08/26/22 13:00	08/26/22
L2246450-10	302-AE07-C1-COMP	SOIL	PHILADELPHIA, PA	08/26/22 13:00	08/26/22
L2246450-11	302-AE07-C2-VOC	SOIL	PHILADELPHIA, PA	08/26/22 13:10	08/26/22
L2246450-12	302-AE07-C2-COMP	SOIL	PHILADELPHIA, PA	08/26/22 13:10	08/26/22
L2246450-13	302-AE07-C3-VOC	SOIL	PHILADELPHIA, PA	08/26/22 13:20	08/26/22
L2246450-14	302-AE07-C3-COMP	SOIL	PHILADELPHIA, PA	08/26/22 13:20	08/26/22
L2246450-15	302-AE07-C4-VOC	SOIL	PHILADELPHIA, PA	08/26/22 13:30	08/26/22
L2246450-16	302-AE07-C4-COMP	SOIL	PHILADELPHIA, PA	08/26/22 13:30	08/26/22
L2246450-17	302-AE07-C5-VOC	SOIL	PHILADELPHIA, PA	08/26/22 13:40	08/26/22
L2246450-18	302-AE07-C5-COMP	SOIL	PHILADELPHIA, PA	08/26/22 13:40	08/26/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

### Case Narrative (continued)

#### Report Revision

September 15, 2022: The Client ID was amended on L2246450-05.

September 13, 2022: The collection dates for L2246450-01 through -18 have been amended.

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2246450-03: The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (65%), toluene-d8 (2830%) and 4-bromofluorobenzene (1080%) due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2246450-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (164%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246450-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246450-15: The surrogate recovery was outside the acceptance criteria for 4-bromofluorobenzene (165%) due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Case Narrative (continued)**

between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 09/15/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-01  
 Client ID: 302-AE06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:00  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/29/22 17:50  
 Analyst: AJK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	0.0011		mg/kg	0.00080	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	ND		mg/kg	0.0016	0.00086	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	0.00026	J	mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0032	0.00089	1
o-Xylene	ND		mg/kg	0.0016	0.00046	1
Xylenes, Total	ND		mg/kg	0.0016	0.00046	1
Isopropylbenzene	0.00018	J	mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0032	0.00053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-03  
 Client ID: 302-AE06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:10  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/29/22 18:20  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.0038		mg/kg	0.0018	0.00018	1
Benzene	1.3	E	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	1.2	E	mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	3.2	E	mg/kg	0.00091	0.00013	1
p/m-Xylene	10.	E	mg/kg	0.0018	0.00051	1
o-Xylene	5.6	E	mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.72	E	mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	1.2	E	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	1.5	E	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	<b>2830</b>	Q	70-130
4-Bromofluorobenzene	<b>1080</b>	Q	70-130
Dibromofluoromethane	<b>65</b>	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-03  
 Client ID: 302-AE06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:10  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 15:58  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.28	0.028	1
Benzene	0.058	J	mg/kg	0.069	0.023	1
1,2-Dichloroethane	ND		mg/kg	0.14	0.036	1
Toluene	ND		mg/kg	0.14	0.075	1
1,2-Dibromoethane	ND		mg/kg	0.069	0.040	1
Ethylbenzene	0.041	J	mg/kg	0.14	0.020	1
p/m-Xylene	0.18	J	mg/kg	0.28	0.077	1
o-Xylene	ND		mg/kg	0.14	0.040	1
Xylenes, Total	0.18	J	mg/kg	0.14	0.040	1
Isopropylbenzene	ND		mg/kg	0.14	0.015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.28	0.027	1
1,2,4-Trimethylbenzene	0.062	J	mg/kg	0.28	0.046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-05  
 Client ID: 302-AE06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 15:32  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	19.	E	mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.061	0.016	1
Toluene	2.1		mg/kg	0.061	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	15.		mg/kg	0.061	0.0086	1
p/m-Xylene	74.	E	mg/kg	0.12	0.034	1
o-Xylene	18.		mg/kg	0.061	0.018	1
Isopropylbenzene	3.0		mg/kg	0.061	0.0066	1
1,3,5-Trimethylbenzene	10.		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	29.	E	mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	116		70-130
4-Bromofluorobenzene	<b>164</b>	Q	70-130
Dibromofluoromethane	96		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-05 D  
 Client ID: 302-AE06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 03:28  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	21.		mg/kg	0.30	0.10	10
p/m-Xylene	71.		mg/kg	1.2	0.34	10
Xylenes, Total	89.		mg/kg	0.061	0.018	10
1,2,4-Trimethylbenzene	30.		mg/kg	1.2	0.20	10

Benzene	21.		mg/kg	0.30	0.10	10
p/m-Xylene	71.		mg/kg	1.2	0.34	10
Xylenes, Total	89.		mg/kg	0.061	0.018	10
1,2,4-Trimethylbenzene	30.		mg/kg	1.2	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-07  
 Client ID: 302-AE06-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:30  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 14:38  
 Analyst: AJK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	0.0016		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00035	1
Toluene	ND		mg/kg	0.0013	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	0.00098	J	mg/kg	0.0013	0.00019	1
p/m-Xylene	0.0053		mg/kg	0.0027	0.00075	1
o-Xylene	0.0014		mg/kg	0.0013	0.00039	1
Xylenes, Total	0.0067		mg/kg	0.0013	0.00039	1
Isopropylbenzene	0.00099	J	mg/kg	0.0013	0.00015	1
1,3,5-Trimethylbenzene	0.00087	J	mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	0.0025	J	mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-09  
 Client ID: 302-AE07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:00  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 14:11  
 Analyst: AJK  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	17.		mg/kg	0.035	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.070	0.018	1
Toluene	0.46		mg/kg	0.070	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.035	0.021	1
Ethylbenzene	13.		mg/kg	0.070	0.0099	1
p/m-Xylene	65.	E	mg/kg	0.14	0.039	1
o-Xylene	16.		mg/kg	0.070	0.020	1
Isopropylbenzene	2.8		mg/kg	0.070	0.0077	1
1,3,5-Trimethylbenzene	10.		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	29.	E	mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	<b>153</b>	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-09 D  
 Client ID: 302-AE07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:00  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/29/22 19:47  
 Analyst: AJK  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
p/m-Xylene	76.		mg/kg	7.0	2.0	50
Xylenes, Total	92.		mg/kg	0.070	0.020	50
1,2,4-Trimethylbenzene	35.		mg/kg	7.0	1.2	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-11  
 Client ID: 302-AE07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:10  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/29/22 20:16  
 Analyst: AJK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00073		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-13  
 Client ID: 302-AE07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 13:44  
 Analyst: NLK  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	5.0		mg/kg	0.028	0.0094	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	0.042	J	mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.017	1
Ethylbenzene	2.1		mg/kg	0.057	0.0080	1
p/m-Xylene	10.		mg/kg	0.11	0.032	1
o-Xylene	3.8		mg/kg	0.057	0.016	1
Xylenes, Total	14.		mg/kg	0.057	0.016	1
Isopropylbenzene	0.58		mg/kg	0.057	0.0062	1
1,3,5-Trimethylbenzene	2.2		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	6.4		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-15  
 Client ID: 302-AE07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:30  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/29/22 21:15  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.039		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.072	0.019	1
Toluene	ND		mg/kg	0.072	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.033	J	mg/kg	0.072	0.010	1
p/m-Xylene	0.15		mg/kg	0.14	0.040	1
o-Xylene	0.073		mg/kg	0.072	0.021	1
Xylenes, Total	0.22		mg/kg	0.072	0.021	1
Isopropylbenzene	0.17		mg/kg	0.072	0.0079	1
1,3,5-Trimethylbenzene	0.13	J	mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	0.32		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-15  
 Client ID: 302-AE07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:30  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 13:18  
 Analyst: NLK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	2.2	E	mg/kg	0.00078	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00040	1
Toluene	0.0034		mg/kg	0.0016	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00078	0.00045	1
Ethylbenzene	0.47	E	mg/kg	0.0016	0.00022	1
p/m-Xylene	2.7	E	mg/kg	0.0031	0.00087	1
o-Xylene	0.92		mg/kg	0.0016	0.00045	1
Isopropylbenzene	0.096		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	0.32		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	1.0	E	mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	<b>165</b>	Q	70-130
Dibromofluoromethane	96		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-17  
 Client ID: 302-AE07-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:40  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 08/31/22 15:05  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	7.4		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.071	0.018	1
Toluene	0.042	J	mg/kg	0.071	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	3.0		mg/kg	0.071	0.010	1
p/m-Xylene	15.		mg/kg	0.14	0.040	1
o-Xylene	5.5		mg/kg	0.071	0.021	1
Xylenes, Total	20.		mg/kg	0.071	0.021	1
Isopropylbenzene	0.81		mg/kg	0.071	0.0078	1
1,3,5-Trimethylbenzene	3.1		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	8.6		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/29/22 11:31  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,11 Batch: WG1681665-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/29/22 12:00  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,15 Batch: WG1681998-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/31/22 08:51  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,15 Batch: WG1682183-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 08/31/22 08:51  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03,05,09,13,17 Batch: WG1682186-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/01/22 18:36  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05 Batch: WG1682940-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,11 Batch: WG1681665-3 WG1681665-4								
Methyl tert butyl ether	103		93		66-130	10		30
Benzene	102		94		70-130	8		30
1,2-Dichloroethane	96		89		70-130	8		30
Toluene	99		91		70-130	8		30
1,2-Dibromoethane	101		94		70-130	7		30
Ethylbenzene	101		93		70-130	8		30
p/m-Xylene	105		97		70-130	8		30
o-Xylene	104		96		70-130	8		30
Isopropylbenzene	101		92		70-130	9		30
1,3,5-Trimethylbenzene	103		93		70-130	10		30
1,2,4-Trimethylbenzene	101		94		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	95		96		70-130
Dibromofluoromethane	100		100		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,15 Batch: WG1681998-3 WG1681998-4								
Methyl tert butyl ether	103		93		66-130	10		30
Benzene	102		94		70-130	8		30
1,2-Dichloroethane	96		89		70-130	8		30
Toluene	99		91		70-130	8		30
1,2-Dibromoethane	101		94		70-130	7		30
Ethylbenzene	101		93		70-130	8		30
p/m-Xylene	105		97		70-130	8		30
o-Xylene	104		96		70-130	8		30
Isopropylbenzene	101		92		70-130	9		30
1,3,5-Trimethylbenzene	103		93		70-130	10		30
1,2,4-Trimethylbenzene	101		94		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	95		96		70-130
Dibromofluoromethane	100		100		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,15 Batch: WG1682183-3 WG1682183-4								
Methyl tert butyl ether	92		92		66-130	0		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	90		91		70-130	1		30
Toluene	87		87		70-130	0		30
1,2-Dibromoethane	87		88		70-130	1		30
Ethylbenzene	85		84		70-130	1		30
p/m-Xylene	87		87		70-130	0		30
o-Xylene	87		87		70-130	0		30
Isopropylbenzene	83		82		70-130	1		30
1,3,5-Trimethylbenzene	85		84		70-130	1		30
1,2,4-Trimethylbenzene	85		84		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	100		101		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	101		100		70-130



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03,05,09,13,17 Batch: WG1682186-3 WG1682186-4								
Methyl tert butyl ether	92		92		66-130	0		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	90		91		70-130	1		30
Toluene	87		87		70-130	0		30
1,2-Dibromoethane	87		88		70-130	1		30
Ethylbenzene	85		84		70-130	1		30
p/m-Xylene	87		87		70-130	0		30
o-Xylene	87		87		70-130	0		30
Isopropylbenzene	83		82		70-130	1		30
1,3,5-Trimethylbenzene	85		84		70-130	1		30
1,2,4-Trimethylbenzene	85		84		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	100		101		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	101		100		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05 Batch: WG1682940-3 WG1682940-4								
Methyl tert butyl ether	88		89		66-130	1		30
Benzene	83		83		70-130	0		30
1,2-Dichloroethane	88		88		70-130	0		30
Toluene	85		85		70-130	0		30
1,2-Dibromoethane	84		84		70-130	0		30
Ethylbenzene	82		82		70-130	0		30
p/m-Xylene	84		84		70-130	0		30
o-Xylene	84		84		70-130	0		30
Isopropylbenzene	81		81		70-130	0		30
1,3,5-Trimethylbenzene	83		82		70-130	1		30
1,2,4-Trimethylbenzene	82		83		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	102		100		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-02  
 Client ID: 302-AE06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:00  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 10:27  
 Analyst: JG  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.19	J	mg/kg	0.22	0.027	1
Fluorene	0.074	J	mg/kg	0.22	0.021	1
Phenanthrene	0.26		mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	0.21		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.12	J	mg/kg	0.13	0.025	1
Chrysene	0.13		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.18		mg/kg	0.13	0.037	1
Benzo(a)pyrene	0.15	J	mg/kg	0.18	0.054	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	99		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-04  
 Client ID: 302-AE06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:10  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 10:51  
 Analyst: JG  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.047	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.19		mg/kg	0.11	0.022	1
Anthracene	0.046	J	mg/kg	0.11	0.034	1
Pyrene	0.34		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.20		mg/kg	0.11	0.020	1
Chrysene	0.19		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.29		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.25		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.17		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-06  
 Client ID: 302-AE06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 11:14  
 Analyst: JG  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.025	J	mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.069	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.11		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.072	J	mg/kg	0.10	0.020	1
Chrysene	0.075	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.10		mg/kg	0.10	0.029	1
Benzo(a)pyrene	0.090	J	mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.084	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	96		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-08  
 Client ID: 302-AE06-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:30  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 11:37  
 Analyst: JG  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.10	J	mg/kg	0.18	0.022	1
Fluorene	0.018	J	mg/kg	0.18	0.018	1
Phenanthrene	0.29		mg/kg	0.11	0.022	1
Anthracene	0.074	J	mg/kg	0.11	0.035	1
Pyrene	0.41		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.24		mg/kg	0.11	0.020	1
Chrysene	0.31		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.42		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.30		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.26		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	89		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-10  
 Client ID: 302-AE07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:00  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 13:34  
 Analyst: SZ  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.034	J	mg/kg	0.20	0.025	1
Fluorene	0.034	J	mg/kg	0.20	0.020	1
Phenanthrene	0.32		mg/kg	0.12	0.025	1
Anthracene	0.067	J	mg/kg	0.12	0.040	1
Pyrene	0.34		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.19		mg/kg	0.12	0.023	1
Chrysene	0.18		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.23		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.20		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	97		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-12  
 Client ID: 302-AE07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:10  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 13:57  
 Analyst: SZ  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.80		mg/kg	0.19	0.023	1
Fluorene	0.10	J	mg/kg	0.19	0.018	1
Phenanthrene	0.25		mg/kg	0.11	0.023	1
Anthracene	0.040	J	mg/kg	0.11	0.037	1
Pyrene	0.14		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.071	J	mg/kg	0.11	0.021	1
Chrysene	0.075	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.11		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.098	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.060	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-14  
 Client ID: 302-AE07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 14:20  
 Analyst: SZ  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.048	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.071	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.051	J	mg/kg	0.11	0.021	1
Chrysene	0.060	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.076	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.067	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.057	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	91		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-16  
 Client ID: 302-AE07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:30  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 14:44  
 Analyst: SZ  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.79		mg/kg	0.22	0.026	1
Fluorene	0.11	J	mg/kg	0.22	0.021	1
Phenanthrene	0.18		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.053	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	108		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-18  
 Client ID: 302-AE07-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:40  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 15:07  
 Analyst: SZ  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.95		mg/kg	0.20	0.024	1
Fluorene	0.23		mg/kg	0.20	0.019	1
Phenanthrene	0.46		mg/kg	0.12	0.024	1
Anthracene	0.045	J	mg/kg	0.12	0.038	1
Pyrene	0.098	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.076	J	mg/kg	0.12	0.022	1
Chrysene	0.096	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.098	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.056	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	103		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/02/22 09:17  
Analyst: JG

Extraction Method: EPA 3546  
Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1682689-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	81		18-120

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1682689-2 WG1682689-3								
Naphthalene	74		57		40-140	26		50
Fluorene	79		61		40-140	26		50
Phenanthrene	75		58		40-140	26		50
Anthracene	77		59		40-140	26		50
Pyrene	82		65		35-142	23		50
Benzo(a)anthracene	74		57		40-140	26		50
Chrysene	72		56		40-140	25		50
Benzo(b)fluoranthene	77		59		40-140	26		50
Benzo(a)pyrene	77		59		40-140	26		50
Benzo(ghi)perylene	74		57		40-140	26		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	110		82		23-120
2-Fluorobiphenyl	90		68		30-120
4-Terphenyl-d14	96		74		18-120

## METALS



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-02  
 Client ID: 302-AE06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:00  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	412		mg/kg	2.62	0.140	1	08/27/22 09:07	09/01/22 22:50	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246450

**Project Number:** 200.00135.006

**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-04

Date Collected: 08/26/22 12:10

Client ID: 302-AE06-C2-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	106		mg/kg	2.12	0.114	1	08/27/22 09:07	09/01/22 23:36	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-06  
 Client ID: 302-AE06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 12:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	188		mg/kg	2.07	0.111	1	08/27/22 09:07	09/01/22 23:41	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246450

**Project Number:** 200.00135.006

**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-08

Date Collected: 08/26/22 12:30

Client ID: 302-AE06-C4-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	197		mg/kg	2.10	0.113	1	08/27/22 09:07	09/01/22 23:46	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246450

**Project Number:** 200.00135.006

**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-10

Date Collected: 08/26/22 13:00

Client ID: 302-AE07-C1-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	154		mg/kg	2.53	0.136	1	08/27/22 09:07	09/01/22 23:50	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-12  
 Client ID: 302-AE07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:10  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	93.4		mg/kg	2.27	0.122	1	08/27/22 09:07	09/01/22 23:55	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-14  
 Client ID: 302-AE07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/26/22 13:20  
 Date Received: 08/26/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	80.0		mg/kg	2.19	0.118	1	08/27/22 09:07	09/02/22 00:00	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246450

**Project Number:** 200.00135.006

**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-16

Date Collected: 08/26/22 13:30

Client ID: 302-AE07-C4-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	26.9		mg/kg	2.54	0.136	1	08/27/22 09:07	09/02/22 00:05	EPA 3050B	1,6010D	DL





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246450

**Project Number:** 200.00135.006

**Report Date:** 09/15/22

**SAMPLE RESULTS**

Lab ID: L2246450-18

Date Collected: 08/26/22 13:40

Client ID: 302-AE07-C5-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.46		mg/kg	2.29	0.123	1	08/27/22 09:07	09/02/22 00:09	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1680375-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/27/22 09:07	09/01/22 22:30	1,6010D	DL

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1680375-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128			-

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1680375-3    QC Sample: L2246223-01    Client ID: MS Sample												
Lead, Total	7.72	49.6	51.1	87		-	-		75-125	-		20

# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

## SAMPLE RESULTS

Lab ID: L2246450-01

Date Collected: 08/26/22 12:00

Client ID: 302-AE06-C1-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	08/27/22 09:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-02

Date Collected: 08/26/22 12:00

Client ID: 302-AE06-C1-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.0		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-03

Date Collected: 08/26/22 12:10

Client ID: 302-AE06-C2-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.5		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

## SAMPLE RESULTS

Lab ID: L2246450-04

Date Collected: 08/26/22 12:10

Client ID: 302-AE06-C2-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.8		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

**SAMPLE RESULTS**

**Lab ID:** L2246450-05  
**Client ID:** 302-AE06-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/26/22 12:20  
**Date Received:** 08/26/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-06

Date Collected: 08/26/22 12:20

Client ID: 302-AE06-C3-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.6		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-07

Date Collected: 08/26/22 12:30

Client ID: 302-AE06-C4-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.0		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-08

Date Collected: 08/26/22 12:30

Client ID: 302-AE06-C4-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.4		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-09

Date Collected: 08/26/22 13:00

Client ID: 302-AE07-C1-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.7		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-10

Date Collected: 08/26/22 13:00

Client ID: 302-AE07-C1-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.8		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-11

Date Collected: 08/26/22 13:10

Client ID: 302-AE07-C2-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.2		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-12

Date Collected: 08/26/22 13:10

Client ID: 302-AE07-C2-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.3		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

## SAMPLE RESULTS

Lab ID: L2246450-13

Date Collected: 08/26/22 13:20

Client ID: 302-AE07-C3-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

## SAMPLE RESULTS

Lab ID: L2246450-14

Date Collected: 08/26/22 13:20

Client ID: 302-AE07-C3-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-15

Date Collected: 08/26/22 13:30

Client ID: 302-AE07-C4-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-16

Date Collected: 08/26/22 13:30

Client ID: 302-AE07-C4-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.1		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246450

Project Number: 200.00135.006

Report Date: 09/15/22

## SAMPLE RESULTS

Lab ID: L2246450-17

Date Collected: 08/26/22 13:40

Client ID: 302-AE07-C5-VOC

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	08/27/22 09:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**SAMPLE RESULTS**

Lab ID: L2246450-18

Date Collected: 08/26/22 13:40

Client ID: 302-AE07-C5-COMP

Date Received: 08/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.5		%	0.100	NA	1	-	08/28/22 18:52	121,2540G	MF



### Lab Duplicate Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1680358-1 QC Sample: L2246485-01 Client ID: DUP Sample						
Solids, Total	88.0	87.0	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 03,05,07,09,11,13,15,17 QC Batch ID: WG1680364-1 QC Sample: L2246446-01 Client ID: DUP Sample						
Solids, Total	85.1	80.7	%	5		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1680681-1 QC Sample: L2244562-13 Client ID: DUP Sample						
Solids, Total	73.2	76.8	%	5		20





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

Cooler	Custody Seal
A	Absent
B	Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2246450-01A	Vial MeOH preserved	B	NA		4.1	Y	Absent		PA-8260HLW(14)
L2246450-01B	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-01C	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-01D	Plastic 120ml unpreserved	B	NA		4.1	Y	Absent		TS(7)
L2246450-02A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.1	Y	Absent		PB-TI(180)
L2246450-02B	Glass 120ml/4oz unpreserved	B	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2246450-03A	Vial MeOH preserved	B	NA		4.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2246450-03B	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260H(14),PA-8260HLW(14)
L2246450-03C	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260H(14),PA-8260HLW(14)
L2246450-03D	Plastic 120ml unpreserved	B	NA		4.1	Y	Absent		TS(7)
L2246450-04A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.1	Y	Absent		PB-TI(180)
L2246450-04B	Glass 120ml/4oz unpreserved	B	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2246450-05A	Vial MeOH preserved	B	NA		4.1	Y	Absent		PA-8260HLW(14)
L2246450-05B	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-05C	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-05D	Plastic 120ml unpreserved	B	NA		4.1	Y	Absent		TS(7)
L2246450-06A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.1	Y	Absent		PB-TI(180)
L2246450-06B	Glass 120ml/4oz unpreserved	B	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2246450-07A	Vial MeOH preserved	B	NA		4.1	Y	Absent		PA-8260HLW(14)
L2246450-07B	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-07C	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-07D	Plastic 120ml unpreserved	B	NA		4.1	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246450**Project Number:** 200.00135.006**Report Date:** 09/15/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246450-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.1	Y	Absent		PB-TI(180)
L2246450-08B	Glass 120ml/4oz unpreserved	B	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2246450-09A	Vial MeOH preserved	B	NA		4.1	Y	Absent		PA-8260HLW(14)
L2246450-09B	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-09C	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-09D	Plastic 120ml unpreserved	B	NA		4.1	Y	Absent		TS(7)
L2246450-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.1	Y	Absent		PB-TI(180)
L2246450-10B	Glass 120ml/4oz unpreserved	B	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2246450-11A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2246450-11B	Vial water preserved	A	NA		4.2	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-11C	Vial water preserved	A	NA		4.2	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-11D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2246450-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2246450-12B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2246450-13A	Vial MeOH preserved	B	NA		4.1	Y	Absent		PA-8260HLW(14)
L2246450-13B	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-13C	Vial water preserved	B	NA		4.1	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-13D	Plastic 120ml unpreserved	B	NA		4.1	Y	Absent		TS(7)
L2246450-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.1	Y	Absent		PB-TI(180)
L2246450-14B	Glass 120ml/4oz unpreserved	B	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2246450-15A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2246450-15B	Vial water preserved	A	NA		4.2	Y	Absent	27-AUG-22 05:40	PA-8260H(14),PA-8260HLW(14)
L2246450-15C	Vial water preserved	A	NA		4.2	Y	Absent	27-AUG-22 05:40	PA-8260H(14),PA-8260HLW(14)
L2246450-15D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2246450-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2246450-16B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)
L2246450-17A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2246450-17B	Vial water preserved	A	NA		4.2	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09152212:13  
**Lab Number:** L2246450  
**Report Date:** 09/15/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246450-17C	Vial water preserved	A	NA		4.2	Y	Absent	27-AUG-22 05:40	PA-8260HLW(14)
L2246450-17D	Plastic 120ml unpreserved	A	NA		4.2	Y	Absent		TS(7)
L2246450-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2246450-18B	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246450  
**Report Date:** 09/15/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246450

**Project Number:** 200.00135.006

**Report Date:** 09/15/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 1 OF 2

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hlcglobal.com

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~17441~~ ~~17443~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 8/27/22

ALPHA Job #: 62246450

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead													
		Date	Time																		
46450-01	302-AE06-C1-VOC	8/26	1200	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02	302-AE06-C1-COMP		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03	302-AE06-C2-VOC		1110			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04	302-AE06-C2-COMP		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05	302-AE06-C3-VOC		1220			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06	302-AE06-C3-COMP		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07	302-AE06-C4-VOC		1230			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
08	302-AE06-C4-COMP		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
09	302-AE07-C1-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	302-AE07-C1-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
46450-01	302-AE06-C1-VOC	8/26	1200	S	TS
02	302-AE06-C1-COMP		1200		
03	302-AE06-C2-VOC		1110		
04	302-AE06-C2-COMP		1210		
05	302-AE06-C3-VOC		1220		
06	302-AE06-C3-COMP		1220		
07	302-AE06-C4-VOC		1230		
08	302-AE06-C4-COMP		1230		
09	302-AE07-C1-VOC		1300		
10	302-AE07-C1-COMP		1300		

Container Type

G G G - - - - -

Preservative

F A A - - - - -

Relinquished By:

Date/Time

Received By:

Date/Time

CD/AVC  
 8/27/22  
 0140

8/26  
 8/24/22 1800  
 8/29/22 2105  
 8/26/22 1400  
 8/26/22 1800  
 Paul Massella 8/26/22 2105

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 8/27/22

ALPHA Job #: C2246450

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead															
		Date	Time																				
46450-11	302-AE07-C2-VOC	1310	426	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	12 302-AE07-C2-Comp	1310				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	13 302-AE07-C3-VOC	1320				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	14 302-AE07-C3-Comp	1320				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	15 302-AE07-C4-VOC	1330				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	16 302-AE07-C4-Comp	1330				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	17 302-AE07-C5-VOC	1340				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	18 302-AE07-C5-Comp	1340				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:

Date/Time

Received By:

Date/Time

cd #002  
 8/27/22  
 0140

Relinquished By: [Signature] Date/Time: 8/26/22 1800  
 Received By: [Signature] Date/Time: 8/26/22 1400  
 Paul Maggella 8/26/22 2105

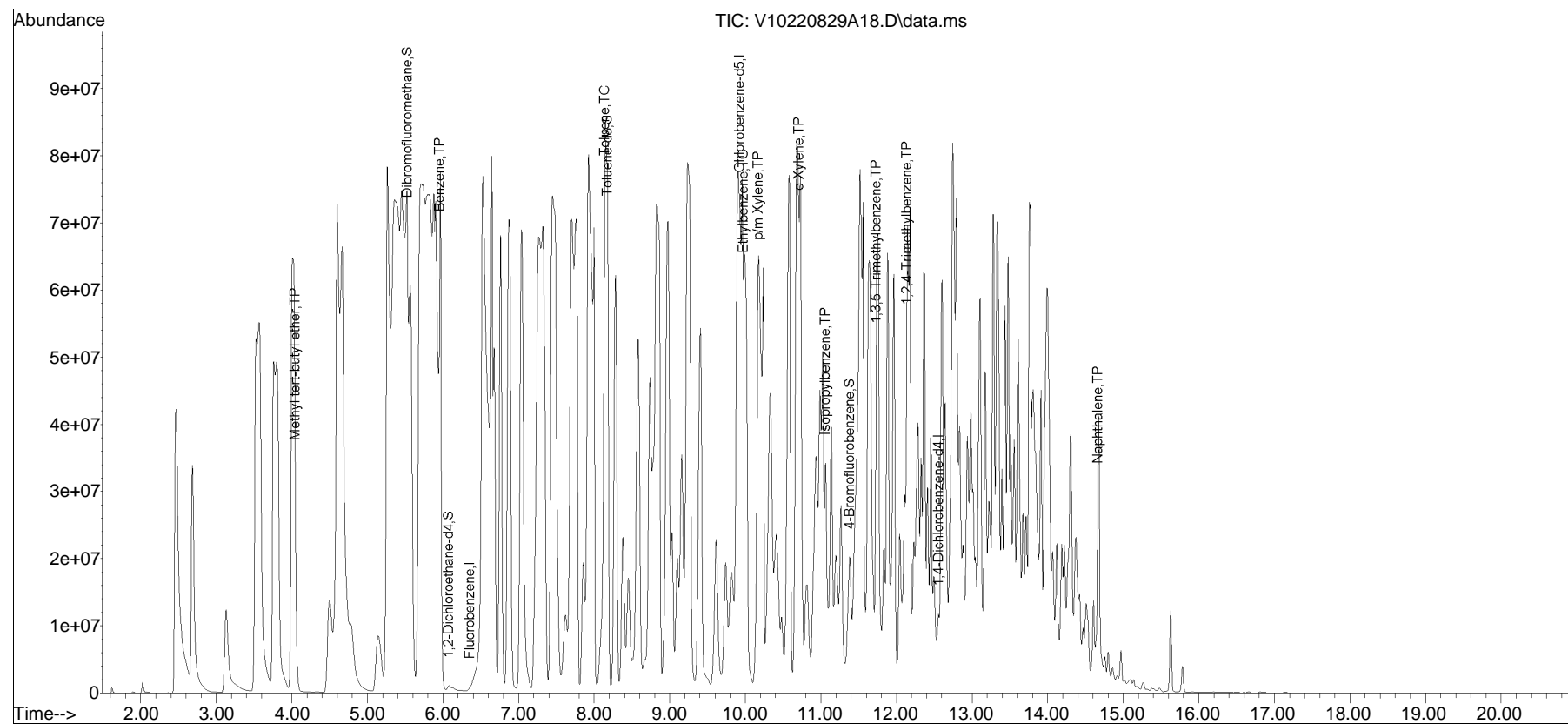
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220829A\  
Data File : V10220829A18.D  
Acq On : 29 Aug 2022 6:20 pm  
Operator : VOA110:AJK  
Sample : 12246450-03,31,6.60,5,,c,r2f  
Misc : WG1681665,ICAL19281  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Aug 30 22:44:15 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220829A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list29A\V10220829A01.D•

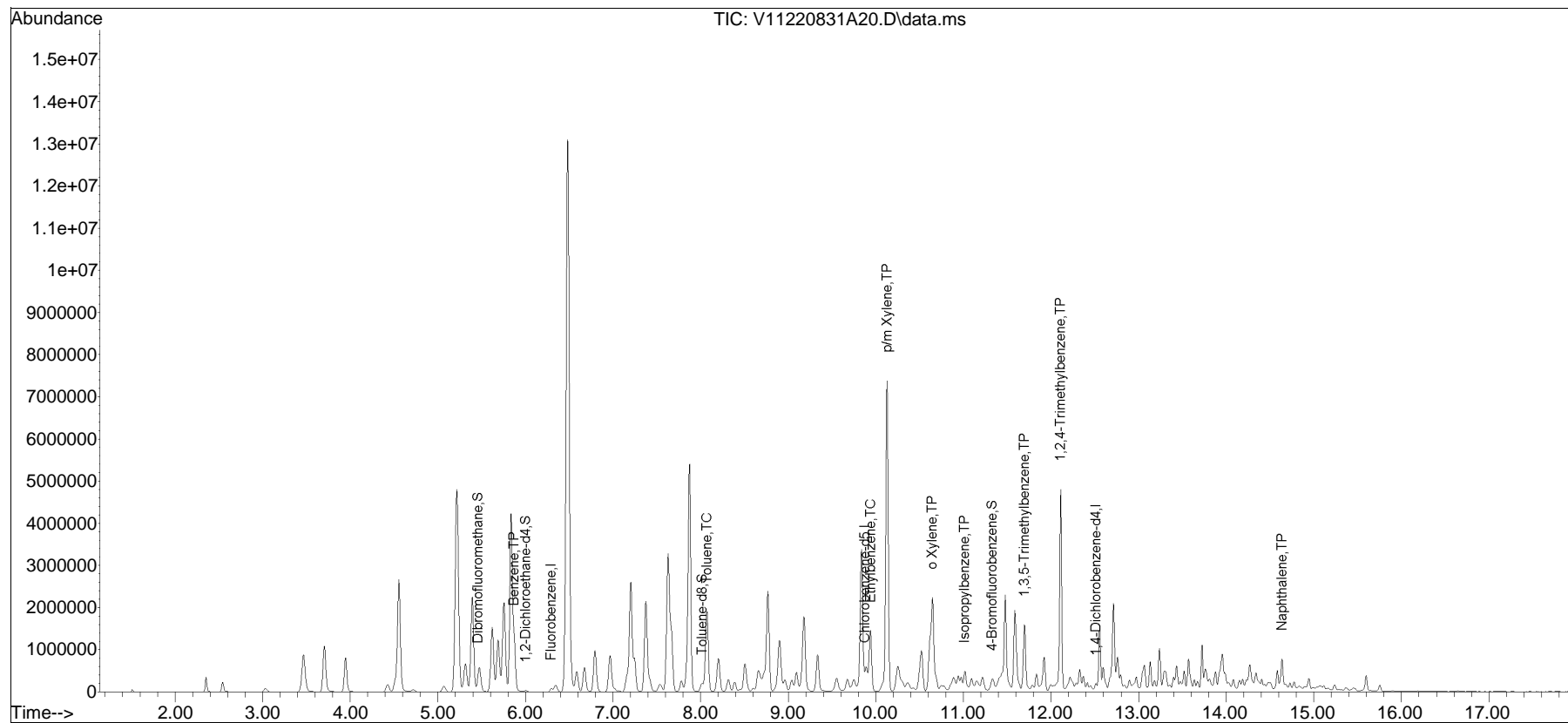


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220831A\  
Data File : V11220831A20.D  
Acq On : 31 Aug 2022 03:32 pm  
Operator : VOA111:AJK  
Sample : L2246450-05,31H,5.88,5,0.100,,A,R2F  
Misc : WG1682186,ICAL19286  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Aug 31 22:16:15 2022  
Quant Method : I:\VOLATILES\VOA111\2022\220831A\V111\_220824N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Aug 25 09:55:07 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list31A\V11220831A01.D•

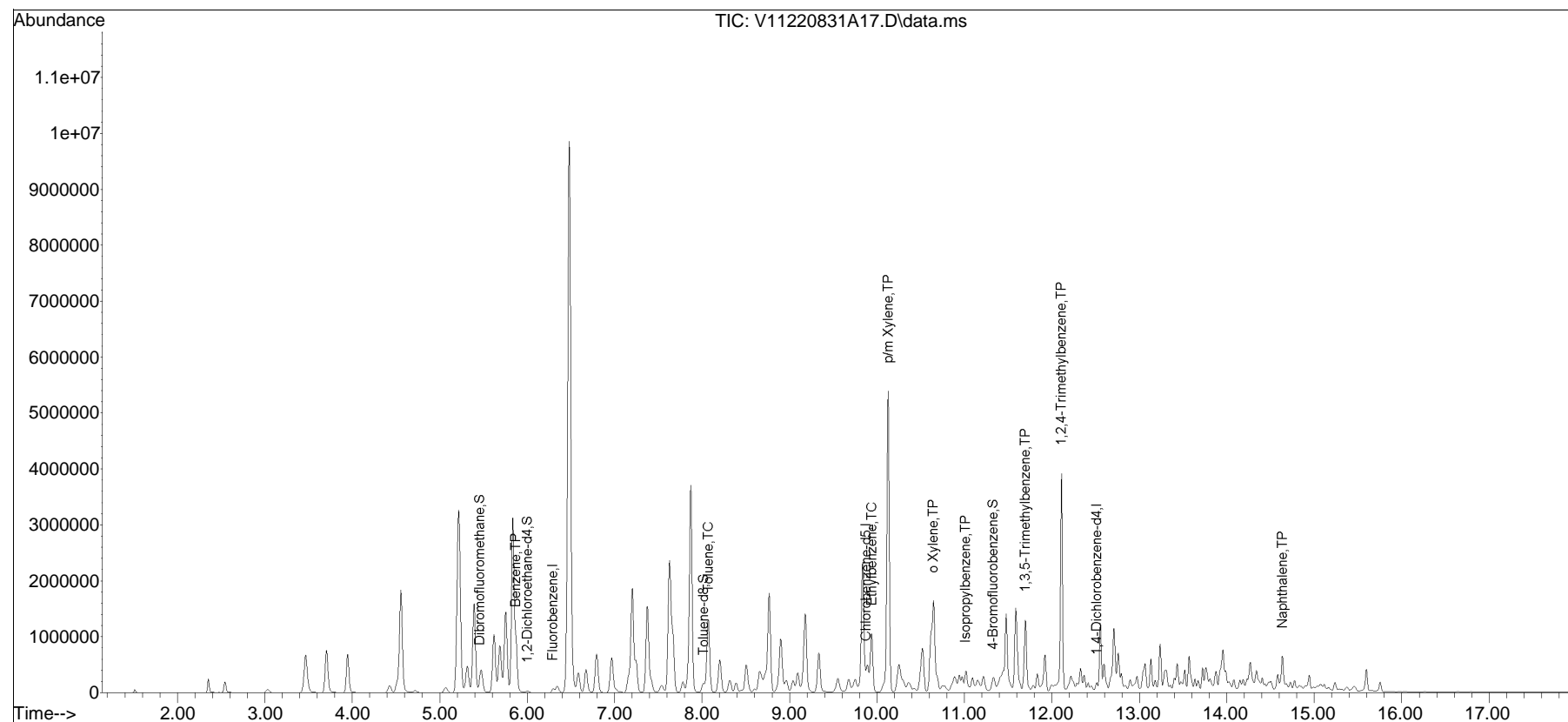


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220831A\  
Data File : V11220831A17.D  
Acq On : 31 Aug 2022 02:11 pm  
Operator : VOA111:AJK  
Sample : L2246450-09,31H,5.73,5,0.100,,A,R2F  
Misc : WG1682186,ICAL19286  
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Aug 31 22:16:01 2022  
Quant Method : I:\VOLATILES\VOA111\2022\220831A\V111\_220824N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Aug 25 09:55:07 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list31A\V11220831A01.D•

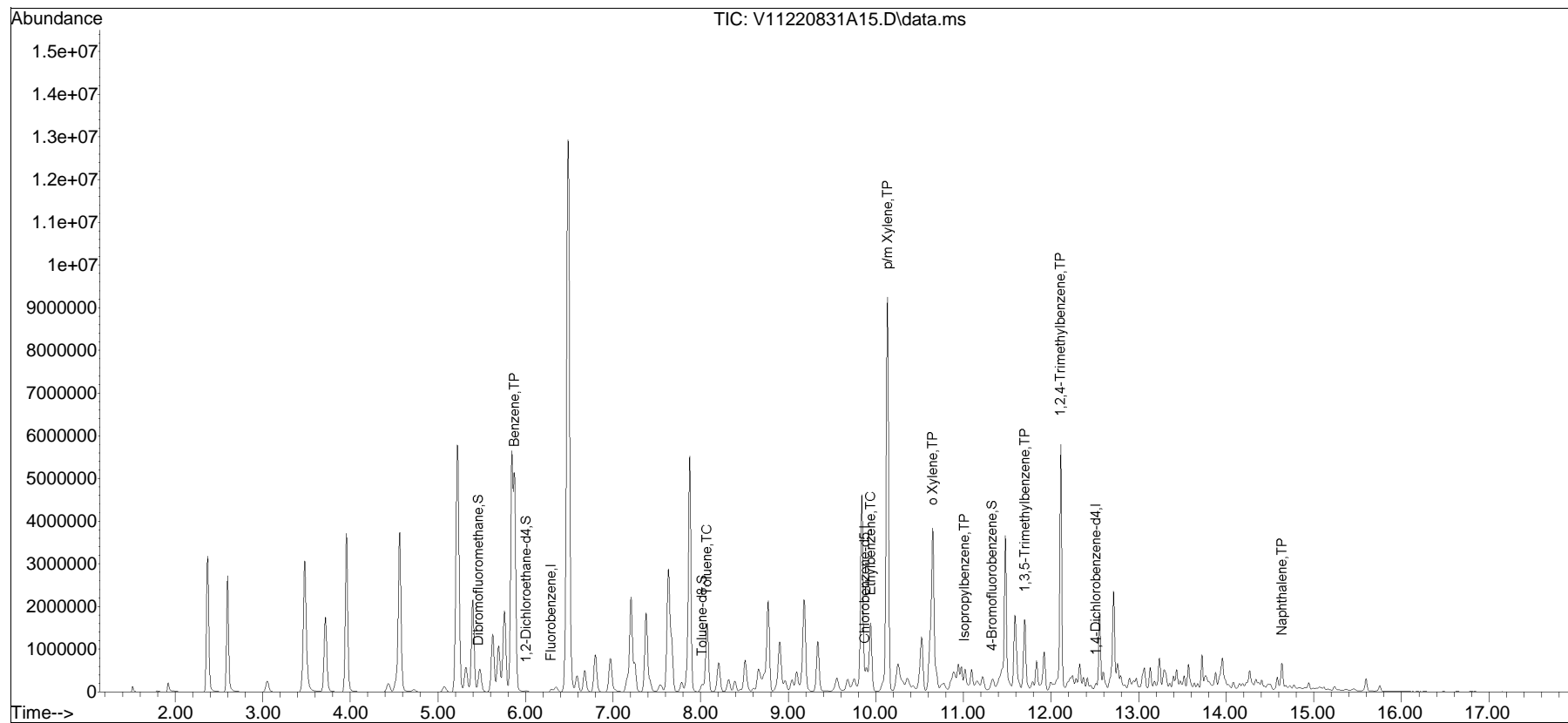


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220831A\  
Data File : V11220831A15.D  
Acq On : 31 Aug 2022 01:18 pm  
Operator : VOA111:NLK  
Sample : L2246450-15,31,4.01,5,,B,R2F  
Misc : WG1682183,ICAL19286  
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Aug 31 14:10:38 2022  
Quant Method : I:\VOLATILES\VOA111\2022\220831A\V111\_220824N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Aug 25 09:55:07 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list31A\V11220831A01.D•





## ANALYTICAL REPORT

Lab Number:	L2246771
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/06/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2246771-01	302-AF07-C1-VOC	SOIL	PHILADELPHIA, PA	08/29/22 12:00	08/29/22
L2246771-02	302-AF07-C1-COMP	SOIL	PHILADELPHIA, PA	08/29/22 12:00	08/29/22
L2246771-03	302-AF07-C2-VOC	SOIL	PHILADELPHIA, PA	08/29/22 12:10	08/29/22
L2246771-04	302-AF07-C2-COMP	SOIL	PHILADELPHIA, PA	08/29/22 12:10	08/29/22
L2246771-05	302-AF07-C3-VOC	SOIL	PHILADELPHIA, PA	08/29/22 12:20	08/29/22
L2246771-06	302-AF07-C3-COMP	SOIL	PHILADELPHIA, PA	08/29/22 12:20	08/29/22
L2246771-07	302-AF07-C4-VOC	SOIL	PHILADELPHIA, PA	08/29/22 12:30	08/29/22
L2246771-08	302-AF07-C4-COMP	SOIL	PHILADELPHIA, PA	08/29/22 12:30	08/29/22
L2246771-09	302-AF07-C5-VOC	SOIL	PHILADELPHIA, PA	08/29/22 12:40	08/29/22
L2246771-10	302-AF07-C5-COMP	SOIL	PHILADELPHIA, PA	08/29/22 12:40	08/29/22
L2246771-11	302-AF08-C1-VOC	SOIL	PHILADELPHIA, PA	08/29/22 13:00	08/29/22
L2246771-12	302-AF08-C1-COMP	SOIL	PHILADELPHIA, PA	08/29/22 13:00	08/29/22
L2246771-13	302-AF08-C2-VOC	SOIL	PHILADELPHIA, PA	08/29/22 13:05	08/29/22
L2246771-14	302-AF08-C2-COMP	SOIL	PHILADELPHIA, PA	08/29/22 13:05	08/29/22
L2246771-15	302-AF08-C3-VOC	SOIL	PHILADELPHIA, PA	08/29/22 13:10	08/29/22
L2246771-16	302-AF08-C3-COMP	SOIL	PHILADELPHIA, PA	08/29/22 13:10	08/29/22
L2246771-17	302-AF08-C4-VOC	SOIL	PHILADELPHIA, PA	08/29/22 13:15	08/29/22
L2246771-18	302-AF08-C4-COMP	SOIL	PHILADELPHIA, PA	08/29/22 13:15	08/29/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2246771-01D, -03D, -15D, and -17D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2246771-01D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246771-03D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (191%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246771-05: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (inappropriate plastic) and preserved appropriately.

L2246771-07: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, the results could not be reported. With the client's authorization, a sample aliquot was taken from an unpreserved container (inappropriate plastic) and preserved appropriately.

L2246771-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (157%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246771-13: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (131%) and 4-bromofluorobenzene (180%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2246771-15D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (195%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

### Case Narrative (continued)

chromatogram is included as an attachment to this report.

L2246771-17D: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (131%) and 4-bromofluorobenzene (142%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 09/06/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-01 D  
 Client ID: 302-AF07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:00  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 15:56  
 Analyst: LAC  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.25	0.025	2
Benzene	ND		mg/kg	0.063	0.021	2
1,2-Dichloroethane	ND		mg/kg	0.12	0.032	2
Toluene	ND		mg/kg	0.12	0.068	2
1,2-Dibromoethane	ND		mg/kg	0.063	0.037	2
Ethylbenzene	ND		mg/kg	0.12	0.018	2
p/m-Xylene	ND		mg/kg	0.25	0.070	2
o-Xylene	ND		mg/kg	0.12	0.036	2
Xylenes, Total	ND		mg/kg	0.12	0.036	2
Isopropylbenzene	3.0		mg/kg	0.12	0.014	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.25	0.024	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.25	0.042	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	85		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-03 D  
 Client ID: 302-AF07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:10  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 16:17  
 Analyst: LAC  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.21	0.021	2
Benzene	ND		mg/kg	0.052	0.017	2
1,2-Dichloroethane	ND		mg/kg	0.10	0.026	2
Toluene	ND		mg/kg	0.10	0.056	2
1,2-Dibromoethane	ND		mg/kg	0.052	0.030	2
Ethylbenzene	ND		mg/kg	0.10	0.014	2
p/m-Xylene	0.064	J	mg/kg	0.21	0.058	2
o-Xylene	0.058	J	mg/kg	0.10	0.030	2
Xylenes, Total	0.12	J	mg/kg	0.10	0.030	2
Isopropylbenzene	6.4		mg/kg	0.10	0.011	2
1,3,5-Trimethylbenzene	0.34		mg/kg	0.21	0.020	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.21	0.034	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	126		70-130
4-Bromofluorobenzene	191	Q	70-130
Dibromofluoromethane	82		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-05  
 Client ID: 302-AF07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:20  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 18:36  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	108		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-07  
 Client ID: 302-AF07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:30  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/06/22 10:22  
 Analyst: JC  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.010		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00033	J	mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	157	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-09  
 Client ID: 302-AF07-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:40  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 13:10  
 Analyst: LAC  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.00014	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	86		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-11  
 Client ID: 302-AF08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:00  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 12:49  
 Analyst: LAC  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00015	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-13  
 Client ID: 302-AF08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:05  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 18:57  
 Analyst: NLK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.015		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	0.0016	J	mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	131	Q	70-130
4-Bromofluorobenzene	180	Q	70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-15 D  
 Client ID: 302-AF08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:10  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 15:14  
 Analyst: LAC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.28	0.029	2
Benzene	ND		mg/kg	0.071	0.024	2
1,2-Dichloroethane	ND		mg/kg	0.14	0.037	2
Toluene	ND		mg/kg	0.14	0.077	2
1,2-Dibromoethane	ND		mg/kg	0.071	0.042	2
Ethylbenzene	ND		mg/kg	0.14	0.020	2
p/m-Xylene	ND		mg/kg	0.28	0.080	2
o-Xylene	ND		mg/kg	0.14	0.042	2
Xylenes, Total	ND		mg/kg	0.14	0.042	2
Isopropylbenzene	8.0		mg/kg	0.14	0.016	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.28	0.028	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.28	0.048	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	195	Q	70-130
Dibromofluoromethane	82		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-17 D  
 Client ID: 302-AF08-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:15  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 15:35  
 Analyst: LAC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.25	0.025	2
Benzene	ND		mg/kg	0.063	0.021	2
1,2-Dichloroethane	ND		mg/kg	0.13	0.032	2
Toluene	ND		mg/kg	0.13	0.069	2
1,2-Dibromoethane	ND		mg/kg	0.063	0.037	2
Ethylbenzene	ND		mg/kg	0.13	0.018	2
p/m-Xylene	ND		mg/kg	0.25	0.071	2
o-Xylene	ND		mg/kg	0.13	0.037	2
Xylenes, Total	ND		mg/kg	0.13	0.037	2
Isopropylbenzene	2.9		mg/kg	0.13	0.014	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.25	0.024	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.25	0.042	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	131	Q	70-130
4-Bromofluorobenzene	142	Q	70-130
Dibromofluoromethane	82		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/02/22 11:30  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09,11 Batch: WG1683847-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	0.00077	J	mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	113		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/02/22 11:30  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,15,17 Batch: WG1683851-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	0.038	J	mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	113		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 13:06  
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,13 Batch: WG1683893-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	136	Q	70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	130		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/06/22 08:37  
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1683977-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	95		70-130

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09,11 Batch: WG1683847-3 WG1683847-4								
Methyl tert butyl ether	76		81		66-130	6		30
Benzene	92		95		70-130	3		30
1,2-Dichloroethane	98		102		70-130	4		30
Toluene	99		102		70-130	3		30
1,2-Dibromoethane	97		101		70-130	4		30
Ethylbenzene	101		105		70-130	4		30
p/m-Xylene	102		104		70-130	2		30
o-Xylene	102		105		70-130	3		30
Isopropylbenzene	100		101		70-130	1		30
1,3,5-Trimethylbenzene	104		104		70-130	0		30
1,2,4-Trimethylbenzene	106		106		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		101		70-130
Toluene-d8	105		103		70-130
4-Bromofluorobenzene	97		94		70-130
Dibromofluoromethane	91		91		70-130



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,15,17 Batch: WG1683851-3 WG1683851-4								
Methyl tert butyl ether	76		81		66-130	6		30
Benzene	92		95		70-130	3		30
1,2-Dichloroethane	98		102		70-130	4		30
Toluene	99		102		70-130	3		30
1,2-Dibromoethane	97		101		70-130	4		30
Ethylbenzene	101		105		70-130	4		30
p/m-Xylene	102		104		70-130	2		30
o-Xylene	102		105		70-130	3		30
Isopropylbenzene	100		101		70-130	1		30
1,3,5-Trimethylbenzene	104		104		70-130	0		30
1,2,4-Trimethylbenzene	106		106		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		101		70-130
Toluene-d8	105		103		70-130
4-Bromofluorobenzene	97		94		70-130
Dibromofluoromethane	91		92		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,13 Batch: WG1683893-3 WG1683893-4								
Methyl tert butyl ether	67		64	Q	66-130	5		30
Benzene	83		81		70-130	2		30
1,2-Dichloroethane	86		86		70-130	0		30
Toluene	86		86		70-130	0		30
1,2-Dibromoethane	82		82		70-130	0		30
Ethylbenzene	91		91		70-130	0		30
p/m-Xylene	92		93		70-130	1		30
o-Xylene	90		90		70-130	0		30
Isopropylbenzene	94		88		70-130	7		30
1,3,5-Trimethylbenzene	96		91		70-130	5		30
1,2,4-Trimethylbenzene	95		91		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	99		95		70-130
Dibromofluoromethane	95		94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1683977-3 WG1683977-4								
Methyl tert butyl ether	97		96		66-130	1		30
Benzene	97		95		70-130	2		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	93		89		70-130	4		30
1,2-Dibromoethane	98		95		70-130	3		30
Ethylbenzene	98		94		70-130	4		30
p/m-Xylene	98		95		70-130	3		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	95		93		70-130	2		30
1,3,5-Trimethylbenzene	96		94		70-130	2		30
1,2,4-Trimethylbenzene	96		94		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	106		106		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	95		95		70-130
Dibromofluoromethane	99		99		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-02  
 Client ID: 302-AF07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:00  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 15:30  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.65		mg/kg	0.20	0.020	1
Phenanthrene	0.96		mg/kg	0.12	0.025	1
Anthracene	0.13		mg/kg	0.12	0.040	1
Pyrene	0.060	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.024	J	mg/kg	0.12	0.023	1
Chrysene	0.027	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	81		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-04  
 Client ID: 302-AF07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:10  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 15:54  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.19	J	mg/kg	0.20	0.025	1
Fluorene	0.69		mg/kg	0.20	0.020	1
Phenanthrene	5.2		mg/kg	0.12	0.025	1
Anthracene	1.4		mg/kg	0.12	0.040	1
Pyrene	4.8		mg/kg	0.12	0.020	1
Benzo(a)anthracene	2.5		mg/kg	0.12	0.023	1
Chrysene	2.2		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	2.6		mg/kg	0.12	0.034	1
Benzo(a)pyrene	2.4		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	1.1		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	129	Q	23-120
2-Fluorobiphenyl	103		30-120
4-Terphenyl-d14	115		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-06  
 Client ID: 302-AF07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:20  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 16:17  
 Analyst: CMM  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.055	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.094	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.072	J	mg/kg	0.12	0.023	1
Chrysene	0.064	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.090	J	mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.057	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-08  
 Client ID: 302-AF07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:30  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 16:40  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 22:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.039	J	mg/kg	0.20	0.024	1
Fluorene	0.031	J	mg/kg	0.20	0.020	1
Phenanthrene	0.24		mg/kg	0.12	0.024	1
Anthracene	0.053	J	mg/kg	0.12	0.039	1
Pyrene	0.26		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.14		mg/kg	0.12	0.023	1
Chrysene	0.13		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.16		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.14	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.071	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	108		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-10  
 Client ID: 302-AF07-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:40  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 17:04  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 22:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.19	0.023	1
Fluorene	0.020	J	mg/kg	0.19	0.018	1
Phenanthrene	0.18		mg/kg	0.11	0.023	1
Anthracene	0.047	J	mg/kg	0.11	0.037	1
Pyrene	0.30		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.26		mg/kg	0.11	0.021	1
Chrysene	0.25		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.43		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.45		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.29		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	86		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-12  
 Client ID: 302-AF08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:00  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 17:27  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 22:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.16	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.084	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.10	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.068	J	mg/kg	0.12	0.022	1
Chrysene	0.066	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.090	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.076	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.045	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	102		30-120
4-Terphenyl-d14	110		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-14  
 Client ID: 302-AF08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:05  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 17:50  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 22:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-16  
 Client ID: 302-AF08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:10  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 18:14  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 22:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-18  
 Client ID: 302-AF08-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:15  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/02/22 18:37  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/01/22 22:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	87		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/02/22 09:17  
Analyst: JG

Extraction Method: EPA 3546  
Extraction Date: 09/01/22 21:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1682689-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	81		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2246771

Report Date: 09/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1682689-2 WG1682689-3								
Naphthalene	74		57		40-140	26		50
Fluorene	79		61		40-140	26		50
Phenanthrene	75		58		40-140	26		50
Anthracene	77		59		40-140	26		50
Pyrene	82		65		35-142	23		50
Benzo(a)anthracene	74		57		40-140	26		50
Chrysene	72		56		40-140	25		50
Benzo(b)fluoranthene	77		59		40-140	26		50
Benzo(a)pyrene	77		59		40-140	26		50
Benzo(ghi)perylene	74		57		40-140	26		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	110		82		23-120
2-Fluorobiphenyl	90		68		30-120
4-Terphenyl-d14	96		74		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-02  
 Client ID: 302-AF07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:00  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.96		mg/kg	2.34	0.125	1	08/30/22 08:25	08/31/22 09:48	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-04

Date Collected: 08/29/22 12:10

Client ID: 302-AF07-C2-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	79.6		mg/kg	2.36	0.126	1	08/30/22 08:25	08/31/22 09:53	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-06

Date Collected: 08/29/22 12:20

Client ID: 302-AF07-C3-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	26.9		mg/kg	2.47	0.132	1	08/30/22 08:25	08/31/22 09:58	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-08

Date Collected: 08/29/22 12:30

Client ID: 302-AF07-C4-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.24		mg/kg	2.38	0.128	1	08/30/22 08:25	08/31/22 10:03	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-10

Date Collected: 08/29/22 12:40

Client ID: 302-AF07-C5-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.62		mg/kg	2.19	0.118	1	08/30/22 08:25	08/31/22 10:07	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-12  
 Client ID: 302-AF08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:00  
 Date Received: 08/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	60.5		mg/kg	2.33	0.125	1	08/30/22 08:25	08/31/22 10:12	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-14

Date Collected: 08/29/22 13:05

Client ID: 302-AF08-C2-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.9		mg/kg	2.49	0.133	1	08/30/22 08:25	08/31/22 10:17	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-16

Date Collected: 08/29/22 13:10

Client ID: 302-AF08-C3-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.18		mg/kg	2.42	0.129	1	08/30/22 08:25	08/31/22 10:32	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2246771

**Project Number:** 200.00135.006

**Report Date:** 09/06/22

**SAMPLE RESULTS**

Lab ID: L2246771-18

Date Collected: 08/29/22 13:15

Client ID: 302-AF08-C4-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.70		mg/kg	2.19	0.117	1	08/30/22 08:25	08/31/22 10:36	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1681209-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/30/22 08:25	08/31/22 08:38	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1681209-2 SRM Lot Number: D113-540								
Lead, Total	78		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1681209-3    QC Sample: L2246802-01    Client ID: MS Sample												
Lead, Total	14.2	46.7	39.4	54	Q	-	-		75-125	-		20



# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-01

Date Collected: 08/29/22 12:00

Client ID: 302-AF07-C1-VOC

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.6		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Project Number:** 200.00135.006**Lab Number:** L2246771**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-02

Client ID: 302-AF07-C1-COMP

Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:00

Date Received: 08/29/22

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-03

Date Collected: 08/29/22 12:10

Client ID: 302-AF07-C2-VOC

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.4		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

## SAMPLE RESULTS

Lab ID: L2246771-04

Date Collected: 08/29/22 12:10

Client ID: 302-AF07-C2-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.0		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

**SAMPLE RESULTS**

**Lab ID:** L2246771-05  
**Client ID:** 302-AF07-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/29/22 12:20  
**Date Received:** 08/29/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

## SAMPLE RESULTS

Lab ID: L2246771-06

Date Collected: 08/29/22 12:20

Client ID: 302-AF07-C3-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.6		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-07

Date Collected: 08/29/22 12:30

Client ID: 302-AF07-C4-VOC

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.8		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-08

Date Collected: 08/29/22 12:30

Client ID: 302-AF07-C4-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.8		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-09

Date Collected: 08/29/22 12:40

Client ID: 302-AF07-C5-VOC

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.5		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Project Number:** 200.00135.006**Lab Number:** L2246771**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-10

Client ID: 302-AF07-C5-COMP

Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 12:40

Date Received: 08/29/22

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.4		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Project Number:** 200.00135.006**Lab Number:** L2246771**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-11

Client ID: 302-AF08-C1-VOC

Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:00

Date Received: 08/29/22

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.5		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-12

Date Collected: 08/29/22 13:00

Client ID: 302-AF08-C1-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.9		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-13

Date Collected: 08/29/22 13:05

Client ID: 302-AF08-C2-VOC

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.3		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-14

Date Collected: 08/29/22 13:05

Client ID: 302-AF08-C2-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.1		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Project Number:** 200.00135.006**Lab Number:** L2246771**Report Date:** 09/06/22**SAMPLE RESULTS**

Lab ID: L2246771-15

Client ID: 302-AF08-C3-VOC

Sample Location: PHILADELPHIA, PA

Date Collected: 08/29/22 13:10

Date Received: 08/29/22

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.4		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

## SAMPLE RESULTS

Lab ID: L2246771-16

Date Collected: 08/29/22 13:10

Client ID: 302-AF08-C3-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

## SAMPLE RESULTS

Lab ID: L2246771-17

Date Collected: 08/29/22 13:15

Client ID: 302-AF08-C4-VOC

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	08/30/22 08:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2246771

Project Number: 200.00135.006

Report Date: 09/06/22

## SAMPLE RESULTS

Lab ID: L2246771-18

Date Collected: 08/29/22 13:15

Client ID: 302-AF08-C4-COMP

Date Received: 08/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.5		%	0.100	NA	1	-	08/30/22 13:13	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2246771

Report Date: 09/06/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17 QC Batch ID: WG1681210-1 QC Sample: L2246771-01 Client ID: 302-AF07-C1-VOC						
Solids, Total	94.6	95.0	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1681384-1 QC Sample: L2246364-01 Client ID: DUP Sample						
Solids, Total	91.0	91.6	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246771-01A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-01B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-01C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-01D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-02B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-03A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-03B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-03C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-03D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-04B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-05B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-05C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-05D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-06B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-07B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-07C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-07D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2246771**Project Number:** 200.00135.006**Report Date:** 09/06/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246771-08B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-09A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-09B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-09C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-09D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-10B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-11A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-11B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-11C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-11D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-12B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-13A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-13B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-13C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-13D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-14B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-15A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-15B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-15C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-15D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-16B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2246771-17A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2246771-17B	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)
L2246771-17C	Vial water preserved	A	NA		2.7	Y	Absent	30-AUG-22 02:48	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09062214:59  
**Lab Number:** L2246771  
**Report Date:** 09/06/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2246771-17D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2246771-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2246771-18B	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2246771  
**Report Date:** 09/06/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 2 OF 2



Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 8/30/22

ALPHA Job #: 42246771

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead														
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
46771-11	302-AF08-C1-VOC	8/29	1300	S	TS
-12	302-AF08-C1-Comp		1300		
-13	302-AF08-C2-VOC		1305		
-14	302-AF08-C2-Comp		1305		
-15	302-AF08-C3-VOC		1310		
-16	302-AF08-C3-Comp		1310		
-17	302-AF08-C4-VOC		1315		
-18	302-AF08-C4-Comp		1315		

CVS 08/30/22 00:25

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/29 15:30	<i>[Signature]</i>	8/29/22 15:30
<i>[Signature]</i>	8/29 17:50	<i>[Signature]</i>	8/29/22 17:50
<i>[Signature]</i>	8/29/22	<i>[Signature]</i>	8/29/22 20:20

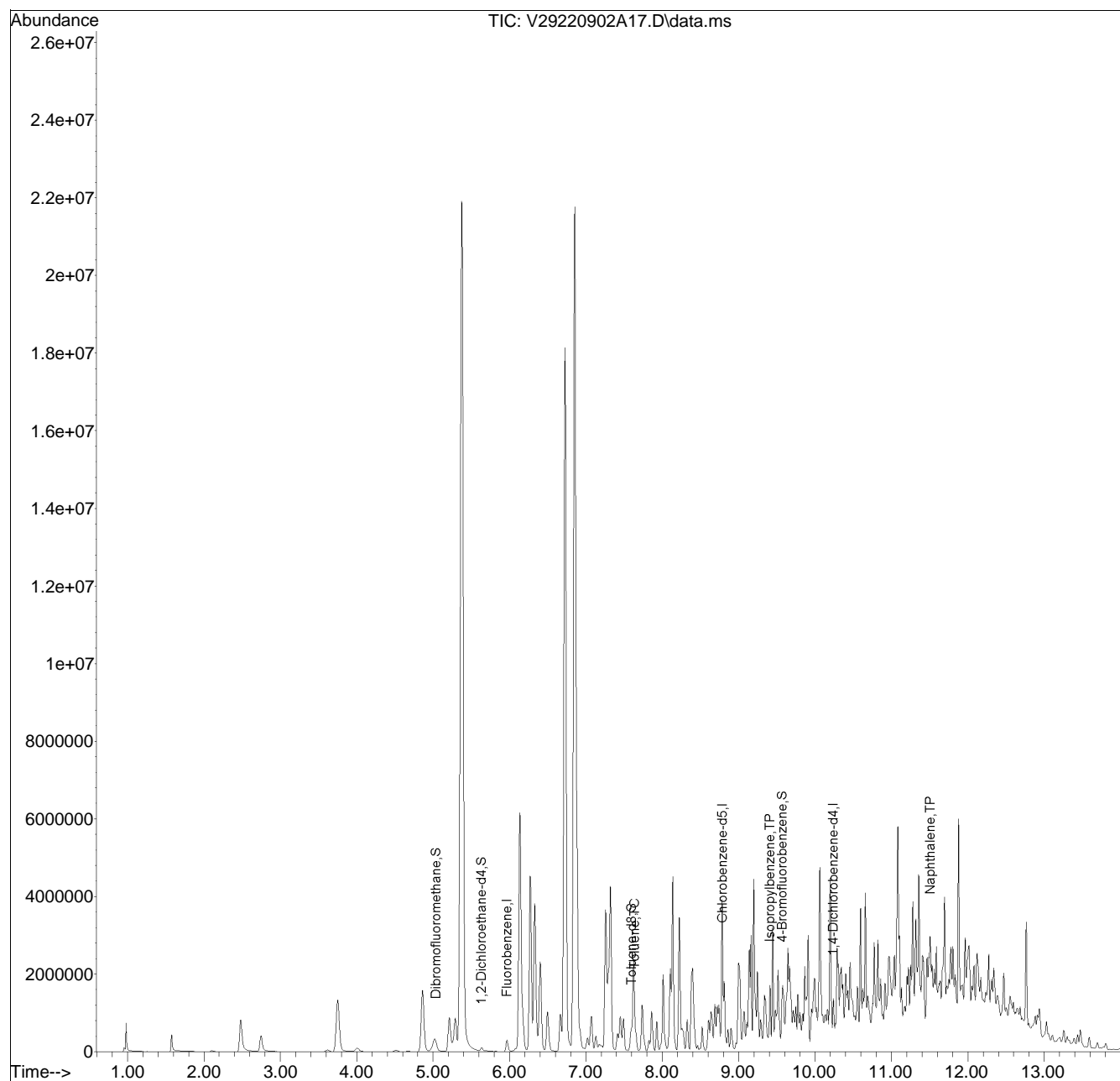
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220902A\  
Data File : V29220902A17.D  
Acq On : 02 Sep 2022 03:56 pm  
Operator : VOA129:LAC  
Sample : 12246771-01d,31h,4.42,5,0.05,,a,r2f  
Misc : WG1683851,ICAL19173  
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Sep 03 11:02:46 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220902A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02A\V29220902A01.D•

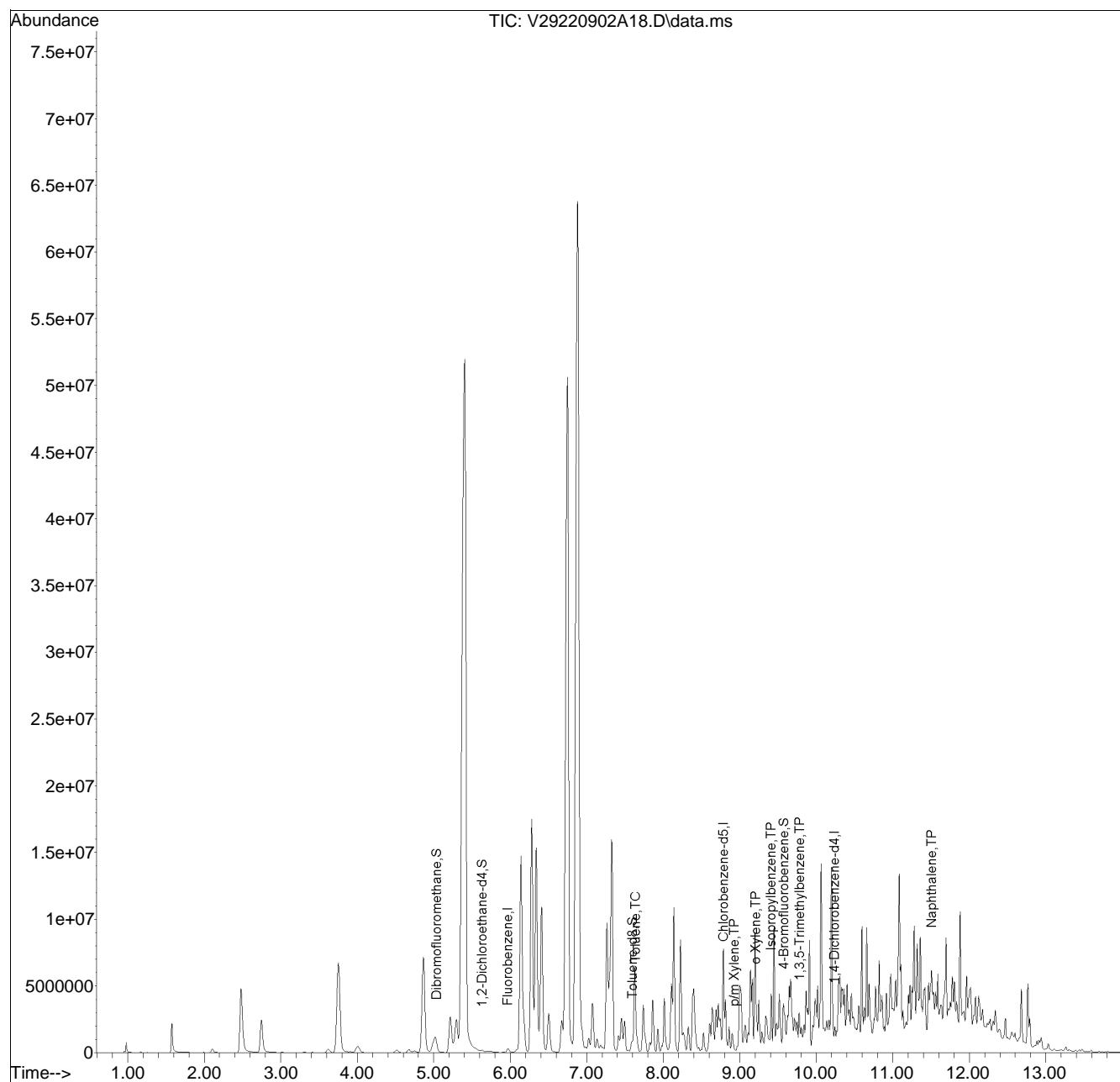


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220902A\  
 Data File : V29220902A18.D  
 Acq On : 02 Sep 2022 04:17 pm  
 Operator : VOA129:LAC  
 Sample : 12246771-03d,31h,5.33,5,0.05,,a,r2f  
 Misc : WG1683851,ICAL19173  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Sep 03 11:03:23 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\220902A\V129\_220712N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 14 08:00:36 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02A\V29220902A01.D•

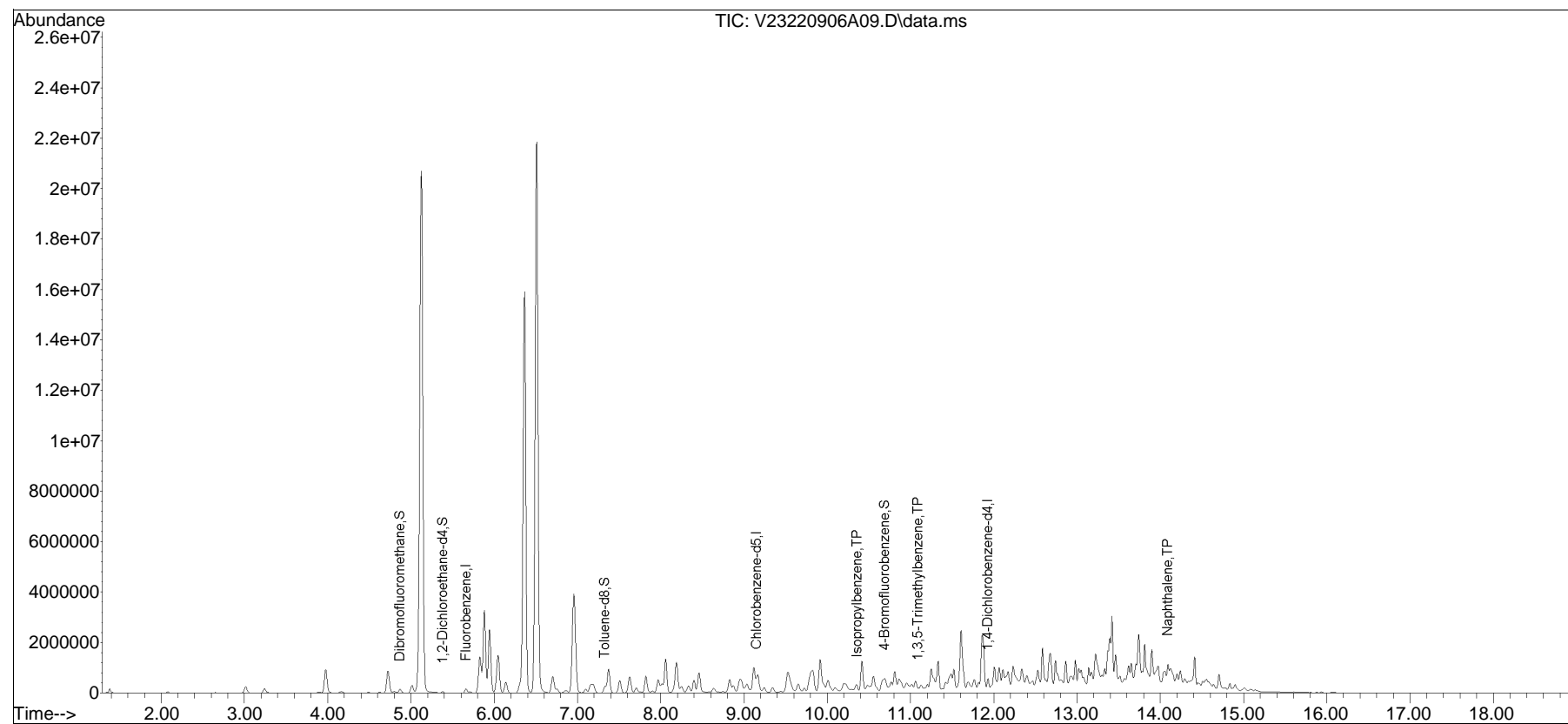


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220906A\  
Data File : V23220906A09.D  
Acq On : 06 Sep 2022 10:22 am  
Operator : VOA123:JC  
Sample : L2246771-07,31,4.93,5,,D,R2F  
Misc : WG1683977,ICAL19289  
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Sep 06 12:25:54 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220906A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list06A\V23220906A01.D•



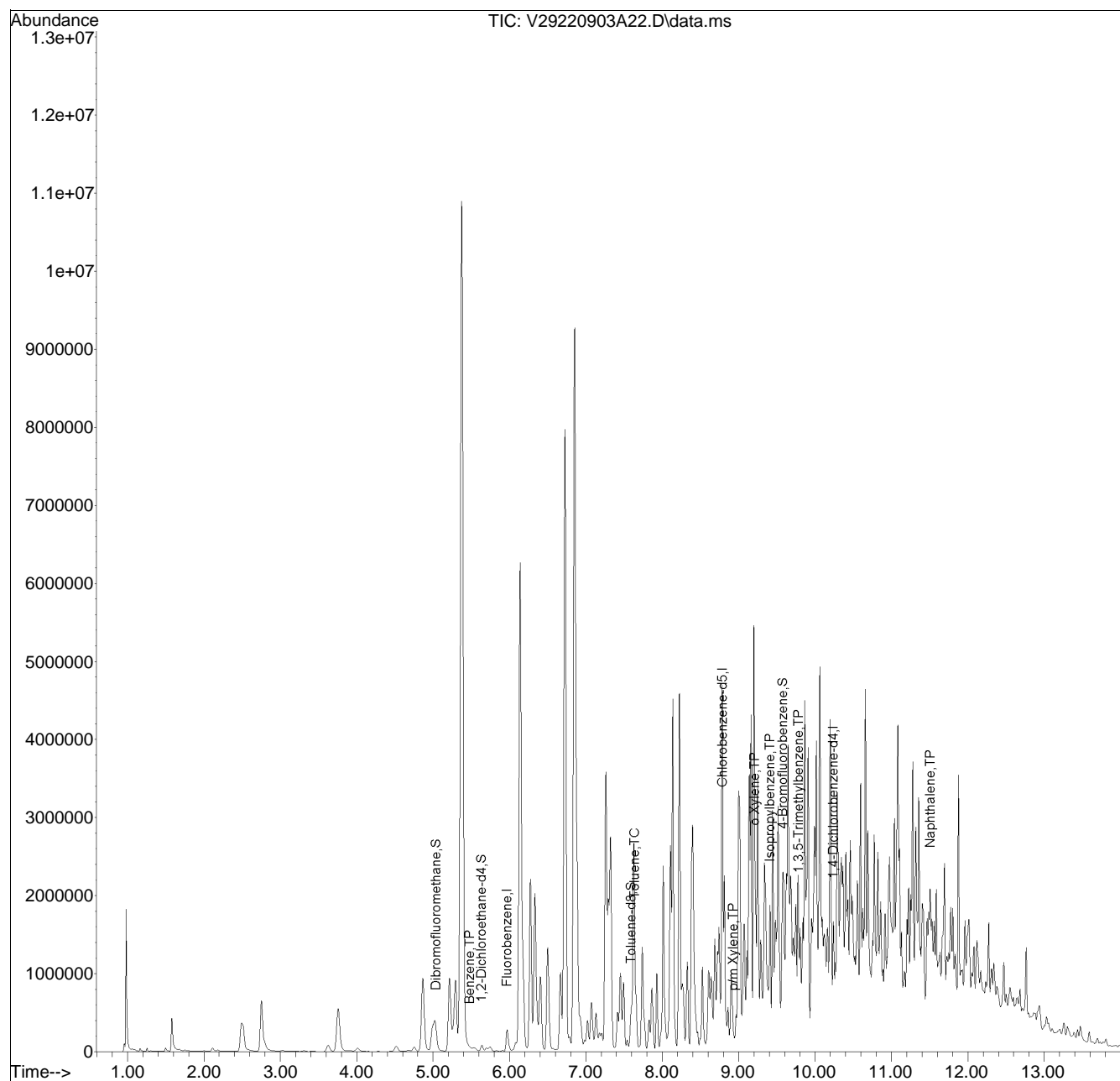


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220903A\  
Data File : V29220903A22.D  
Acq On : 03 Sep 2022 06:57 pm  
Operator : VOA129:NLK  
Sample : 12246771-13,31,5.59,5,,b,r2f  
Misc : WG1683893,ICAL19173  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Sep 04 21:30:03 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220903A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list03A\V29220903A02.D•

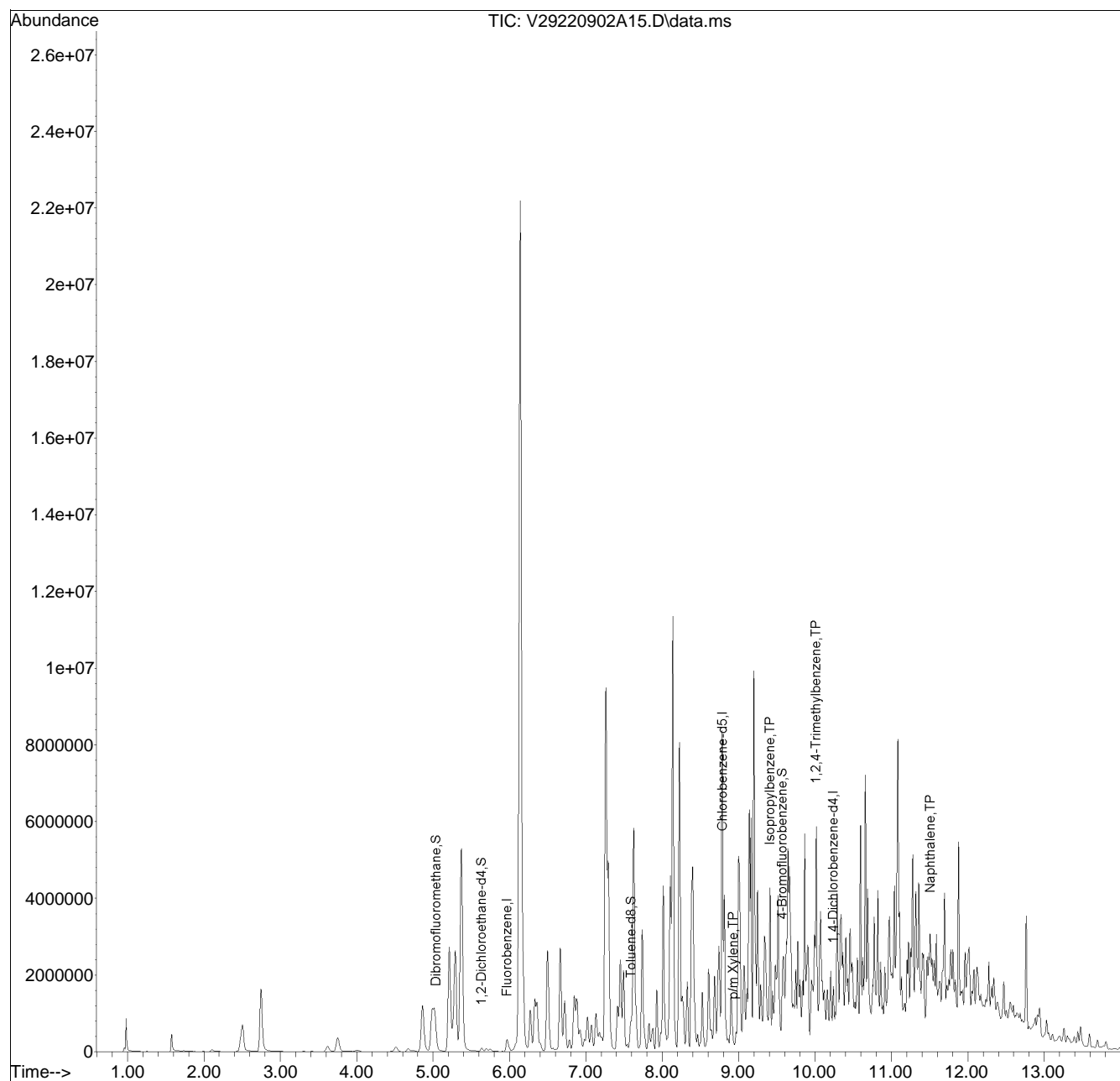


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220902A\  
Data File : V29220902A15.D  
Acq On : 02 Sep 2022 03:14 pm  
Operator : VOA129:LAC  
Sample : 12246771-15d,31h,4.46,5,0.05,,a,r2f  
Misc : WG1683851,ICAL19173  
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Sep 03 11:00:47 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220902A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02A\V29220902A01.D•

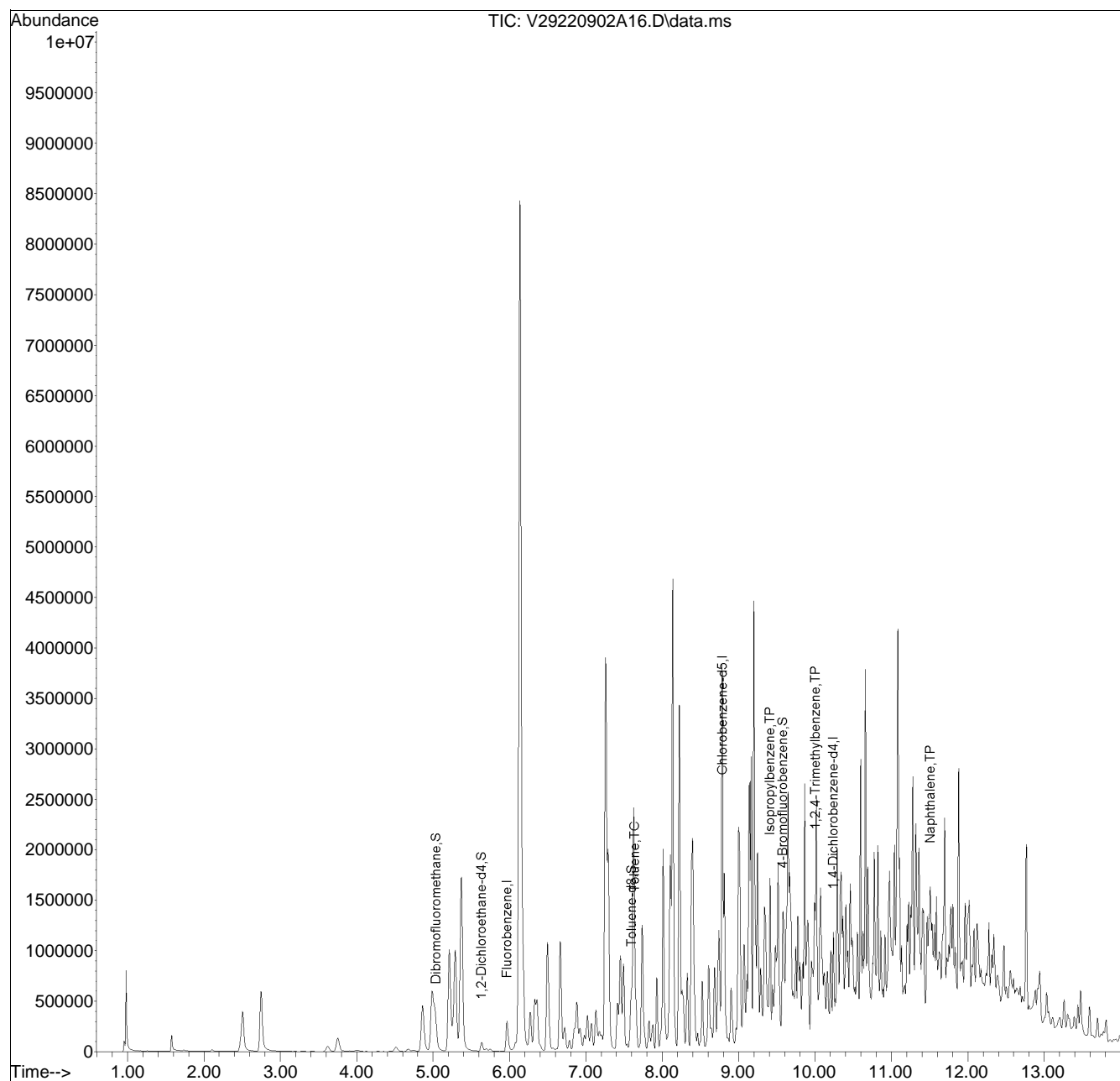


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220902A\  
Data File : V29220902A16.D  
Acq On : 02 Sep 2022 03:35 pm  
Operator : VOA129:LAC  
Sample : 12246771-17d,31h,4.91,5,0.05,,a,r2f  
Misc : WG1683851,ICAL19173  
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Sep 03 11:01:22 2022  
Quant Method : I:\VOLATILES\VOA129\2022\220902A\V129\_220712N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 14 08:00:36 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02A\V29220902A01.D•





## ANALYTICAL REPORT

Lab Number:	L2247027
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/07/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2247027-01	302-AE08-C1-VOC	SOIL	PHILADELPHIA, PA	08/30/22 10:15	08/30/22
L2247027-02	302-AE08-C1-COMP	SOIL	PHILADELPHIA, PA	08/30/22 10:15	08/30/22
L2247027-03	302-AE08-C2-VOC	SOIL	PHILADELPHIA, PA	08/30/22 10:30	08/30/22
L2247027-04	302-AE08-C2-COMP	SOIL	PHILADELPHIA, PA	08/30/22 10:30	08/30/22
L2247027-05	302-AE08-C3-VOC	SOIL	PHILADELPHIA, PA	08/30/22 10:45	08/30/22
L2247027-06	302-AE08-C3-COMP	SOIL	PHILADELPHIA, PA	08/30/22 10:45	08/30/22
L2247027-07	302-AE08-C4-VOC	SOIL	PHILADELPHIA, PA	08/30/22 11:00	08/30/22
L2247027-08	302-AE08-C4-COMP	SOIL	PHILADELPHIA, PA	08/30/22 11:00	08/30/22
L2247027-09	302-AG09-C1-VOC	SOIL	PHILADELPHIA, PA	08/30/22 12:30	08/30/22
L2247027-10	302-AG09-C1-COMP	SOIL	PHILADELPHIA, PA	08/30/22 12:30	08/30/22
L2247027-11	302-AG08-C1-VOC	SOIL	PHILADELPHIA, PA	08/30/22 13:15	08/30/22
L2247027-12	302-AG08-C1-COMP	SOIL	PHILADELPHIA, PA	08/30/22 13:15	08/30/22
L2247027-13	302-AG08-C2-VOC	SOIL	PHILADELPHIA, PA	08/30/22 13:30	08/30/22
L2247027-14	302-AG08-C2-COMP	SOIL	PHILADELPHIA, PA	08/30/22 13:30	08/30/22
L2247027-15	302-AG08-C3-VOC	SOIL	PHILADELPHIA, PA	08/30/22 13:45	08/30/22
L2247027-16	302-AG08-C3-COMP	SOIL	PHILADELPHIA, PA	08/30/22 13:45	08/30/22
L2247027-17	302-AG08-C4-VOC	SOIL	PHILADELPHIA, PA	08/30/22 14:00	08/30/22
L2247027-18	302-AG08-C4-COMP	SOIL	PHILADELPHIA, PA	08/30/22 14:00	08/30/22
L2247027-19	302-AG08-C5-VOC	SOIL	PHILADELPHIA, PA	08/30/22 14:15	08/30/22
L2247027-20	302-AG08-C5-COMP	SOIL	PHILADELPHIA, PA	08/30/22 14:15	08/30/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2247027-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (184%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2247027-13D2: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (282%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2247027-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (332%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2247027-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (365%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2247027-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (286%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 09/07/22

# ORGANICS



# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-01  
 Client ID: 302-AE08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 09:28  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-03  
 Client ID: 302-AE08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 09:55  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-05  
 Client ID: 302-AE08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 10:21  
 Analyst: JC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0028		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0012	J	mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0012	J	mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0011	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-07  
 Client ID: 302-AE08-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 11:00  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 10:47  
 Analyst: JC  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-09  
 Client ID: 302-AG09-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 12:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 02:02  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	0.00054	J	mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	0.00023	J	mg/kg	0.0013	0.00019	1
p/m-Xylene	0.0011	J	mg/kg	0.0027	0.00075	1
o-Xylene	0.00066	J	mg/kg	0.0013	0.00039	1
Xylenes, Total	0.0018	J	mg/kg	0.0013	0.00039	1
Isopropylbenzene	0.0015		mg/kg	0.0013	0.00015	1
1,3,5-Trimethylbenzene	0.0010	J	mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	0.0023	J	mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	<b>184</b>	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-11  
 Client ID: 302-AG08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 11:39  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-13 D2  
 Client ID: 302-AG08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 03:47  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.24	0.024	2
Benzene	0.74		mg/kg	0.059	0.020	2
1,2-Dichloroethane	ND		mg/kg	0.12	0.030	2
Toluene	0.85		mg/kg	0.12	0.064	2
1,2-Dibromoethane	ND		mg/kg	0.059	0.034	2
Ethylbenzene	4.8		mg/kg	0.12	0.017	2
p/m-Xylene	4.4		mg/kg	0.24	0.066	2
o-Xylene	4.0		mg/kg	0.12	0.034	2
Xylenes, Total	8.4		mg/kg	0.12	0.034	2
Isopropylbenzene	9.2		mg/kg	0.12	0.013	2
1,3,5-Trimethylbenzene	22.		mg/kg	0.24	0.023	2
1,2,4-Trimethylbenzene	54.	E	mg/kg	0.24	0.039	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	<b>282</b>	Q	70-130
Dibromofluoromethane	95		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-13 D  
 Client ID: 302-AG08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 12:06  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
1,2,4-Trimethylbenzene	49.		mg/kg	2.4	0.39	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-15  
 Client ID: 302-AG08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 03:21  
 Analyst: NLK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.45		mg/kg	0.029	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	0.32		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	2.7		mg/kg	0.059	0.0083	1
p/m-Xylene	1.6		mg/kg	0.12	0.033	1
o-Xylene	0.96		mg/kg	0.059	0.017	1
Xylenes, Total	2.6		mg/kg	0.059	0.017	1
Isopropylbenzene	4.7		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	9.5		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	21.	E	mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	332	Q	70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-15 D  
 Client ID: 302-AG08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/02/22 12:32  
 Analyst: JC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
1,2,4-Trimethylbenzene	18.		mg/kg	2.4	0.39	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	85		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-17  
 Client ID: 302-AG08-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:00  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 02:28  
 Analyst: NLK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	0.38		mg/kg	0.027	0.0090	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	0.10		mg/kg	0.054	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	3.5		mg/kg	0.054	0.0076	1
p/m-Xylene	0.54		mg/kg	0.11	0.030	1
o-Xylene	0.058		mg/kg	0.054	0.016	1
Xylenes, Total	0.60		mg/kg	0.054	0.016	1
Isopropylbenzene	4.8		mg/kg	0.054	0.0059	1
1,3,5-Trimethylbenzene	4.2		mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	11.		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	365	Q	70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-19  
 Client ID: 302-AG08-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/03/22 02:55  
 Analyst: NLK  
 Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.22	0.022	1
Benzene	2.0		mg/kg	0.054	0.018	1
1,2-Dichloroethane	ND		mg/kg	0.11	0.028	1
Toluene	1.2		mg/kg	0.11	0.059	1
1,2-Dibromoethane	ND		mg/kg	0.054	0.032	1
Ethylbenzene	0.70		mg/kg	0.11	0.015	1
p/m-Xylene	2.4		mg/kg	0.22	0.061	1
o-Xylene	0.83		mg/kg	0.11	0.032	1
Xylenes, Total	3.2		mg/kg	0.11	0.032	1
Isopropylbenzene	17.		mg/kg	0.11	0.012	1
1,3,5-Trimethylbenzene	0.95		mg/kg	0.22	0.021	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.22	0.036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	<b>286</b>	Q	70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/02/22 20:48  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09 Batch: WG1683889-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/02/22 20:48  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13,15,17,19 Batch: WG1683890-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/02/22 08:54  
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,11 Batch: WG1684271-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	100		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/02/22 08:54  
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13,15 Batch: WG1684273-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	100		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09 Batch: WG1683889-3 WG1683889-4								
Methyl tert butyl ether	98		99		66-130	1		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	105		105		70-130	0		30
Toluene	97		94		70-130	3		30
1,2-Dibromoethane	98		97		70-130	1		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	101		97		70-130	4		30
o-Xylene	100		98		70-130	2		30
Isopropylbenzene	102		98		70-130	4		30
1,3,5-Trimethylbenzene	102		98		70-130	4		30
1,2,4-Trimethylbenzene	101		97		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		109		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		98		70-130

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13,15,17,19 Batch: WG1683890-3 WG1683890-4								
Methyl tert butyl ether	98		99		66-130	1		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	105		105		70-130	0		30
Toluene	97		94		70-130	3		30
1,2-Dibromoethane	98		97		70-130	1		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	101		97		70-130	4		30
o-Xylene	100		98		70-130	2		30
Isopropylbenzene	102		98		70-130	4		30
1,3,5-Trimethylbenzene	102		98		70-130	4		30
1,2,4-Trimethylbenzene	101		97		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		109		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,11 Batch: WG1684271-3 WG1684271-4								
Methyl tert butyl ether	88		90		66-130	2		30
Benzene	82		78		70-130	5		30
1,2-Dichloroethane	76		74		70-130	3		30
Toluene	82		80		70-130	2		30
1,2-Dibromoethane	76		77		70-130	1		30
Ethylbenzene	81		78		70-130	4		30
p/m-Xylene	86		83		70-130	4		30
o-Xylene	84		80		70-130	5		30
Isopropylbenzene	90		86		70-130	5		30
1,3,5-Trimethylbenzene	87		82		70-130	6		30
1,2,4-Trimethylbenzene	84		81		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	81		83		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	96		95		70-130
Dibromofluoromethane	87		85		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13,15 Batch: WG1684273-3 WG1684273-4								
Methyl tert butyl ether	88		90		66-130	2		30
Benzene	82		78		70-130	5		30
1,2-Dichloroethane	76		74		70-130	3		30
Toluene	82		80		70-130	2		30
1,2-Dibromoethane	76		77		70-130	1		30
Ethylbenzene	81		78		70-130	4		30
p/m-Xylene	86		83		70-130	4		30
o-Xylene	84		80		70-130	5		30
Isopropylbenzene	90		86		70-130	5		30
1,3,5-Trimethylbenzene	87		82		70-130	6		30
1,2,4-Trimethylbenzene	84		81		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	81		83		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	96		95		70-130
Dibromofluoromethane	87		85		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-02  
 Client ID: 302-AE08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 13:20  
 Analyst: ALS  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.063	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.090	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.069	J	mg/kg	0.12	0.022	1
Chrysene	0.063	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.11	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.10	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.058	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-04  
 Client ID: 302-AE08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 13:44  
 Analyst: ALS  
 Percent Solids: 77%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	61		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-06  
 Client ID: 302-AE08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 14:08  
 Analyst: ALS  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-08  
 Client ID: 302-AE08-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 11:00  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 14:32  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	81		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-10  
 Client ID: 302-AG09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 12:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 14:56  
 Analyst: ALS  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-12  
 Client ID: 302-AG08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 15:19  
 Analyst: ALS  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.75		mg/kg	0.19	0.024	1
Fluorene	0.17	J	mg/kg	0.19	0.019	1
Phenanthrene	0.36		mg/kg	0.12	0.024	1
Anthracene	0.087	J	mg/kg	0.12	0.038	1
Pyrene	0.24		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.18		mg/kg	0.12	0.022	1
Chrysene	0.21		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.15		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.15		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	83		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-14  
 Client ID: 302-AG08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 15:43  
 Analyst: ALS  
 Percent Solids: 69%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.81		mg/kg	0.24	0.029	1
Fluorene	0.11	J	mg/kg	0.24	0.023	1
Phenanthrene	0.27		mg/kg	0.14	0.029	1
Anthracene	0.072	J	mg/kg	0.14	0.046	1
Pyrene	0.24		mg/kg	0.14	0.024	1
Benzo(a)anthracene	0.23		mg/kg	0.14	0.027	1
Chrysene	0.22		mg/kg	0.14	0.025	1
Benzo(b)fluoranthene	0.28		mg/kg	0.14	0.040	1
Benzo(a)pyrene	0.29		mg/kg	0.19	0.058	1
Benzo(ghi)perylene	0.17	J	mg/kg	0.19	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-16  
 Client ID: 302-AG08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 16:07  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.3		mg/kg	0.19	0.023	1
Fluorene	0.42		mg/kg	0.19	0.018	1
Phenanthrene	1.5		mg/kg	0.11	0.023	1
Anthracene	0.47		mg/kg	0.11	0.037	1
Pyrene	1.0		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.81		mg/kg	0.11	0.021	1
Chrysene	0.76		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.77		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.70		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.35		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-18  
 Client ID: 302-AG08-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:00  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 16:31  
 Analyst: ALS  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.51		mg/kg	0.20	0.024	1
Fluorene	0.064	J	mg/kg	0.20	0.019	1
Phenanthrene	0.28		mg/kg	0.12	0.024	1
Anthracene	0.070	J	mg/kg	0.12	0.039	1
Pyrene	0.22		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.13		mg/kg	0.12	0.022	1
Chrysene	0.16		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.14	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.16		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-20  
 Client ID: 302-AG08-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 16:55  
 Analyst: ALS  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.30		mg/kg	0.22	0.027	1
Fluorene	0.049	J	mg/kg	0.22	0.021	1
Phenanthrene	0.093	J	mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	0.069	J	mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.050	J	mg/kg	0.13	0.025	1
Chrysene	0.057	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.054	J	mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.053	1
Benzo(ghi)perylene	0.035	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	60		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/05/22 12:08  
Analyst: ALS

Extraction Method: EPA 3546  
Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1683539-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	92		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1683539-2 WG1683539-3								
Naphthalene	61		79		40-140	26		50
Fluorene	67		84		40-140	23		50
Phenanthrene	66		82		40-140	22		50
Anthracene	69		84		40-140	20		50
Pyrene	70		84		35-142	18		50
Benzo(a)anthracene	66		83		40-140	23		50
Chrysene	64		81		40-140	23		50
Benzo(b)fluoranthene	72		92		40-140	24		50
Benzo(a)pyrene	71		87		40-140	20		50
Benzo(ghi)perylene	69		87		40-140	23		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	80		104		23-120
2-Fluorobiphenyl	65		83		30-120
4-Terphenyl-d14	71		83		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-02  
 Client ID: 302-AE08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	31.4		mg/kg	2.34	0.125	1	08/31/22 16:24	09/02/22 09:14	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-04  
 Client ID: 302-AE08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.41		mg/kg	2.57	0.138	1	08/31/22 16:24	09/02/22 09:18	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-06  
 Client ID: 302-AE08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 10:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.59		mg/kg	2.32	0.124	1	08/31/22 16:24	09/02/22 11:39	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-08  
 Client ID: 302-AE08-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 11:00  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.10		mg/kg	2.27	0.122	1	08/31/22 16:24	09/02/22 10:04	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-10  
 Client ID: 302-AG09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 12:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.87		mg/kg	2.24	0.120	1	08/31/22 16:24	09/02/22 10:08	EPA 3050B	1,6010D	JF





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-12  
 Client ID: 302-AG08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3080		mg/kg	2.32	0.124	1	08/31/22 16:24	09/02/22 10:13	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-14  
 Client ID: 302-AG08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:30  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3870		mg/kg	2.81	0.151	1	08/31/22 16:24	09/02/22 10:18	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-16  
 Client ID: 302-AG08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 13:45  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9720		mg/kg	4.51	0.242	2	08/31/22 16:24	09/02/22 11:44	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-18  
 Client ID: 302-AG08-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:00  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6280		mg/kg	2.36	0.126	1	08/31/22 16:24	09/02/22 10:28	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-20  
 Client ID: 302-AG08-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6160		mg/kg	2.53	0.136	1	08/31/22 16:24	09/02/22 10:32	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1681904-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	08/31/22 16:24	09/02/22 09:05	1,6010D	JF

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1681904-2 SRM Lot Number: D113-540								
Lead, Total	102		-		72-128			-



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>MSD Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>MSD Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>RPD Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20    QC Batch ID: WG1681904-3    QC Sample: L2247079-08    Client ID: MS Sample												
Lead, Total	9.48	51	53.6	86	-	-	-	-	75-125	-	-	20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1681904-4 QC Sample: L2247079-08 Client ID: DUP Sample						
Lead, Total	9.48	8.23	mg/kg	14		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-01  
**Client ID:** 302-AE08-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 10:15  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-02  
**Client ID:** 302-AE08-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 10:15  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-03  
**Client ID:** 302-AE08-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 10:30  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-04  
**Client ID:** 302-AE08-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 10:30  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.0		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-05  
**Client ID:** 302-AE08-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 10:45  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-06  
**Client ID:** 302-AE08-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 10:45  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-07  
**Client ID:** 302-AE08-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 11:00  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.8		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-08  
**Client ID:** 302-AE08-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 11:00  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.3		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-09  
**Client ID:** 302-AG09-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 12:30  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-10  
**Client ID:** 302-AG09-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 12:30  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.7		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-11  
**Client ID:** 302-AG08-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 13:15  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.7		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-12  
**Client ID:** 302-AG08-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 13:15  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-13  
**Client ID:** 302-AG08-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 13:30  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-14  
**Client ID:** 302-AG08-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 13:30  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	68.8		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-15  
**Client ID:** 302-AG08-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 13:45  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-16  
**Client ID:** 302-AG08-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 13:45  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.4		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-17  
**Client ID:** 302-AG08-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 14:00  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.4		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-18  
**Client ID:** 302-AG08-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 14:00  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

Lab ID: L2247027-19  
 Client ID: 302-AG08-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/30/22 14:15  
 Date Received: 08/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	66.6		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

**SAMPLE RESULTS**

**Lab ID:** L2247027-20  
**Client ID:** 302-AG08-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/30/22 14:15  
**Date Received:** 08/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.7		%	0.100	NA	1	-	08/31/22 10:18	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1681859-1 QC Sample: L2247027-01 Client ID: 302-AE08-C1-VOC						
Solids, Total	82.2	82.6	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247027**Project Number:** 200.00135.006**Report Date:** 09/07/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247027-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2247027-01B	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-01C	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-01D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2247027-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2247027-02B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2247027-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2247027-03B	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-03C	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-03D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2247027-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2247027-04B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2247027-05A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2247027-05B	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-05C	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-05D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2247027-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2247027-06B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2247027-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2247027-07B	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-07C	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-07D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247027**Project Number:** 200.00135.006**Report Date:** 09/07/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247027-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2247027-08B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2247027-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2247027-09B	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-09C	Vial water preserved	A	NA		3.2	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-09D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2247027-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2247027-10B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2247027-11A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2247027-11B	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-11C	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-11D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2247027-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2247027-12B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2247027-13A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2247027-13B	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-13C	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-13D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2247027-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2247027-14B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2247027-15A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2247027-15B	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-15C	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-15D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2247027-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2247027-16B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2247027-17A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2247027-17B	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09072210:21  
**Lab Number:** L2247027  
**Report Date:** 09/07/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247027-17C	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-17D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2247027-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2247027-18B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2247027-19A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2247027-19B	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-19C	Vial water preserved	B	NA		3.5	Y	Absent	31-AUG-22 08:29	PA-8260HLW(14)
L2247027-19D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2247027-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2247027-20B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247027  
**Report Date:** 09/07/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

Westborough, MA  
 TEL: 508-898-9229  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
47027-01	302-AE08-C1-VOC	8/30	1015	S	TS
-02	302-AE08-C1-Comp		1015		
-03	302-AE08-C2-VOC		1030		
-04	302-AE08-C2-Comp		1030		
-05	302-AE08-C3-VOC		1045		
-06	302-AE08-C3-Comp		1045		
-07	302-AE08-C4-VOC		1100		
-08	302-AE08-C4-Comp		1100		
-09	302-AG09-C1-VOC		1230		
-10	302-AG09-C1-Comp		1230		

8/31/22 02:25

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

### Turn-Around Time

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 8/31/22

ALPHA Job #: L2247027

### Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client Info PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program

Criteria

### ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead	ANALYSIS												SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below) Sample Specific Comments	TOTAL # BOTTLES	
			1	2	3	4	5	6	7	8	9	10	11	12			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
	8/30		8/31/22 11:50
	8/30/22 1:00		8/31/22 1:00
	8/30/22 2:00		8/30/22 2:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

Project Name: Philadelphia Refinery

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Fax:  Standard     Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrafase.com, William.Schmidt@ransomenv.com, and ijeray@hilcoglobal.com

Date Rec'd in Lab: 8/31/22

ALPHA Job #: L2247027

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client Info    PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES			
		Date	Time																			
47027-11	302-AG08-C1-VOC	8/30	1315	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-12	302-AG08-C1-Comp		1315			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-AG08-C2-VOC		1330			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-AG08-C2-Comp		1330			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-AG08-C3-VOC		1345			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-AG08-C3-Comp		1345			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-AG08-C4-VOC		1400			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-AG08-C4-Comp		1400			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-19	302-AG08-C5-VOC		1415			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-20	302-AG08-C5-Comp		1415			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
47027-11	302-AG08-C1-VOC	8/30	1315	S	TS
-12	302-AG08-C1-Comp		1315		
-13	302-AG08-C2-VOC		1330		
-14	302-AG08-C2-Comp		1330		
-15	302-AG08-C3-VOC		1345		
-16	302-AG08-C3-Comp		1345		
-17	302-AG08-C4-VOC		1400		
-18	302-AG08-C4-Comp		1400		
-19	302-AG08-C5-VOC		1415		
-20	302-AG08-C5-Comp		1415		

ELCOT 8/31/22 02:25

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	8/30	<i>[Signature]</i>	8/30/22 1550
<i>[Signature]</i>	8/30/22 1800	<i>[Signature]</i>	8/30/22 1800
<i>[Signature]</i>	8/30/22 2:00	<i>[Signature]</i>	8/30/22 2:00
<i>[Signature]</i>	8/30/22	<i>[Signature]</i>	8/30/22 0050

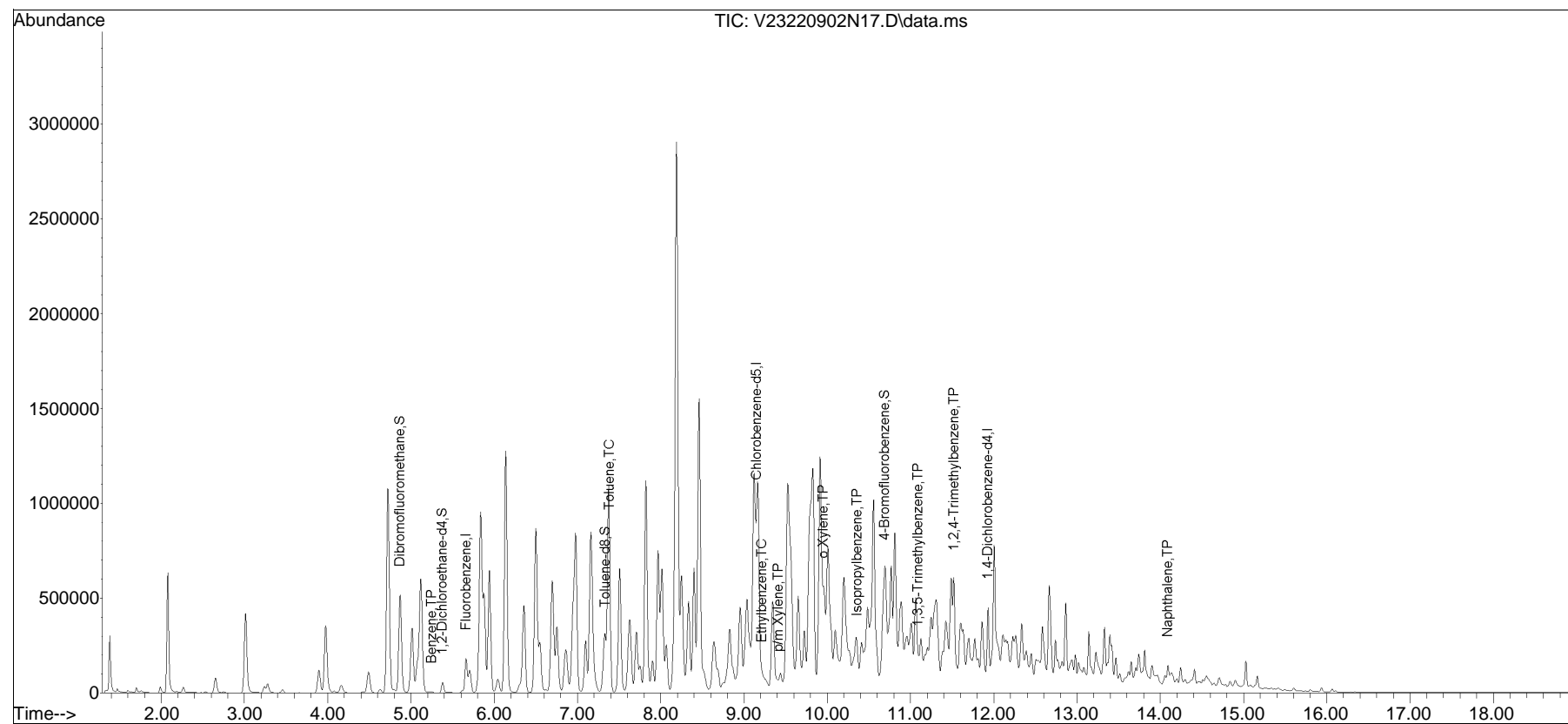
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220902N\  
Data File : V23220902N17.D  
Acq On : 03 Sep 2022 02:02 am  
Operator : VOA123:NLK  
Sample : L2247027-09,31,4.37,5,,B,R2F  
Misc : WG1683889,ICAL19289  
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Sep 04 21:36:33 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220902N\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02N\V23220902N01.D•

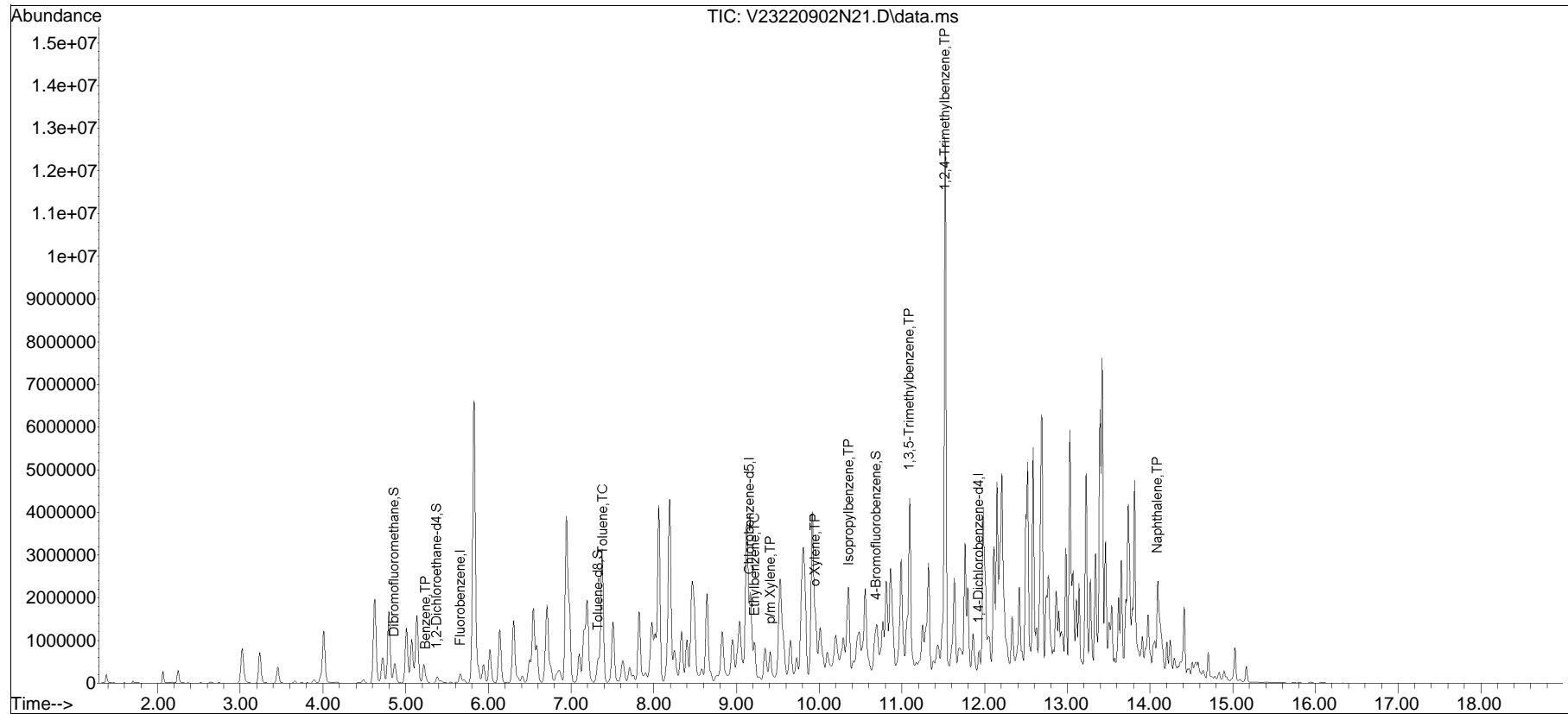


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220902N\  
 Data File : V23220902N21.D  
 Acq On : 03 Sep 2022 03:47 am  
 Operator : VOA123:NLK  
 Sample : L2247027-13D,31H,6.16,5,0.05,,A,R2F  
 Misc : WG1683890,ICAL19289  
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Sep 04 21:47:56 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\220902N\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02N\V23220902N01.D•

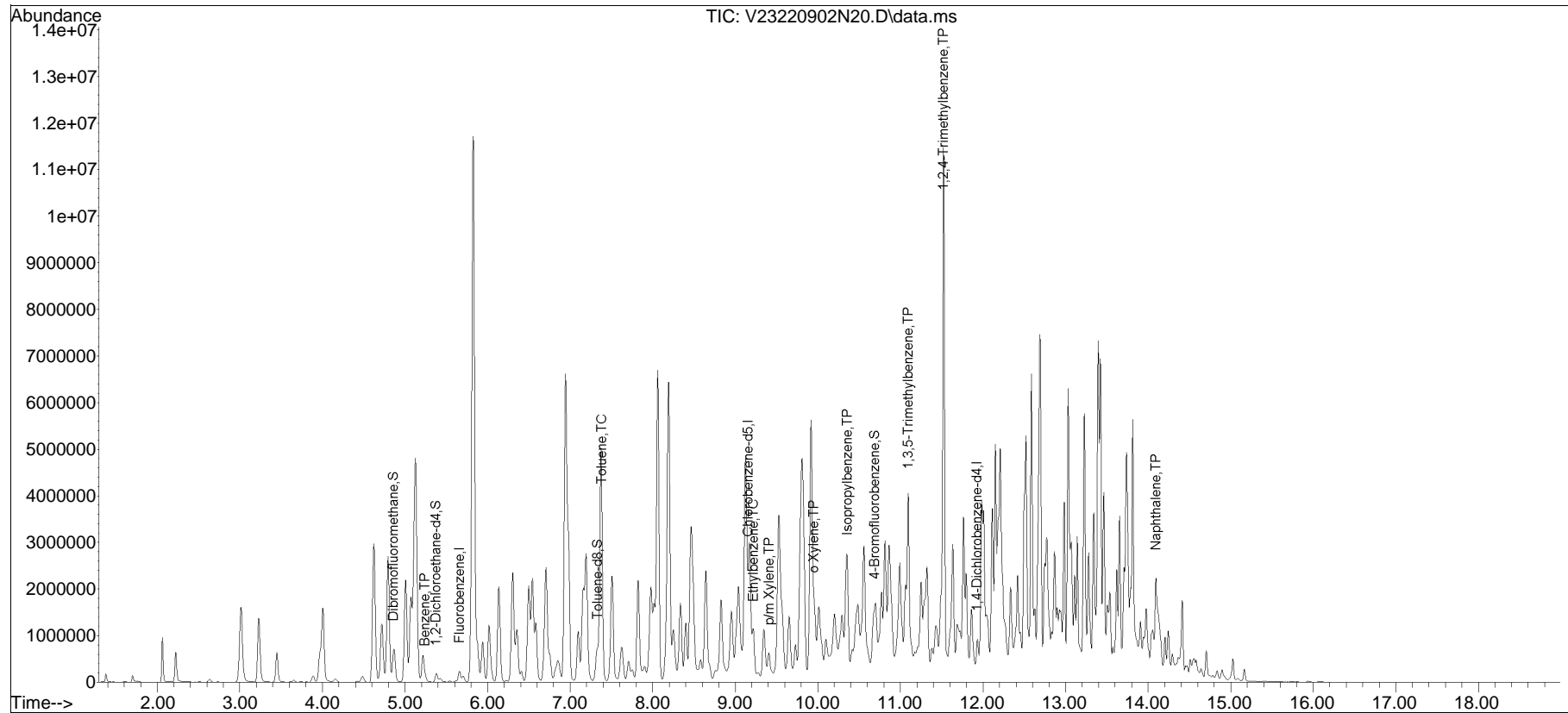


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220902N\  
Data File : V23220902N20.D  
Acq On : 03 Sep 2022 03:21 am  
Operator : VOA123:NLK  
Sample : L2247027-15,31H,6.65,5,0.100,,A,R2F  
Misc : WG1683890,ICAL19289  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 04 21:47:06 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220902N\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02N\V23220902N01.D•

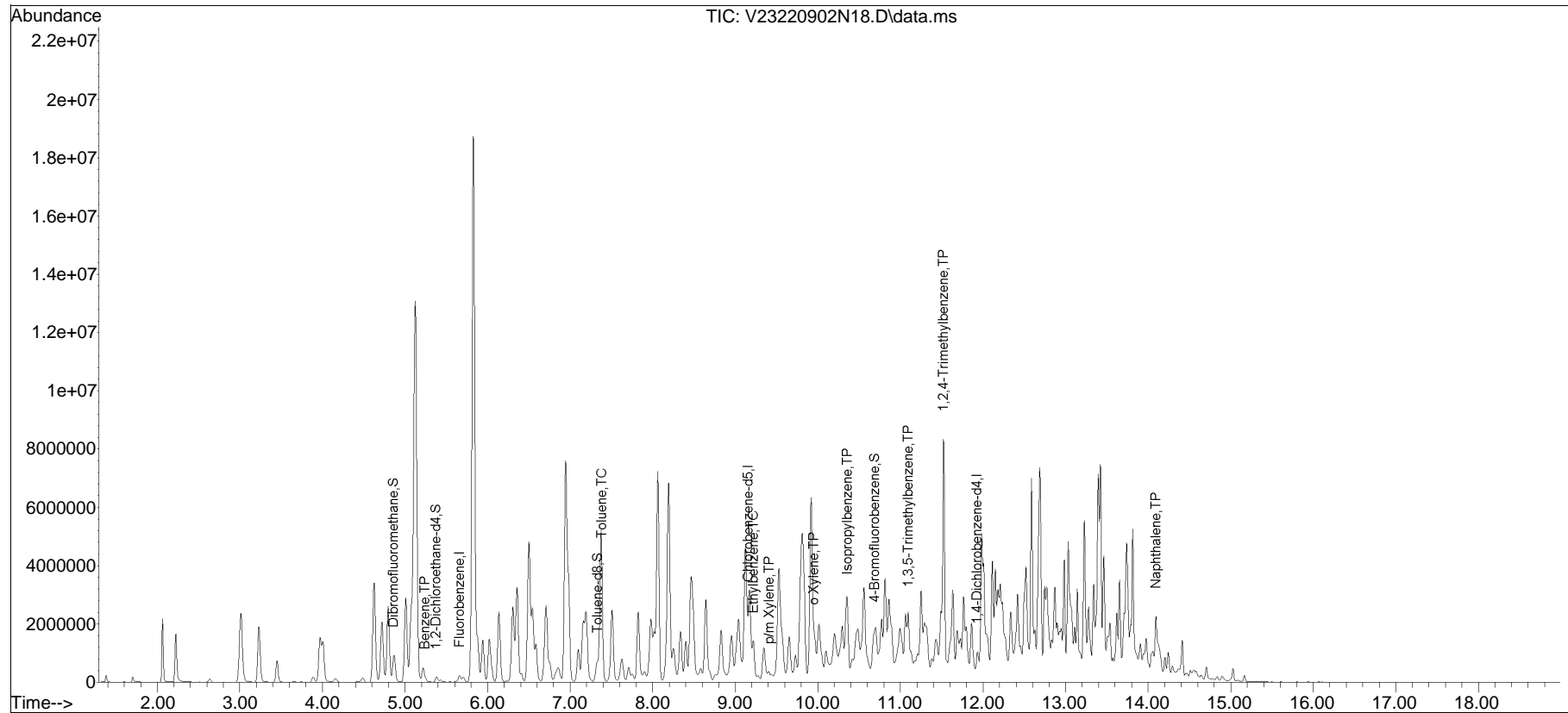


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220902N\  
 Data File : V23220902N18.D  
 Acq On : 03 Sep 2022 02:28 am  
 Operator : VOA123:NLK  
 Sample : L2247027-17,31H,5.79,5,0.100,,A,R2F  
 Misc : WG1683890,ICAL19289  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Sep 04 21:46:32 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\220902N\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02N\V23220902N01.D•

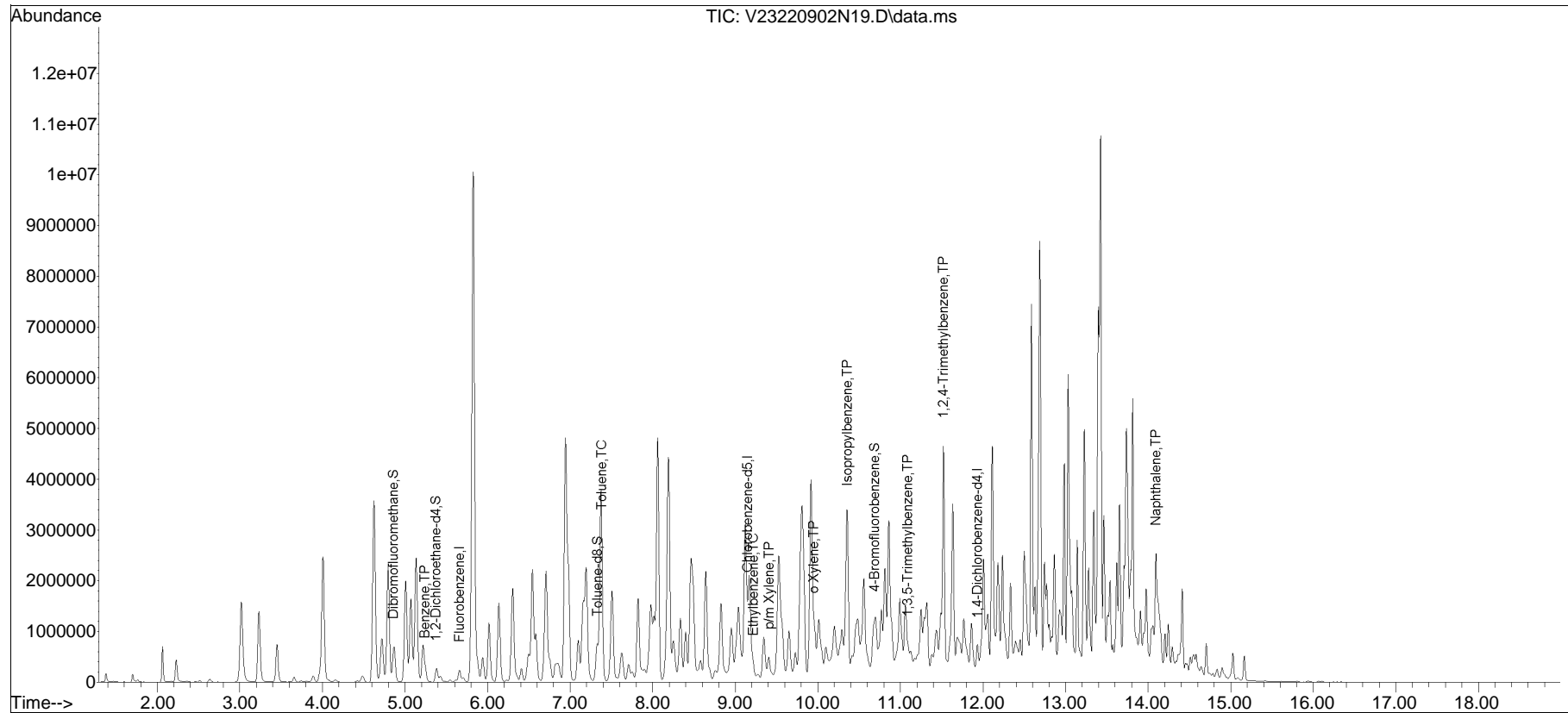


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220902N\  
 Data File : V23220902N19.D  
 Acq On : 03 Sep 2022 02:55 am  
 Operator : VOA123:NLK  
 Sample : L2247027-19,31H,4.48,5,0.100,,A,R2F  
 Misc : WG1683890,ICAL19289  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Sep 04 21:46:48 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\220902N\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list02N\V23220902N01.D•





## ANALYTICAL REPORT

Lab Number:	L2247278
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/08/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2247278-01	302-AF09-C1-VOC	SOIL	PHILADELPHIA, PA	08/31/22 10:00	08/31/22
L2247278-02	302-AF09-C1-COMP	SOIL	PHILADELPHIA, PA	08/31/22 10:00	08/31/22
L2247278-03	302-AF09-C2-VOC	SOIL	PHILADELPHIA, PA	08/31/22 10:15	08/31/22
L2247278-04	302-AF09-C2-COMP	SOIL	PHILADELPHIA, PA	08/31/22 10:15	08/31/22
L2247278-05	302-AF09-C3-VOC	SOIL	PHILADELPHIA, PA	08/31/22 10:30	08/31/22
L2247278-06	302-AF09-C3-COMP	SOIL	PHILADELPHIA, PA	08/31/22 10:30	08/31/22
L2247278-07	302-AG10-C1-VOC	SOIL	PHILADELPHIA, PA	08/31/22 12:30	08/31/22
L2247278-08	302-AG10-C1-COMP	SOIL	PHILADELPHIA, PA	08/31/22 12:30	08/31/22
L2247278-09	302-AH09-C1-VOC	SOIL	PHILADELPHIA, PA	08/31/22 13:00	08/31/22
L2247278-10	302-AH09-C1-COMP	SOIL	PHILADELPHIA, PA	08/31/22 13:00	08/31/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 09/08/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-01  
 Client ID: 302-AF09-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:00  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/08/22 00:26  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-03  
 Client ID: 302-AF09-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:15  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/08/22 00:53  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-05  
 Client ID: 302-AF09-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:30  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/08/22 01:19  
 Analyst: JC  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-07  
 Client ID: 302-AG10-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 12:30  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/08/22 01:45  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	95		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-09  
 Client ID: 302-AH09-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 13:00  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/08/22 02:11  
 Analyst: JC  
 Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00063		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	0.00051	J	mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00028	1
Xylenes, Total	ND		mg/kg	0.00094	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/07/22 20:23  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09 Batch: WG1684900-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09 Batch: WG1684900-3 WG1684900-4								
Methyl tert butyl ether	89		87		66-130	2		30
Benzene	79		78		70-130	1		30
1,2-Dichloroethane	75		74		70-130	1		30
Toluene	82		81		70-130	1		30
1,2-Dibromoethane	78		74		70-130	5		30
Ethylbenzene	79		78		70-130	1		30
p/m-Xylene	83		81		70-130	2		30
o-Xylene	81		80		70-130	1		30
Isopropylbenzene	88		88		70-130	0		30
1,3,5-Trimethylbenzene	84		82		70-130	2		30
1,2,4-Trimethylbenzene	81		80		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	83		82		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	109		108		70-130
Dibromofluoromethane	77		77		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-02  
 Client ID: 302-AF09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:00  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/07/22 09:49  
 Analyst: JG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/05/22 13:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.018	J	mg/kg	0.19	0.018	1
Phenanthrene	0.30		mg/kg	0.11	0.023	1
Anthracene	0.078	J	mg/kg	0.11	0.037	1
Pyrene	0.48		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.33		mg/kg	0.11	0.021	1
Chrysene	0.31		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.32		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.28		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-04  
 Client ID: 302-AF09-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:15  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/07/22 03:51  
 Analyst: JG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/05/22 13:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-06  
 Client ID: 302-AF09-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:30  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/07/22 05:03  
 Analyst: JG  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/05/22 13:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.021	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-08  
 Client ID: 302-AG10-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 12:30  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/07/22 11:24  
 Analyst: JG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/05/22 13:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.19		mg/kg	0.11	0.023	1
Anthracene	0.045	J	mg/kg	0.11	0.037	1
Pyrene	0.27		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.022	1
Chrysene	0.14		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.12	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.071	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	67		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-10  
 Client ID: 302-AH09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 13:00  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/07/22 11:00  
 Analyst: JG  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/05/22 13:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.040	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.10	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.13		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.084	J	mg/kg	0.12	0.023	1
Chrysene	0.092	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.11	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.10	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.070	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 09/05/22 12:08  
 Analyst: ALS

Extraction Method: EPA 3546  
 Extraction Date: 09/04/22 19:20

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1683539-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	92		18-120

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1683539-2 WG1683539-3								
Naphthalene	61		79		40-140	26		50
Fluorene	67		84		40-140	23		50
Phenanthrene	66		82		40-140	22		50
Anthracene	69		84		40-140	20		50
Pyrene	70		84		35-142	18		50
Benzo(a)anthracene	66		83		40-140	23		50
Chrysene	64		81		40-140	23		50
Benzo(b)fluoranthene	72		92		40-140	24		50
Benzo(a)pyrene	71		87		40-140	20		50
Benzo(ghi)perylene	69		87		40-140	23		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	80		104		23-120
2-Fluorobiphenyl	65		83		30-120
4-Terphenyl-d14	71		83		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-02  
 Client ID: 302-AF09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 10:00  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	107		mg/kg	4.49	0.241	2	09/02/22 08:20	09/07/22 18:33	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247278

**Project Number:** 200.00135.006

**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-04

Date Collected: 08/31/22 10:15

Client ID: 302-AF09-C2-COMP

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	18.9		mg/kg	4.72	0.253	2	09/02/22 08:20	09/07/22 07:40	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247278

**Project Number:** 200.00135.006

**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-06

Date Collected: 08/31/22 10:30

Client ID: 302-AF09-C3-COMP

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	26.5		mg/kg	4.71	0.252	2	09/02/22 08:20	09/07/22 07:45	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247278

**Project Number:** 200.00135.006

**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-08

Date Collected: 08/31/22 12:30

Client ID: 302-AG10-C1-COMP

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	41.1		mg/kg	4.58	0.246	2	09/02/22 08:20	09/07/22 07:49	EPA 3050B	1,6010D	JF





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-10  
 Client ID: 302-AH09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 08/31/22 13:00  
 Date Received: 08/31/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2200		mg/kg	2.40	0.128	1	09/02/22 08:20	09/02/22 22:29	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247278

**Project Number:** 200.00135.006

**Report Date:** 09/08/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1682822-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/02/22 08:20	09/02/22 18:08	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1682822-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128	-		



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>MSD Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>MSD Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>RPD Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10    QC Batch ID: WG1682822-3    QC Sample: L2247640-07    Client ID: MS Sample												
Lead, Total	14.7	50.9	53.6	76	-	-	-	-	75-125	-	-	20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2247278

Report Date: 09/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 QC Batch ID: WG1682822-4 QC Sample: L2247640-07 Client ID: DUP Sample						
Lead, Total	14.7	13.4	mg/kg	9		20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247278**Project Number:** 200.00135.006**Report Date:** 09/08/22**SAMPLE RESULTS**

Lab ID: L2247278-01

Date Collected: 08/31/22 10:00

Client ID: 302-AF09-C1-VOC

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

**Lab ID:** L2247278-02  
**Client ID:** 302-AF09-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/31/22 10:00  
**Date Received:** 08/31/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

**Lab ID:** L2247278-03  
**Client ID:** 302-AF09-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/31/22 10:15  
**Date Received:** 08/31/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.1		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

**SAMPLE RESULTS**

**Lab ID:** L2247278-04  
**Client ID:** 302-AF09-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 08/31/22 10:15  
**Date Received:** 08/31/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.2		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247278

Project Number: 200.00135.006

Report Date: 09/08/22

## SAMPLE RESULTS

Lab ID: L2247278-05

Date Collected: 08/31/22 10:30

Client ID: 302-AF09-C3-VOC

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.3		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247278

Project Number: 200.00135.006

Report Date: 09/08/22

## SAMPLE RESULTS

Lab ID: L2247278-06

Date Collected: 08/31/22 10:30

Client ID: 302-AF09-C3-COMP

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247278

Project Number: 200.00135.006

Report Date: 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-07

Date Collected: 08/31/22 12:30

Client ID: 302-AG10-C1-VOC

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247278**Project Number:** 200.00135.006**Report Date:** 09/08/22**SAMPLE RESULTS**

Lab ID: L2247278-08

Date Collected: 08/31/22 12:30

Client ID: 302-AG10-C1-COMP

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247278

**Project Number:** 200.00135.006

**Report Date:** 09/08/22

**SAMPLE RESULTS**

Lab ID: L2247278-09

Date Collected: 08/31/22 13:00

Client ID: 302-AH09-C1-VOC

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	66.6		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247278**Project Number:** 200.00135.006**Report Date:** 09/08/22**SAMPLE RESULTS**

Lab ID: L2247278-10

Date Collected: 08/31/22 13:00

Client ID: 302-AH09-C1-COMP

Date Received: 08/31/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	09/01/22 17:30	121,2540G	MF





## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2247278

Report Date: 09/08/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1682626-1 QC Sample: L2247258-01 Client ID: DUP Sample						
Solids, Total	90.0	90.1	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247278**Project Number:** 200.00135.006**Report Date:** 09/08/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247278-01A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2247278-01B	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-01C	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-01D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2247278-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2247278-02B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2247278-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2247278-03B	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-03C	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-03D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2247278-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2247278-04B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2247278-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2247278-05B	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-05C	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-05D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2247278-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2247278-06B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2247278-07A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2247278-07B	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-07C	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-07D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2247278-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Serial\_No:**09082211:19  
**Lab Number:** L2247278  
**Report Date:** 09/08/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247278-08B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2247278-09A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2247278-09B	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-09C	Vial water preserved	A	NA		2.4	Y	Absent	01-SEP-22 15:25	PA-8260HLW(14)
L2247278-09D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2247278-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2247278-10B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247278  
**Report Date:** 09/08/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

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**Report Date:** 09/08/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247278

**Project Number:** 200.00135.006

**Report Date:** 09/08/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







## ANALYTICAL REPORT

Lab Number:	L2247598
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/09/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2247598-01	302-AI09-C1-VOC	SOIL	PHILADELPHIA, PA	09/01/22 10:00	09/01/22
L2247598-02	302-AI09-C1-COMP	SOIL	PHILADELPHIA, PA	09/01/22 10:00	09/01/22
L2247598-03	302-AK08-C1-VOC	SOIL	PHILADELPHIA, PA	09/01/22 12:00	09/01/22
L2247598-04	302-AK08-C1-COMP	SOIL	PHILADELPHIA, PA	09/01/22 12:00	09/01/22
L2247598-05	302-AL08-C1-VOC	SOIL	PHILADELPHIA, PA	09/01/22 13:30	09/01/22
L2247598-06	302-AL08-C1-COMP	SOIL	PHILADELPHIA, PA	09/01/22 13:30	09/01/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22


**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 09/09/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-01  
 Client ID: 302-AI09-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 10:00  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/07/22 20:49  
 Analyst: JC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	81		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-03  
 Client ID: 302-AK08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 12:00  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/07/22 21:15  
 Analyst: JC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-05  
 Client ID: 302-AL08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 13:30  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/07/22 21:42  
 Analyst: JC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	81		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/07/22 20:23  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05 Batch: WG1684900-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1684900-3 WG1684900-4								
Methyl tert butyl ether	89		87		66-130	2		30
Benzene	79		78		70-130	1		30
1,2-Dichloroethane	75		74		70-130	1		30
Toluene	82		81		70-130	1		30
1,2-Dibromoethane	78		74		70-130	5		30
Ethylbenzene	79		78		70-130	1		30
p/m-Xylene	83		81		70-130	2		30
o-Xylene	81		80		70-130	1		30
Isopropylbenzene	88		88		70-130	0		30
1,3,5-Trimethylbenzene	84		82		70-130	2		30
1,2,4-Trimethylbenzene	81		80		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	83		82		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	109		108		70-130
Dibromofluoromethane	77		77		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-02  
 Client ID: 302-AI09-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 10:00  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 10:46  
 Analyst: LJJ  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 23:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-04  
 Client ID: 302-AK08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 12:00  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 11:09  
 Analyst: LJG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 23:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-06  
 Client ID: 302-AL08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 13:30  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 11:33  
 Analyst: LJG  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 23:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	54		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/09/22 09:36  
Analyst: LJG

Extraction Method: EPA 3546  
Extraction Date: 09/08/22 18:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1685143-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	79		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2247598

Report Date: 09/09/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1685143-2 WG1685143-3								
Naphthalene	68		67		40-140	1		50
Fluorene	72		73		40-140	1		50
Phenanthrene	67		68		40-140	1		50
Anthracene	69		71		40-140	3		50
Pyrene	71		73		35-142	3		50
Benzo(a)anthracene	67		70		40-140	4		50
Chrysene	65		67		40-140	3		50
Benzo(b)fluoranthene	68		69		40-140	1		50
Benzo(a)pyrene	68		70		40-140	3		50
Benzo(ghi)perylene	68		70		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		89		23-120
2-Fluorobiphenyl	70		69		30-120
4-Terphenyl-d14	69		71		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247598

**Project Number:** 200.00135.006

**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-02

Date Collected: 09/01/22 10:00

Client ID: 302-AI09-C1-COMP

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.12		mg/kg	2.32	0.125	1	09/02/22 22:44	09/07/22 20:02	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247598

**Project Number:** 200.00135.006

**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-04

Date Collected: 09/01/22 12:00

Client ID: 302-AK08-C1-COMP

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.29		mg/kg	4.65	0.249	2	09/02/22 22:44	09/07/22 22:29	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

**SAMPLE RESULTS**

Lab ID: L2247598-06  
 Client ID: 302-AL08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/01/22 13:30  
 Date Received: 09/01/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	38.2		mg/kg	24.6	1.32	10	09/02/22 22:44	09/07/22 22:34	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247598

Project Number: 200.00135.006

Report Date: 09/09/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1682994-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/02/22 22:44	09/07/22 19:02	1,6010D	DL

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247598

**Project Number:** 200.00135.006

**Report Date:** 09/09/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1682994-2 SRM Lot Number: D113-540								
Lead, Total	85		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06    QC Batch ID: WG1682994-3    WG1682994-4    QC Sample: L2247688-02    Client ID: MS Sample												
Lead, Total	7.48	47.4	48.5	86		47.2	83		75-125	3		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247598**Project Number:** 200.00135.006**Report Date:** 09/09/22**SAMPLE RESULTS**

Lab ID: L2247598-01

Date Collected: 09/01/22 10:00

Client ID: 302-AI09-C1-VOC

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	09/02/22 10:42	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247598

Project Number: 200.00135.006

Report Date: 09/09/22

## SAMPLE RESULTS

Lab ID: L2247598-02

Date Collected: 09/01/22 10:00

Client ID: 302-AI09-C1-COMP

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	09/03/22 12:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247598**Project Number:** 200.00135.006**Report Date:** 09/09/22**SAMPLE RESULTS**

Lab ID: L2247598-03

Date Collected: 09/01/22 12:00

Client ID: 302-AK08-C1-VOC

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	09/02/22 10:42	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247598

Project Number: 200.00135.006

Report Date: 09/09/22

## SAMPLE RESULTS

Lab ID: L2247598-04

Date Collected: 09/01/22 12:00

Client ID: 302-AK08-C1-COMP

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.6		%	0.100	NA	1	-	09/03/22 12:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247598**Project Number:** 200.00135.006**Report Date:** 09/09/22**SAMPLE RESULTS**

Lab ID: L2247598-05

Date Collected: 09/01/22 13:30

Client ID: 302-AL08-C1-VOC

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.6		%	0.100	NA	1	-	09/02/22 10:42	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247598**Project Number:** 200.00135.006**Report Date:** 09/09/22**SAMPLE RESULTS**

Lab ID: L2247598-06

Date Collected: 09/01/22 13:30

Client ID: 302-AL08-C1-COMP

Date Received: 09/01/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.7		%	0.100	NA	1	-	09/03/22 12:19	121,2540G	RI





## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2247598

Report Date: 09/09/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05 QC Batch ID: WG1682926-1 QC Sample: L2247474-21 Client ID: DUP Sample						
Solids, Total	87.1	86.7	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247598**Project Number:** 200.00135.006**Report Date:** 09/09/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247598-01A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2247598-01B	Vial water preserved	A	NA		2.3	Y	Absent	02-SEP-22 09:28	PA-8260HLW(14)
L2247598-01C	Vial water preserved	A	NA		2.3	Y	Absent	02-SEP-22 09:28	PA-8260HLW(14)
L2247598-01D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2247598-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2247598-02B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2247598-03A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2247598-03B	Vial water preserved	A	NA		2.3	Y	Absent	02-SEP-22 09:28	PA-8260HLW(14)
L2247598-03C	Vial water preserved	A	NA		2.3	Y	Absent	02-SEP-22 09:28	PA-8260HLW(14)
L2247598-03D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2247598-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2247598-04B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)
L2247598-05A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2247598-05B	Vial water preserved	A	NA		2.3	Y	Absent	02-SEP-22 09:28	PA-8260HLW(14)
L2247598-05C	Vial water preserved	A	NA		2.3	Y	Absent	02-SEP-22 09:28	PA-8260HLW(14)
L2247598-05D	Plastic 120ml unpreserved	A	NA		2.3	Y	Absent		TS(7)
L2247598-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2247598-06B	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247598  
**Report Date:** 09/09/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247598

**Project Number:** 200.00135.006

**Report Date:** 09/09/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







## ANALYTICAL REPORT

Lab Number:	L2247865
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/12/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2247865-01	302-AM06-C1-VOC	SOIL	PHILADELPHIA, PA	09/02/22 09:30	09/02/22
L2247865-02	302-AM06-C1-COMP	SOIL	PHILADELPHIA, PA	09/02/22 09:30	09/02/22
L2247865-03	302-AN04-C1-VOC	SOIL	PHILADELPHIA, PA	09/02/22 10:00	09/02/22
L2247865-04	302-AN04-C1-COMP	SOIL	PHILADELPHIA, PA	09/02/22 10:00	09/02/22
L2247865-05	302-AO06-C1-VOC	SOIL	PHILADELPHIA, PA	09/02/22 11:00	09/02/22
L2247865-06	302-AO06-C1-COMP	SOIL	PHILADELPHIA, PA	09/02/22 11:00	09/02/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22


**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 09/12/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-01  
 Client ID: 302-AM06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 09:30  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/07/22 22:08  
 Analyst: JC  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00023	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-03  
 Client ID: 302-AN04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 10:00  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/07/22 22:34  
 Analyst: JC  
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	93		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-05  
 Client ID: 302-AO06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 11:00  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/12/22 09:30  
 Analyst: NLK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/07/22 20:23  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03 Batch: WG1684900-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/12/22 09:04  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1686241-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	97		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2247865

Project Number: 200.00135.006

Report Date: 09/12/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03 Batch: WG1684900-3 WG1684900-4								
Methyl tert butyl ether	89		87		66-130	2		30
Benzene	79		78		70-130	1		30
1,2-Dichloroethane	75		74		70-130	1		30
Toluene	82		81		70-130	1		30
1,2-Dibromoethane	78		74		70-130	5		30
Ethylbenzene	79		78		70-130	1		30
p/m-Xylene	83		81		70-130	2		30
o-Xylene	81		80		70-130	1		30
Isopropylbenzene	88		88		70-130	0		30
1,3,5-Trimethylbenzene	84		82		70-130	2		30
1,2,4-Trimethylbenzene	81		80		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	83		82		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	109		108		70-130
Dibromofluoromethane	77		77		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2247865

Project Number: 200.00135.006

Report Date: 09/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1686241-3 WG1686241-4								
Methyl tert butyl ether	97		96		66-130	1		30
Benzene	94		92		70-130	2		30
1,2-Dichloroethane	87		87		70-130	0		30
Toluene	90		90		70-130	0		30
1,2-Dibromoethane	92		93		70-130	1		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	92		92		70-130	0		30
o-Xylene	91		92		70-130	1		30
Isopropylbenzene	93		93		70-130	0		30
1,3,5-Trimethylbenzene	93		93		70-130	0		30
1,2,4-Trimethylbenzene	92		92		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	99		98		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-02  
 Client ID: 302-AM06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 09:30  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 21:24  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-04  
 Client ID: 302-AN04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 10:00  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 21:47  
 Analyst: EK  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	88		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-06  
 Client ID: 302-AO06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 11:00  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 22:11  
 Analyst: EK  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 09/09/22 09:36  
 Analyst: LJG

Extraction Method: EPA 3546  
 Extraction Date: 09/08/22 18:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1685143-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	79		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2247865

Report Date: 09/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1685143-2 WG1685143-3								
Naphthalene	68		67		40-140	1		50
Fluorene	72		73		40-140	1		50
Phenanthrene	67		68		40-140	1		50
Anthracene	69		71		40-140	3		50
Pyrene	71		73		35-142	3		50
Benzo(a)anthracene	67		70		40-140	4		50
Chrysene	65		67		40-140	3		50
Benzo(b)fluoranthene	68		69		40-140	1		50
Benzo(a)pyrene	68		70		40-140	3		50
Benzo(ghi)perylene	68		70		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		89		23-120
2-Fluorobiphenyl	70		69		30-120
4-Terphenyl-d14	69		71		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-02  
 Client ID: 302-AM06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 09:30  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.27		mg/kg	2.35	0.126	1	09/03/22 08:40	09/06/22 12:38	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247865

**Project Number:** 200.00135.006

**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-04

Date Collected: 09/02/22 10:00

Client ID: 302-AN04-C1-COMP

Date Received: 09/02/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.15		mg/kg	2.22	0.119	1	09/03/22 08:40	09/06/22 12:42	EPA 3050B	1,6010D	ZK



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-06  
 Client ID: 302-AO06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 11:00  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.5		mg/kg	2.40	0.129	1	09/03/22 08:40	09/06/22 16:11	EPA 3050B	1,6010D	ZK



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247865

Project Number: 200.00135.006

Report Date: 09/12/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1683231-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/03/22 08:40	09/06/22 08:56	1,6010D	ZK

### Prep Information

Digestion Method: EPA 3050B





## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247865

**Project Number:** 200.00135.006

**Report Date:** 09/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1683231-2 SRM Lot Number: D113-540								
Lead, Total	97		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06    QC Batch ID: WG1683231-3    QC Sample: L2247941-01    Client ID: MS Sample												
Lead, Total	6.70	48.8	49.3	87	-	-	-	-	75-125	-	-	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-01  
 Client ID: 302-AM06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/02/22 09:30  
 Date Received: 09/02/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.7		%	0.100	NA	1	-	09/03/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247865

Project Number: 200.00135.006

Report Date: 09/12/22

**SAMPLE RESULTS**

Lab ID: L2247865-02

Date Collected: 09/02/22 09:30

Client ID: 302-AM06-C1-COMP

Date Received: 09/02/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	09/03/22 10:32	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247865

Project Number: 200.00135.006

Report Date: 09/12/22

## SAMPLE RESULTS

Lab ID: L2247865-03

Date Collected: 09/02/22 10:00

Client ID: 302-AN04-C1-VOC

Date Received: 09/02/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	97.6		%	0.100	NA	1	-	09/03/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2247865

Project Number: 200.00135.006

Report Date: 09/12/22

## SAMPLE RESULTS

Lab ID: L2247865-04

Date Collected: 09/02/22 10:00

Client ID: 302-AN04-C1-COMP

Date Received: 09/02/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	09/03/22 10:32	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247865**Project Number:** 200.00135.006**Report Date:** 09/12/22**SAMPLE RESULTS**

Lab ID: L2247865-05

Date Collected: 09/02/22 11:00

Client ID: 302-AO06-C1-VOC

Date Received: 09/02/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.7		%	0.100	NA	1	-	09/03/22 10:46	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

**SAMPLE RESULTS**

**Lab ID:** L2247865-06  
**Client ID:** 302-AO06-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/02/22 11:00  
**Date Received:** 09/02/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.6		%	0.100	NA	1	-	09/03/22 10:32	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2247865

Report Date: 09/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04,06 QC Batch ID: WG1683216-1 QC Sample: L2247865-02 Client ID: 302-AM06-C1-COMP						
Solids, Total	83.4	83.3	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01,03,05 QC Batch ID: WG1683227-1 QC Sample: L2246746-12 Client ID: DUP Sample						
Solids, Total	81.1	79.8	%	2		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2247865**Project Number:** 200.00135.006**Report Date:** 09/12/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2247865-01A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2247865-01B	Vial water preserved	A	NA		3.7	Y	Absent	03-SEP-22 03:55	PA-8260HLW(14)
L2247865-01C	Vial water preserved	A	NA		3.7	Y	Absent	03-SEP-22 06:26	PA-8260HLW(14)
L2247865-01D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2247865-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2247865-02B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2247865-03A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2247865-03B	Vial water preserved	A	NA		3.7	Y	Absent	03-SEP-22 03:55	PA-8260HLW(14)
L2247865-03C	Vial water preserved	A	NA		3.7	Y	Absent	03-SEP-22 03:55	PA-8260HLW(14)
L2247865-03D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2247865-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2247865-04B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2247865-05A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2247865-05B	Vial water preserved	A	NA		3.7	Y	Absent	03-SEP-22 03:55	PA-8260HLW(14)
L2247865-05C	Vial water preserved	A	NA		3.7	Y	Absent	03-SEP-22 03:55	PA-8260HLW(14)
L2247865-05D	Plastic 120ml unpreserved	A	NA		3.7	Y	Absent		TS(7)
L2247865-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2247865-06B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2247865  
**Report Date:** 09/12/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2247865

**Project Number:** 200.00135.006

**Report Date:** 09/12/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







## ANALYTICAL REPORT

Lab Number:	L2249446
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/19/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2249446-01	302-AP05-C1-VOC	SOIL	PHILADELPHIA, PA	09/12/22 10:00	09/12/22
L2249446-02	302-AP05-C1-COMP	SOIL	PHILADELPHIA, PA	09/12/22 10:00	09/12/22
L2249446-03	302-AQ04-C1-VOC	SOIL	PHILADELPHIA, PA	09/12/22 12:00	09/12/22
L2249446-04	302-AQ04-C1-COMP	SOIL	PHILADELPHIA, PA	09/12/22 12:00	09/12/22
L2249446-05	302-AQ04-C2-VOC	SOIL	PHILADELPHIA, PA	09/12/22 12:30	09/12/22
L2249446-06	302-AQ04-C2-COMP	SOIL	PHILADELPHIA, PA	09/12/22 12:30	09/12/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 09/19/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-01  
 Client ID: 302-AP05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 10:00  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 18:13  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00028	J	mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-03  
 Client ID: 302-AQ04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 12:00  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 18:39  
 Analyst: AJK  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	136	Q	70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	106		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-05  
 Client ID: 302-AQ04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 12:30  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 19:05  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 14:17  
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05 Batch: WG1688436-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1688436-3 WG1688436-4								
Methyl tert butyl ether	99		93		66-130	6		30
Benzene	95		89		70-130	7		30
1,2-Dichloroethane	93		89		70-130	4		30
Toluene	91		89		70-130	2		30
1,2-Dibromoethane	95		93		70-130	2		30
Ethylbenzene	95		92		70-130	3		30
p/m-Xylene	94		89		70-130	5		30
o-Xylene	93		90		70-130	3		30
Isopropylbenzene	94		90		70-130	4		30
1,3,5-Trimethylbenzene	97		94		70-130	3		30
1,2,4-Trimethylbenzene	96		92		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	113		111		70-130
Toluene-d8	108		108		70-130
4-Bromofluorobenzene	100		102		70-130
Dibromofluoromethane	99		97		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-02  
 Client ID: 302-AP05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 10:00  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 13:05  
 Analyst: IM  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 09/17/22 05:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.019	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	87		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-04  
 Client ID: 302-AQ04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 12:00  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 13:29  
 Analyst: IM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/17/22 05:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	90		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-06  
 Client ID: 302-AQ04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 12:30  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 13:52  
 Analyst: IM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/17/22 05:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	95		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/19/22 11:55  
Analyst: IM

Extraction Method: EPA 3546  
Extraction Date: 09/16/22 18:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1688554-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	92		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1688554-2 WG1688554-3								
Naphthalene	64		79		40-140	21		50
Fluorene	79		89		40-140	12		50
Phenanthrene	79		86		40-140	8		50
Anthracene	78		87		40-140	11		50
Pyrene	89		89		35-142	0		50
Benzo(a)anthracene	78		87		40-140	11		50
Chrysene	77		84		40-140	9		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	77		82		40-140	6		50
Benzo(ghi)perylene	77		84		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	93		122	Q	23-120
2-Fluorobiphenyl	65		80		30-120
4-Terphenyl-d14	80		82		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-02  
 Client ID: 302-AP05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 10:00  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.46		mg/kg	2.13	0.114	1	09/13/22 17:10	09/19/22 09:58	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249446

**Project Number:** 200.00135.006

**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-04

Date Collected: 09/12/22 12:00

Client ID: 302-AQ04-C1-COMP

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.30		mg/kg	2.22	0.119	1	09/13/22 17:10	09/19/22 10:03	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

**SAMPLE RESULTS**

Lab ID: L2249446-06  
 Client ID: 302-AQ04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/12/22 12:30  
 Date Received: 09/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	0.960	J	mg/kg	2.24	0.120	1	09/13/22 17:10	09/19/22 12:04	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2249446

Project Number: 200.00135.006

Report Date: 09/19/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1686803-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/13/22 17:10	09/19/22 09:49	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249446

**Project Number:** 200.00135.006

**Report Date:** 09/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1686803-2 SRM Lot Number: D113-540								
Lead, Total	96		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06    QC Batch ID: WG1686803-3    QC Sample: L2246445-09    Client ID: MS Sample												
Lead, Total	122	54.4	151	53	Q	-	-		75-125	-		20

# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2249446

Project Number: 200.00135.006

Report Date: 09/19/22

## SAMPLE RESULTS

Lab ID: L2249446-01

Date Collected: 09/12/22 10:00

Client ID: 302-AP05-C1-VOC

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	09/13/22 10:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249446**Project Number:** 200.00135.006**Report Date:** 09/19/22**SAMPLE RESULTS**

Lab ID: L2249446-02

Date Collected: 09/12/22 10:00

Client ID: 302-AP05-C1-COMP

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.4		%	0.100	NA	1	-	09/13/22 10:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249446**Project Number:** 200.00135.006**Report Date:** 09/19/22**SAMPLE RESULTS**

Lab ID: L2249446-03

Date Collected: 09/12/22 12:00

Client ID: 302-AQ04-C1-VOC

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	77.6		%	0.100	NA	1	-	09/13/22 10:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249446**Project Number:** 200.00135.006**Report Date:** 09/19/22**SAMPLE RESULTS**

Lab ID: L2249446-04

Date Collected: 09/12/22 12:00

Client ID: 302-AQ04-C1-COMP

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	09/13/22 10:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249446**Project Number:** 200.00135.006**Report Date:** 09/19/22**SAMPLE RESULTS**

Lab ID: L2249446-05

Date Collected: 09/12/22 12:30

Client ID: 302-AQ04-C2-VOC

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	09/13/22 10:02	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2249446

Project Number: 200.00135.006

Report Date: 09/19/22

## SAMPLE RESULTS

Lab ID: L2249446-06

Date Collected: 09/12/22 12:30

Client ID: 302-AQ04-C2-COMP

Date Received: 09/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.5		%	0.100	NA	1	-	09/13/22 10:02	121,2540G	RI





## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2249446

**Report Date:** 09/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1686600-1 QC Sample: L2249435-01 Client ID: DUP Sample						
Solids, Total	72.1	72.7	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249446**Project Number:** 200.00135.006**Report Date:** 09/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2249446-01A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2249446-01B	Vial water preserved	A	NA		4.6	Y	Absent	13-SEP-22 06:46	PA-8260HLW(14)
L2249446-01C	Vial water preserved	A	NA		4.6	Y	Absent	13-SEP-22 06:46	PA-8260HLW(14)
L2249446-01D	Plastic 120ml unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2249446-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2249446-02B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2249446-03A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2249446-03B	Vial water preserved	A	NA		4.6	Y	Absent	13-SEP-22 06:46	PA-8260HLW(14)
L2249446-03C	Vial water preserved	A	NA		4.6	Y	Absent	13-SEP-22 06:46	PA-8260HLW(14)
L2249446-03D	Plastic 120ml unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2249446-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2249446-04B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2249446-05A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2249446-05B	Vial water preserved	A	NA		4.6	Y	Absent	13-SEP-22 06:46	PA-8260HLW(14)
L2249446-05C	Vial water preserved	A	NA		4.6	Y	Absent	13-SEP-22 06:46	PA-8260HLW(14)
L2249446-05D	Plastic 120ml unpreserved	A	NA		4.6	Y	Absent		TS(7)
L2249446-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2249446-06B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249446  
**Report Date:** 09/19/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249446

**Project Number:** 200.00135.006

**Report Date:** 09/19/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 1

Westborough, MA  
 TEL: 508-698-9220  
 FAX: 508-698-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1761~~ ~~1763~~ 18559

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 9/13/22

ALPHA Job #: 02249446

### Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client info PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

### ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES			
		Date	Time																			
49446-D1	302-AP05-C1-VOC	9/12	1000	S	an	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	02 302-AP05-C1-COMP		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	03 302-AG04-C1-VOC		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	04 302-AG04-C1-COMP		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	05 302-AG04-C2-VOL		1230			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	06 302-AG04-C2-COMP		1230			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/12/22	<i>[Signature]</i>	9/12/22 1515
<i>[Signature]</i>	9/12/22/800	<i>[Signature]</i>	9-12-1800
<i>[Signature]</i>	9-12-2100	<i>[Signature]</i>	9-12-22-2100
<i>[Signature]</i>	9-12-22	<i>[Signature]</i>	9/12 125 2250

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

Lab Number:	L2249766
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/20/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2249766-01	302-AR04-C1-VOC	SOIL	PHILADELPHIA, PA	09/13/22 12:00	09/13/22
L2249766-02	302-AR04-C1-COMP	SOIL	PHILADELPHIA, PA	09/13/22 12:00	09/13/22
L2249766-03	302-AR04-C2-VOC	SOIL	PHILADELPHIA, PA	09/13/22 12:30	09/13/22
L2249766-04	302-AR04-C2-COMP	SOIL	PHILADELPHIA, PA	09/13/22 12:30	09/13/22
L2249766-05	302-AS06-C1-VOC	SOIL	PHILADELPHIA, PA	09/13/22 13:00	09/13/22
L2249766-06	302-AS06-C1-COMP	SOIL	PHILADELPHIA, PA	09/13/22 13:00	09/13/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: *Melissa Sturgis* Melissa Sturgis

Title: Technical Director/Representative

Date: 09/20/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-01  
 Client ID: 302-AR04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 12:00  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 19:32  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-03  
 Client ID: 302-AR04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 12:30  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 19:58  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-05  
 Client ID: 302-AS06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 13:00  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 20:24  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00081	0.00021	1
Toluene	ND		mg/kg	0.00081	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00024	1
Ethylbenzene	ND		mg/kg	0.00081	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00045	1
o-Xylene	ND		mg/kg	0.00081	0.00023	1
Xylenes, Total	ND		mg/kg	0.00081	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00081	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 09/15/22 14:17  
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05 Batch: WG1688436-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2249766

Project Number: 200.00135.006

Report Date: 09/20/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1688436-3 WG1688436-4								
Methyl tert butyl ether	99		93		66-130	6		30
Benzene	95		89		70-130	7		30
1,2-Dichloroethane	93		89		70-130	4		30
Toluene	91		89		70-130	2		30
1,2-Dibromoethane	95		93		70-130	2		30
Ethylbenzene	95		92		70-130	3		30
p/m-Xylene	94		89		70-130	5		30
o-Xylene	93		90		70-130	3		30
Isopropylbenzene	94		90		70-130	4		30
1,3,5-Trimethylbenzene	97		94		70-130	3		30
1,2,4-Trimethylbenzene	96		92		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	113		111		70-130
Toluene-d8	108		108		70-130
4-Bromofluorobenzene	100		102		70-130
Dibromofluoromethane	99		97		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-02  
 Client ID: 302-AR04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 12:00  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 20:31  
 Analyst: SLR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/18/22 07:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.10	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.30		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.26		mg/kg	0.12	0.022	1
Chrysene	0.22		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.32		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.24		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	117		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-04  
 Client ID: 302-AR04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 12:30  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 20:54  
 Analyst: SLR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/18/22 07:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-06  
 Client ID: 302-AS06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 13:00  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 21:18  
 Analyst: SLR  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/18/22 07:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/19/22 15:02  
Analyst: IM

Extraction Method: EPA 3546  
Extraction Date: 09/18/22 07:17

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1688851-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	85		18-120



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1688851-2 WG1688851-3								
Naphthalene	80		77		40-140	4		50
Fluorene	83		83		40-140	0		50
Phenanthrene	81		81		40-140	0		50
Anthracene	82		83		40-140	1		50
Pyrene	85		86		35-142	1		50
Benzo(a)anthracene	82		84		40-140	2		50
Chrysene	78		81		40-140	4		50
Benzo(b)fluoranthene	74		82		40-140	10		50
Benzo(a)pyrene	70		82		40-140	16		50
Benzo(ghi)perylene	82		84		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	120		115		23-120
2-Fluorobiphenyl	75		74		30-120
4-Terphenyl-d14	75		74		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249766

**Project Number:** 200.00135.006

**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-02

Date Collected: 09/13/22 12:00

Client ID: 302-AR04-C1-COMP

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	86.6		mg/kg	2.35	0.126	1	09/15/22 08:45	09/16/22 09:15	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249766

**Project Number:** 200.00135.006

**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-04

Date Collected: 09/13/22 12:30

Client ID: 302-AR04-C2-COMP

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.52		mg/kg	2.37	0.127	1	09/15/22 08:45	09/16/22 09:21	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249766

**Project Number:** 200.00135.006

**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-06

Date Collected: 09/13/22 13:00

Client ID: 302-AS06-C1-COMP

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.18		mg/kg	2.38	0.128	1	09/15/22 08:45	09/16/22 09:26	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2249766

Project Number: 200.00135.006

Report Date: 09/20/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1687681-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/15/22 08:45	09/16/22 09:05	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2249766

**Project Number:** 200.00135.006

**Report Date:** 09/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1687681-2 SRM Lot Number: D113-540								
Lead, Total	80		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06    QC Batch ID: WG1687681-3    QC Sample: L2200081-100    Client ID: MS Sample												
Lead, Total	3.26	40.1	31.7	71	Q	-	-		75-125	-		20





# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249766**Project Number:** 200.00135.006**Report Date:** 09/20/22**SAMPLE RESULTS**

Lab ID: L2249766-01

Date Collected: 09/13/22 12:00

Client ID: 302-AR04-C1-VOC

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	09/15/22 09:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2249766

Project Number: 200.00135.006

Report Date: 09/20/22

## SAMPLE RESULTS

Lab ID: L2249766-02

Date Collected: 09/13/22 12:00

Client ID: 302-AR04-C1-COMP

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	09/15/22 09:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2249766

Project Number: 200.00135.006

Report Date: 09/20/22

## SAMPLE RESULTS

Lab ID: L2249766-03

Date Collected: 09/13/22 12:30

Client ID: 302-AR04-C2-VOC

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	09/15/22 09:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249766**Project Number:** 200.00135.006**Report Date:** 09/20/22**SAMPLE RESULTS**

Lab ID: L2249766-04

Date Collected: 09/13/22 12:30

Client ID: 302-AR04-C2-COMP

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.3		%	0.100	NA	1	-	09/15/22 09:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2249766

Project Number: 200.00135.006

Report Date: 09/20/22

## SAMPLE RESULTS

Lab ID: L2249766-05

Date Collected: 09/13/22 13:00

Client ID: 302-AS06-C1-VOC

Date Received: 09/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.4		%	0.100	NA	1	-	09/15/22 09:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

**SAMPLE RESULTS**

Lab ID: L2249766-06  
 Client ID: 302-AS06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/13/22 13:00  
 Date Received: 09/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.6		%	0.100	NA	1	-	09/15/22 09:09	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2249766

**Report Date:** 09/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1687688-1 QC Sample: L2249766-01 Client ID: 302-AR04-C1-VOC						
Solids, Total	84.2	81.8	%	3		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2249766**Project Number:** 200.00135.006**Report Date:** 09/20/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2249766-01A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2249766-01B	Vial water preserved	A	NA		3.7	Y	Absent	14-SEP-22 22:55	PA-8260HLW(14)
L2249766-01C	Vial water preserved	A	NA		3.7	Y	Absent	14-SEP-22 22:55	PA-8260HLW(14)
L2249766-01D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)
L2249766-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2249766-02B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2249766-03A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2249766-03B	Vial water preserved	A	NA		3.7	Y	Absent	14-SEP-22 22:55	PA-8260HLW(14)
L2249766-03C	Vial water preserved	A	NA		3.7	Y	Absent	14-SEP-22 22:55	PA-8260HLW(14)
L2249766-03D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)
L2249766-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2249766-04B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)
L2249766-05A	Vial MeOH preserved	A	NA		3.7	Y	Absent		PA-8260HLW(14)
L2249766-05B	Vial water preserved	A	NA		3.7	Y	Absent	14-SEP-22 22:55	PA-8260HLW(14)
L2249766-05C	Vial water preserved	A	NA		3.7	Y	Absent	14-SEP-22 22:55	PA-8260HLW(14)
L2249766-05D	Plastic 2oz unpreserved for TS	A	NA		3.7	Y	Absent		TS(7)
L2249766-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.7	Y	Absent		PB-TI(180)
L2249766-06B	Glass 120ml/4oz unpreserved	A	NA		3.7	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2249766  
**Report Date:** 09/20/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 1



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12161~~ ~~17883~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/14/22

ALPHA Job #: L2249766

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

Sample ID	VOCs (8260)	SVOCs (8270)	Lead															
49766-01	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
02	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
03	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
04	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
05	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
06	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

**TOTAL # BOTTLES**

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
49766-01	302-AR04-C1-VOC	9/13	1200	S	al
02	302-AR04-C1-COMP		1200		
03	302-AR04-C2-VOC		1250		
04	302-AR04-C2-COMP		1230		
05	302-AS06-C1-VOC		1300		
06	302-AS06-C1-COMP		1300		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/13/22 1510	<i>[Signature]</i>	9/13/22 1510
<i>[Signature]</i>	9/13/22 1510	<i>[Signature]</i>	9/13/22 1510

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2250151
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/21/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2250151-01	302-AT05-C1-VOC	SOIL	PHILADELPHIA, PA	09/14/22 11:00	09/14/22
L2250151-02	302-AT05-C1-COMP	SOIL	PHILADELPHIA, PA	09/14/22 11:00	09/14/22
L2250151-03	302-AU05-C1-VOC	SOIL	PHILADELPHIA, PA	09/14/22 11:30	09/14/22
L2250151-04	302-AU05-C1-COMP	SOIL	PHILADELPHIA, PA	09/14/22 11:30	09/14/22
L2250151-05	302-AV05-C1-VOC	SOIL	PHILADELPHIA, PA	09/14/22 12:00	09/14/22
L2250151-06	302-AV05-C1-COMP	SOIL	PHILADELPHIA, PA	09/14/22 12:00	09/14/22
L2250151-07	302-AV05-C2-VOC	SOIL	PHILADELPHIA, PA	09/14/22 13:00	09/14/22
L2250151-08	302-AV05-C2-COMP	SOIL	PHILADELPHIA, PA	09/14/22 13:00	09/14/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**Case Narrative (continued)**

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 09/21/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-01  
 Client ID: 302-AT05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 11:00  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 09:35  
 Analyst: JC  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	138	Q	70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	116		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-03  
 Client ID: 302-AU05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 11:30  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 10:02  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	144	Q	70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	115		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-05  
 Client ID: 302-AV05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 12:00  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 10:28  
 Analyst: JC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	ND		mg/kg	0.00084	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00084	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00084	0.00024	1
Xylenes, Total	ND		mg/kg	0.00084	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	144	Q	70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	116		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-07  
 Client ID: 302-AV05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 13:00  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 10:55  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	147	Q	70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	117		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/19/22 08:58  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07 Batch: WG1689832-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	108		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2250151

Project Number: 200.00135.006

Report Date: 09/21/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07 Batch: WG1689832-3 WG1689832-4								
Methyl tert butyl ether	116		117		66-130	1		30
Benzene	103		105		70-130	2		30
1,2-Dichloroethane	125		121		70-130	3		30
Toluene	102		103		70-130	1		30
1,2-Dibromoethane	100		99		70-130	1		30
Ethylbenzene	111		109		70-130	2		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	107		107		70-130	0		30
Isopropylbenzene	99		102		70-130	3		30
1,3,5-Trimethylbenzene	102		105		70-130	3		30
1,2,4-Trimethylbenzene	102		106		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	128		126		70-130
Toluene-d8	106		107		70-130
4-Bromofluorobenzene	105		108		70-130
Dibromofluoromethane	104		104		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-02  
 Client ID: 302-AT05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 11:00  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/21/22 00:15  
 Analyst: IM  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 09/19/22 01:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-04  
 Client ID: 302-AU05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 11:30  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/20/22 22:18  
 Analyst: IM  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/19/22 01:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-06  
 Client ID: 302-AV05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 12:00  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/21/22 03:23  
 Analyst: IM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/19/22 01:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.086	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.28		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.021	1
Chrysene	0.14		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.17		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.13	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.084	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	150	Q	23-120
2-Fluorobiphenyl	99		30-120
4-Terphenyl-d14	99		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-08  
 Client ID: 302-AV05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/14/22 13:00  
 Date Received: 09/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/21/22 01:02  
 Analyst: IM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/19/22 01:38

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	131	Q	23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	99		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 09/20/22 06:04  
 Analyst: MG

Extraction Method: EPA 3546  
 Extraction Date: 09/19/22 01:36

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08 Batch: WG1688987-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		25-120
Phenol-d6	73		10-120
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	62		30-120
2,4,6-Tribromophenol	82		10-136
4-Terphenyl-d14	72		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08 Batch: WG1688987-2 WG1688987-3								
Naphthalene	65		70		40-140	7		50
Fluorene	68		74		40-140	8		50
Phenanthrene	66		71		40-140	7		50
Anthracene	68		73		40-140	7		50
Pyrene	70		74		35-142	6		50
Benzo(a)anthracene	68		73		40-140	7		50
Chrysene	67		74		40-140	10		50
Benzo(b)fluoranthene	67		74		40-140	10		50
Benzo(a)pyrene	70		78		40-140	11		50
Benzo(ghi)perylene	70		76		40-140	8		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	79		87		25-120
Phenol-d6	81		88		10-120
Nitrobenzene-d5	85		92		23-120
2-Fluorobiphenyl	68		73		30-120
2,4,6-Tribromophenol	87		90		10-136
4-Terphenyl-d14	76		79		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250151

**Project Number:** 200.00135.006

**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-02

Date Collected: 09/14/22 11:00

Client ID: 302-AT05-C1-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.27		mg/kg	2.49	0.133	1	09/16/22 10:50	09/20/22 13:38	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250151

**Project Number:** 200.00135.006

**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-04

Date Collected: 09/14/22 11:30

Client ID: 302-AU05-C1-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.27		mg/kg	2.42	0.130	1	09/16/22 10:50	09/20/22 13:42	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250151

**Project Number:** 200.00135.006

**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-06

Date Collected: 09/14/22 12:00

Client ID: 302-AV05-C1-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	89.9		mg/kg	2.21	0.118	1	09/16/22 10:50	09/20/22 14:03	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250151

**Project Number:** 200.00135.006

**Report Date:** 09/21/22

**SAMPLE RESULTS**

Lab ID: L2250151-08

Date Collected: 09/14/22 13:00

Client ID: 302-AV05-C2-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.01		mg/kg	2.16	0.116	1	09/16/22 10:50	09/20/22 14:07	EPA 3050B	1,6010D	JF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250151

Project Number: 200.00135.006

Report Date: 09/21/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08 Batch: WG1688166-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/16/22 10:50	09/20/22 10:27	1,6010D	JF

### Prep Information

Digestion Method: EPA 3050B





## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250151

**Project Number:** 200.00135.006

**Report Date:** 09/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 Batch: WG1688166-2 SRM Lot Number: D113-540								
Lead, Total	94		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250151

**Project Number:** 200.00135.006

**Report Date:** 09/21/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MS Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08    QC Batch ID: WG1688166-3    QC Sample: L2250180-01    Client ID: MS Sample												
Lead, Total	720	46.8	360	0	Q	-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2250151

Report Date: 09/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1688166-4 QC Sample: L2250180-01 Client ID: DUP Sample						
Lead, Total	720	338	mg/kg	72	Q	20

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08 QC Batch ID: WG1688166-6 QC Sample: L2250180-01 Client ID: DUP Sample						
Lead, Total	720	754	mg/kg	5		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250151**Project Number:** 200.00135.006**Report Date:** 09/21/22**SAMPLE RESULTS**

Lab ID: L2250151-01

Date Collected: 09/14/22 11:00

Client ID: 302-AT05-C1-VOC

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.0		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250151**Project Number:** 200.00135.006**Report Date:** 09/21/22**SAMPLE RESULTS**

Lab ID: L2250151-02

Date Collected: 09/14/22 11:00

Client ID: 302-AT05-C1-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	75.6		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

**SAMPLE RESULTS**

**Lab ID:** L2250151-03  
**Client ID:** 302-AU05-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/14/22 11:30  
**Date Received:** 09/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250151**Project Number:** 200.00135.006**Report Date:** 09/21/22**SAMPLE RESULTS**

Lab ID: L2250151-04

Date Collected: 09/14/22 11:30

Client ID: 302-AU05-C1-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250151**Project Number:** 200.00135.006**Report Date:** 09/21/22**SAMPLE RESULTS**

Lab ID: L2250151-05

Date Collected: 09/14/22 12:00

Client ID: 302-AV05-C1-VOC

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250151**Project Number:** 200.00135.006**Report Date:** 09/21/22**SAMPLE RESULTS**

Lab ID: L2250151-06

Date Collected: 09/14/22 12:00

Client ID: 302-AV05-C1-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.7		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250151**Project Number:** 200.00135.006**Report Date:** 09/21/22**SAMPLE RESULTS**

Lab ID: L2250151-07

Date Collected: 09/14/22 13:00

Client ID: 302-AV05-C2-VOC

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250151

Project Number: 200.00135.006

Report Date: 09/21/22

## SAMPLE RESULTS

Lab ID: L2250151-08

Date Collected: 09/14/22 13:00

Client ID: 302-AV05-C2-COMP

Date Received: 09/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	09/15/22 13:19	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2250151

Report Date: 09/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1687934-1 QC Sample: L2250151-01 Client ID: 302-AT05-C1-VOC						
Solids, Total	75.0	75.3	%	0		20

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09212215:40  
**Lab Number:** L2250151  
**Report Date:** 09/21/22

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2250151-01A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2250151-01B	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-01C	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-01D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2250151-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2250151-02B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2250151-03A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2250151-03B	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-03C	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-03D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2250151-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2250151-04B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2250151-05A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2250151-05B	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-05C	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-05D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2250151-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2250151-06B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2250151-07A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2250151-07B	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-07C	Vial water preserved	A	NA		4.6	Y	Absent	15-SEP-22 13:10	PA-8260HLW(14)
L2250151-07D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2250151-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09212215:40  
**Lab Number:** L2250151  
**Report Date:** 09/21/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2250151-08B	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		TS(7),PA-PAH(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250151  
**Report Date:** 09/21/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE / OF

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/15/22

ALPHA Job #: L2250151

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Other Analytes										TOTAL # BOTTLES				
20151-01	302-AT05-C1-VOC	9/14	1100	S	an	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-02	302-AT05-C1-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
+03	302-AV05-C1-VOC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AV05-C1-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AV05-C1-VOC		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AV05-C1-COMP		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AV05-C2-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AV05-C2-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
20151-01	302-AT05-C1-VOC	9/14	1100	S	an
-02	302-AT05-C1-COMP		1100		
+03	302-AV05-C1-VOC		1130		
-04	302-AV05-C1-COMP		1130		
-05	302-AV05-C1-VOC		1200		
-06	302-AV05-C1-COMP		1200		
-07	302-AV05-C2-VOC		1300		
-08	302-AV05-C2-COMP		1300		

Container Type	-	-	g	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/14/22 1500	Fin AAL	9/14/22 15:05
<i>[Signature]</i>	9/15/22 1300	<i>[Signature]</i>	9/14/22 1500
<i>[Signature]</i>	9/14/22 2100	<i>[Signature]</i>	9/14/22 2100
<i>[Signature]</i>	9/15/22 0050	<i>[Signature]</i>	9/15/22 23:15

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO. 0149(140) Rev. 5-2011-12



## ANALYTICAL REPORT

Lab Number:	L2250581
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/22/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2250581-01	302-AW05-C1-VOC	SOIL	PHILADELPHIA, PA	09/15/22 12:00	09/15/22
L2250581-02	302-AW05-C1-COMP	SOIL	PHILADELPHIA, PA	09/15/22 12:00	09/15/22
L2250581-03	302-AX06-C1-VOC	SOIL	PHILADELPHIA, PA	09/15/22 12:30	09/15/22
L2250581-04	302-AX06-C1-COMP	SOIL	PHILADELPHIA, PA	09/15/22 12:30	09/15/22
L2250581-05	302-AY07-C1-VOC	SOIL	PHILADELPHIA, PA	09/15/22 13:00	09/15/22
L2250581-06	302-AY07-C1-COMP	SOIL	PHILADELPHIA, PA	09/15/22 13:00	09/15/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Total Metals

L2250581-02, -04 and -06: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 09/22/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-01  
 Client ID: 302-AW05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 12:00  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 08:49  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-03  
 Client ID: 302-AX06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 12:30  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 14:00  
 Analyst: JC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	154	Q	70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	119		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-05  
 Client ID: 302-AY07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 13:00  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 14:26  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	165	Q	70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	122		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/19/22 08:58  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05 Batch: WG1689832-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	108		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/22/22 08:25  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1690768-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	91		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2250581

Project Number: 200.00135.006

Report Date: 09/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05 Batch: WG1689832-3 WG1689832-4								
Methyl tert butyl ether	116		117		66-130	1		30
Benzene	103		105		70-130	2		30
1,2-Dichloroethane	125		121		70-130	3		30
Toluene	102		103		70-130	1		30
1,2-Dibromoethane	100		99		70-130	1		30
Ethylbenzene	111		109		70-130	2		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	107		107		70-130	0		30
Isopropylbenzene	99		102		70-130	3		30
1,3,5-Trimethylbenzene	102		105		70-130	3		30
1,2,4-Trimethylbenzene	102		106		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	128		126		70-130
Toluene-d8	106		107		70-130
4-Bromofluorobenzene	105		108		70-130
Dibromofluoromethane	104		104		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1690768-3 WG1690768-4								
Methyl tert butyl ether	77		77		66-130	0		30
Benzene	81		83		70-130	2		30
1,2-Dichloroethane	76		79		70-130	4		30
Toluene	75		78		70-130	4		30
1,2-Dibromoethane	79		81		70-130	3		30
Ethylbenzene	80		84		70-130	5		30
p/m-Xylene	79		83		70-130	5		30
o-Xylene	80		83		70-130	4		30
Isopropylbenzene	82		86		70-130	5		30
1,3,5-Trimethylbenzene	82		88		70-130	7		30
1,2,4-Trimethylbenzene	81		87		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	94		94		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	101		104		70-130
Dibromofluoromethane	95		93		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-02  
 Client ID: 302-AW05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 12:00  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 19:20  
 Analyst: SLR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/16/22 18:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-04  
 Client ID: 302-AX06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 12:30  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 19:44  
 Analyst: SLR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/16/22 18:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-06  
 Client ID: 302-AY07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 13:00  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/19/22 20:07  
 Analyst: SLR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/16/22 18:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.035	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.048	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.036	J	mg/kg	0.12	0.022	1
Chrysene	0.035	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.045	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.023	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/19/22 11:55  
Analyst: IM

Extraction Method: EPA 3546  
Extraction Date: 09/16/22 18:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06 Batch: WG1688554-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	92		18-120



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2250581

Report Date: 09/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06 Batch: WG1688554-2 WG1688554-3								
Naphthalene	64		79		40-140	21		50
Fluorene	79		89		40-140	12		50
Phenanthrene	79		86		40-140	8		50
Anthracene	78		87		40-140	11		50
Pyrene	89		89		35-142	0		50
Benzo(a)anthracene	78		87		40-140	11		50
Chrysene	77		84		40-140	9		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	77		82		40-140	6		50
Benzo(ghi)perylene	77		84		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	93		122	Q	23-120
2-Fluorobiphenyl	65		80		30-120
4-Terphenyl-d14	80		82		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250581

**Project Number:** 200.00135.006

**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-02

Date Collected: 09/15/22 12:00

Client ID: 302-AW05-C1-COMP

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.22		mg/kg	4.54	0.243	2	09/17/22 08:30	09/20/22 13:15	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250581

**Project Number:** 200.00135.006

**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-04

Date Collected: 09/15/22 12:30

Client ID: 302-AX06-C1-COMP

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.62	J	mg/kg	4.86	0.261	2	09/17/22 08:30	09/20/22 13:20	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-06  
 Client ID: 302-AY07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/15/22 13:00  
 Date Received: 09/15/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.42		mg/kg	4.66	0.250	2	09/17/22 08:30	09/20/22 13:24	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250581

Project Number: 200.00135.006

Report Date: 09/22/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06 Batch: WG1688668-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/17/22 08:30	09/20/22 11:58	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 Batch: WG1688668-2 SRM Lot Number: D113-540								
Lead, Total	96		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06    QC Batch ID: WG1688668-3    QC Sample: L2250312-01    Client ID: MS Sample												
Lead, Total	24.6	48.1	56.7	67	Q	-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2250581

**Report Date:** 09/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06 QC Batch ID: WG1688668-4 QC Sample: L2250312-01 Client ID: DUP Sample						
Lead, Total	24.6	21.7	mg/kg	13		20

# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2250581

Project Number: 200.00135.006

Report Date: 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-01

Date Collected: 09/15/22 12:00

Client ID: 302-AW05-C1-VOC

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	09/16/22 20:33	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250581

Project Number: 200.00135.006

Report Date: 09/22/22

**SAMPLE RESULTS**

Lab ID: L2250581-02

Date Collected: 09/15/22 12:00

Client ID: 302-AW05-C1-COMP

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.9		%	0.100	NA	1	-	09/17/22 12:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250581**Project Number:** 200.00135.006**Report Date:** 09/22/22**SAMPLE RESULTS**

Lab ID: L2250581-03

Date Collected: 09/15/22 12:30

Client ID: 302-AX06-C1-VOC

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.9		%	0.100	NA	1	-	09/16/22 20:33	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250581**Project Number:** 200.00135.006**Report Date:** 09/22/22**SAMPLE RESULTS**

Lab ID: L2250581-04

Date Collected: 09/15/22 12:30

Client ID: 302-AX06-C1-COMP

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	09/17/22 12:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250581**Project Number:** 200.00135.006**Report Date:** 09/22/22**SAMPLE RESULTS**

Lab ID: L2250581-05

Date Collected: 09/15/22 13:00

Client ID: 302-AY07-C1-VOC

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	09/16/22 20:33	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250581

Project Number: 200.00135.006

Report Date: 09/22/22

## SAMPLE RESULTS

Lab ID: L2250581-06

Date Collected: 09/15/22 13:00

Client ID: 302-AY07-C1-COMP

Date Received: 09/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	09/17/22 12:39	121,2540G	RI





## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2250581

**Report Date:** 09/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03,05 QC Batch ID: WG1688570-1 QC Sample: L2250654-01 Client ID: DUP Sample						
Solids, Total	76.2	75.1	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04,06 QC Batch ID: WG1688754-1 QC Sample: L2249710-01 Client ID: DUP Sample						
Solids, Total	66.8	66.6	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250581**Project Number:** 200.00135.006**Report Date:** 09/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2250581-01A	Vial MeOH preserved	A	NA		4.5	Y	Absent		PA-8260HLW(14)
L2250581-01B	Vial water preserved	A	NA		4.5	Y	Absent	16-SEP-22 17:11	PA-8260HLW(14)
L2250581-01C	Vial water preserved	A	NA		4.5	Y	Absent	16-SEP-22 17:11	PA-8260HLW(14)
L2250581-01D	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2250581-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		PB-TI(180)
L2250581-02B	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2250581-03A	Vial MeOH preserved	A	NA		4.5	Y	Absent		PA-8260HLW(14)
L2250581-03B	Vial water preserved	A	NA		4.5	Y	Absent	16-SEP-22 17:11	PA-8260HLW(14)
L2250581-03C	Vial water preserved	A	NA		4.5	Y	Absent	16-SEP-22 17:11	PA-8260HLW(14)
L2250581-03D	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2250581-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		PB-TI(180)
L2250581-04B	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		TS(7),PA-PAH(14)
L2250581-05A	Vial MeOH preserved	A	NA		4.5	Y	Absent		PA-8260HLW(14)
L2250581-05B	Vial water preserved	A	NA		4.5	Y	Absent	16-SEP-22 17:11	PA-8260HLW(14)
L2250581-05C	Vial water preserved	A	NA		4.5	Y	Absent	16-SEP-22 17:11	PA-8260HLW(14)
L2250581-05D	Plastic 2oz unpreserved for TS	A	NA		4.5	Y	Absent		TS(7)
L2250581-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.5	Y	Absent		PB-TI(180)
L2250581-06B	Glass 120ml/4oz unpreserved	A	NA		4.5	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250581  
**Report Date:** 09/22/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

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## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12161~~ ~~17883~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/16/22

ALPHA Job #: L2250581

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES			
		Date	Time																				
50581-01	302-AW05-CI-VOC	9/15	1200	S	a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
02	302-AW05-CI-COMP		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
03	302-AX06-CI-VOC		1250			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
04	302-AX06-CI-COMP		1250			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
05	302-AY07-CI-VOC		1300			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
06	302-AY07-CI-COMP		1300			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
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						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type

G G G - - - - -

Preservative

F A A - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/15/22	<i>[Signature]</i>	9/15/22 1545
<i>[Signature]</i>	9/15/22 100	<i>[Signature]</i>	9/15/22 10:00
<i>[Signature]</i>	9/15/22 2100	<i>[Signature]</i>	9/15/22 2400
<i>[Signature]</i>	9/15/22	<i>[Signature]</i>	9/15/22 2350

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

Lab Number:	L2250829
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/23/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2250829-01	302-BB08-C1-VOC	SOIL	PHILADELPHIA, PA	09/16/22 10:00	09/16/22
L2250829-02	302-BB08-C1-COMP	SOIL	PHILADELPHIA, PA	09/16/22 10:00	09/16/22
L2250829-03	302-BB08-C2-VOC	SOIL	PHILADELPHIA, PA	09/16/22 10:30	09/16/22
L2250829-04	302-BB08-C2-COMP	SOIL	PHILADELPHIA, PA	09/16/22 10:30	09/16/22
L2250829-05	302-BB08-C3-VOC	SOIL	PHILADELPHIA, PA	09/16/22 11:00	09/16/22
L2250829-06	302-BB08-C3-COMP	SOIL	PHILADELPHIA, PA	09/16/22 11:00	09/16/22
L2250829-07	302-BB07-C1-VOC	SOIL	PHILADELPHIA, PA	09/16/22 11:30	09/16/22
L2250829-08	302-BB07-C1-COMP	SOIL	PHILADELPHIA, PA	09/16/22 11:30	09/16/22
L2250829-09	302-BB07-C2-VOC	SOIL	PHILADELPHIA, PA	09/16/22 12:00	09/16/22
L2250829-10	302-BB07-C2-COMP	SOIL	PHILADELPHIA, PA	09/16/22 12:00	09/16/22
L2250829-11	302-BB07-C3-VOC	SOIL	PHILADELPHIA, PA	09/16/22 13:00	09/16/22
L2250829-12	302-BB07-C3-COMP	SOIL	PHILADELPHIA, PA	09/16/22 13:00	09/16/22
L2250829-13	302-BB07-C4-VOC	SOIL	PHILADELPHIA, PA	09/16/22 13:10	09/16/22
L2250829-14	302-BB07-C4-COMP	SOIL	PHILADELPHIA, PA	09/16/22 13:10	09/16/22
L2250829-15	302-BB07-C5-VOC	SOIL	PHILADELPHIA, PA	09/16/22 13:20	09/16/22
L2250829-16	302-BB07-C5-COMP	SOIL	PHILADELPHIA, PA	09/16/22 13:20	09/16/22
L2250829-17	302-BC06-C1-VOC	SOIL	PHILADELPHIA, PA	09/16/22 13:30	09/16/22
L2250829-18	302-BC06-C1-COMP	SOIL	PHILADELPHIA, PA	09/16/22 13:30	09/16/22
L2250829-19	302-BC06-C2-VOC	SOIL	PHILADELPHIA, PA	09/16/22 13:40	09/16/22
L2250829-20	302-BC06-C2-COMP	SOIL	PHILADELPHIA, PA	09/16/22 13:40	09/16/22
L2250829-21	302-BC06-C3-VOC	SOIL	PHILADELPHIA, PA	09/16/22 13:50	09/16/22
L2250829-22	302-BC06-C3-COMP	SOIL	PHILADELPHIA, PA	09/16/22 13:50	09/16/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L2250829-17 through -22: The collection time was specified by the client.

#### Volatile Organics

L2250829-07D: The surrogate recovery is outside the acceptance criteria for toluene-d8 (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2250829-09: Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2250829-09(Low): The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (49%), toluene-d8 (261%), and 4-bromofluorobenzene (234%) due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compounds that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2250829-09(High): The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (62%), toluene-d8 (156%) and 4-bromofluorobenzene (163%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial analysis. The results of both analyses are reported; however, all associated compounds are considered to have a potential bias.

L2250829-11D: The surrogate recovery was outside the method acceptance criteria for dibromofluoromethane (67%) due to interference with the Internal Standard.

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

### Case Narrative (continued)

L2250829-13: The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (65%), toluene-d8 (145%) and 4-bromofluorobenzene (140%). The sample was re-analyzed on a larger dilution. The results of both analyses are reported; however, all associated compounds are considered to have a potential bias.

L2250829-15D2: The surrogate recovery was outside the acceptance criteria for dibromofluoromethane (61%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial analysis. The results of both analyses are reported; however, all associated compounds are considered to have a potential bias.

L2250829-19D2: The surrogate recovery was outside the acceptance criteria for dibromofluoromethane (60%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial analysis. The results of both analyses are reported; however, all associated compounds are considered to have a potential bias.

L2250829-21D2: The surrogate recovery was outside the acceptance criteria for dibromofluoromethane (66%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial analysis. The results of both analyses are reported; however, all associated compounds are considered to have a potential bias.

#### Total Metals

L2250829-02, -04, -06, -08, -10, -12, -14, -16, -18, -20, and -22: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 09/23/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-01  
 Client ID: 302-BB08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 10:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 12:30  
 Analyst: LAC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0028		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0012	0.00033	1
Xylenes, Total	ND		mg/kg	0.0012	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	88		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-03  
 Client ID: 302-BB08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 10:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 12:56  
 Analyst: LAC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00044		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-05  
 Client ID: 302-BB08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 11:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 13:22  
 Analyst: LAC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00080	0.00020	1
Toluene	ND		mg/kg	0.00080	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00023	1
Ethylbenzene	ND		mg/kg	0.00080	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00044	1
o-Xylene	ND		mg/kg	0.00080	0.00023	1
Xylenes, Total	ND		mg/kg	0.00080	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-07 D  
 Client ID: 302-BB07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 11:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 13:48  
 Analyst: LAC  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.22	0.022	2
Benzene	1.0		mg/kg	0.054	0.018	2
1,2-Dichloroethane	ND		mg/kg	0.11	0.028	2
Toluene	3.3		mg/kg	0.11	0.059	2
1,2-Dibromoethane	ND		mg/kg	0.054	0.032	2
Ethylbenzene	4.8		mg/kg	0.11	0.015	2
p/m-Xylene	16.		mg/kg	0.22	0.061	2
o-Xylene	3.6		mg/kg	0.11	0.032	2
Xylenes, Total	20.		mg/kg	0.11	0.032	2
Isopropylbenzene	1.5		mg/kg	0.11	0.012	2
1,3,5-Trimethylbenzene	4.1		mg/kg	0.22	0.021	2
1,2,4-Trimethylbenzene	8.0		mg/kg	0.22	0.036	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	144	Q	70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	74		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-09  
 Client ID: 302-BB07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 12:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 14:15  
 Analyst: LAC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.37	E	mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	1.6	E	mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	1.9	E	mg/kg	0.0010	0.00014	1
p/m-Xylene	4.4	E	mg/kg	0.0020	0.00056	1
o-Xylene	1.8	E	mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.34	E	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.59	E	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	1.1	E	mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	261	Q	70-130
4-Bromofluorobenzene	234	Q	70-130
Dibromofluoromethane	49	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-09  
 Client ID: 302-BB07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 12:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 16:03  
 Analyst: AJK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	6.8		mg/kg	0.027	0.0090	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	20.	E	mg/kg	0.054	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	20.	E	mg/kg	0.054	0.0077	1
p/m-Xylene	64.	E	mg/kg	0.11	0.030	1
o-Xylene	17.		mg/kg	0.054	0.016	1
Xylenes, Total	67.		mg/kg	0.054	0.016	1
Isopropylbenzene	4.3		mg/kg	0.054	0.0059	1
1,3,5-Trimethylbenzene	8.2		mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	17.	E	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	156	Q	70-130
4-Bromofluorobenzene	163	Q	70-130
Dibromofluoromethane	62	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-09 D  
 Client ID: 302-BB07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 12:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 21:55  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	1.1	0.11	10
Benzene	7.3		mg/kg	0.27	0.090	10
1,2-Dichloroethane	ND		mg/kg	0.54	0.14	10
Toluene	15.		mg/kg	0.54	0.30	10
1,2-Dibromoethane	ND		mg/kg	0.27	0.16	10
Ethylbenzene	16.		mg/kg	0.54	0.077	10
p/m-Xylene	50.		mg/kg	1.1	0.30	10
o-Xylene	14.		mg/kg	0.54	0.16	10
Xylenes, Total	64.		mg/kg	0.54	0.16	10
Isopropylbenzene	3.5		mg/kg	0.54	0.059	10
1,3,5-Trimethylbenzene	6.6		mg/kg	1.1	0.10	10
1,2,4-Trimethylbenzene	14.		mg/kg	1.1	0.18	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-11 D2  
 Client ID: 302-BB07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/23/22 09:10  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.46	0.046	4
Benzene	27.		mg/kg	0.11	0.038	4
1,2-Dichloroethane	ND		mg/kg	0.23	0.059	4
Toluene	44.		mg/kg	0.23	0.12	4
1,2-Dibromoethane	ND		mg/kg	0.11	0.067	4
Ethylbenzene	56.		mg/kg	0.23	0.032	4
p/m-Xylene	150	E	mg/kg	0.46	0.13	4
o-Xylene	33.		mg/kg	0.23	0.067	4
Isopropylbenzene	3.8		mg/kg	0.23	0.025	4
1,3,5-Trimethylbenzene	19.		mg/kg	0.46	0.044	4
1,2,4-Trimethylbenzene	50.		mg/kg	0.46	0.077	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	126		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-11 D  
 Client ID: 302-BB07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 17:47  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
p/m-Xylene	160		mg/kg	0.57	0.16	5
Xylenes, Total	190		mg/kg	0.23	0.067	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	67	Q	70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-13  
 Client ID: 302-BB07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:10  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 16:29  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.43		mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	0.44		mg/kg	0.060	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	14.		mg/kg	0.060	0.0085	1
p/m-Xylene	5.6		mg/kg	0.12	0.034	1
o-Xylene	0.34		mg/kg	0.060	0.018	1
Xylenes, Total	5.9		mg/kg	0.060	0.018	1
Isopropylbenzene	1.8		mg/kg	0.060	0.0066	1
1,3,5-Trimethylbenzene	0.62		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	7.6		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	145	Q	70-130
4-Bromofluorobenzene	140	Q	70-130
Dibromofluoromethane	65	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-13 D  
 Client ID: 302-BB07-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:10  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 15:07  
 Analyst: LAC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	6.0	0.60	50
Benzene	0.71	J	mg/kg	1.5	0.50	50
1,2-Dichloroethane	ND		mg/kg	3.0	0.77	50
Toluene	2.6	J	mg/kg	3.0	1.6	50
1,2-Dibromoethane	ND		mg/kg	1.5	0.88	50
Ethylbenzene	16.		mg/kg	3.0	0.42	50
p/m-Xylene	8.6		mg/kg	6.0	1.7	50
o-Xylene	1.0	J	mg/kg	3.0	0.88	50
Xylenes, Total	9.6	J	mg/kg	0.060	0.018	50
Isopropylbenzene	2.0	J	mg/kg	3.0	0.33	50
1,3,5-Trimethylbenzene	1.4	J	mg/kg	6.0	0.58	50
1,2,4-Trimethylbenzene	9.9		mg/kg	6.0	1.0	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	86		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-15 D2  
 Client ID: 302-BB07-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:20  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 18:13  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.61	0.061	5
Benzene	51.		mg/kg	0.15	0.050	5
1,2-Dichloroethane	ND		mg/kg	0.30	0.078	5
Toluene	140	E	mg/kg	0.30	0.16	5
1,2-Dibromoethane	ND		mg/kg	0.15	0.089	5
Ethylbenzene	62.		mg/kg	0.30	0.043	5
p/m-Xylene	220	E	mg/kg	0.61	0.17	5
o-Xylene	74.		mg/kg	0.30	0.088	5
Isopropylbenzene	5.5		mg/kg	0.30	0.033	5
1,3,5-Trimethylbenzene	38.		mg/kg	0.61	0.059	5
1,2,4-Trimethylbenzene	100	E	mg/kg	0.61	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	61	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-15 D  
 Client ID: 302-BB07-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:20  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 15:33  
 Analyst: LAC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	6.1	0.61	50
Benzene	65.		mg/kg	1.5	0.50	50
1,2-Dichloroethane	ND		mg/kg	3.0	0.78	50
Toluene	150		mg/kg	3.0	1.6	50
1,2-Dibromoethane	ND		mg/kg	1.5	0.89	50
Ethylbenzene	65.		mg/kg	3.0	0.43	50
p/m-Xylene	240		mg/kg	6.1	1.7	50
o-Xylene	76.		mg/kg	3.0	0.88	50
Xylenes, Total	320		mg/kg	0.30	0.088	50
Isopropylbenzene	5.8		mg/kg	3.0	0.33	50
1,3,5-Trimethylbenzene	41.		mg/kg	6.1	0.59	50
1,2,4-Trimethylbenzene	110		mg/kg	6.1	1.0	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	75		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-17  
 Client ID: 302-BC06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 15:59  
 Analyst: LAC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.066		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	0.0033		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	0.014		mg/kg	0.0012	0.00016	1
p/m-Xylene	0.024		mg/kg	0.0023	0.00065	1
o-Xylene	0.0020		mg/kg	0.0012	0.00034	1
Xylenes, Total	0.026		mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.0011	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.0038		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0088		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-19 D2  
 Client ID: 302-BC06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:40  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 17:21  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	2.3	0.23	20
Benzene	25.		mg/kg	0.57	0.19	20
1,2-Dichloroethane	ND		mg/kg	1.1	0.30	20
Toluene	7.8		mg/kg	1.1	0.62	20
1,2-Dibromoethane	ND		mg/kg	0.57	0.34	20
Ethylbenzene	140		mg/kg	1.1	0.16	20
p/m-Xylene	520		mg/kg	2.3	0.64	20
o-Xylene	65.		mg/kg	1.1	0.33	20
Xylenes, Total	580		mg/kg	1.1	0.33	20
Isopropylbenzene	11.		mg/kg	1.1	0.12	20
1,3,5-Trimethylbenzene	250		mg/kg	2.3	0.22	20
1,2,4-Trimethylbenzene	640	E	mg/kg	2.3	0.38	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	60	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-19 D  
 Client ID: 302-BC06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:40  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 16:25  
 Analyst: LAC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	110	12.	1000
Benzene	31.		mg/kg	29	9.5	1000
1,2-Dichloroethane	ND		mg/kg	57	15.	1000
Toluene	ND		mg/kg	57	31.	1000
1,2-Dibromoethane	ND		mg/kg	29	17.	1000
Ethylbenzene	120		mg/kg	57	8.1	1000
p/m-Xylene	460		mg/kg	110	32.	1000
o-Xylene	60.		mg/kg	57	17.	1000
Xylenes, Total	520		mg/kg	1.1	0.33	1000
Isopropylbenzene	7.1	J	mg/kg	57	6.3	1000
1,3,5-Trimethylbenzene	200		mg/kg	110	11.	1000
1,2,4-Trimethylbenzene	600		mg/kg	110	19.	1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-21 D2  
 Client ID: 302-BC06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:50  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 16:55  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	2.2	0.22	20
Benzene	11.		mg/kg	0.56	0.19	20
1,2-Dichloroethane	ND		mg/kg	1.1	0.29	20
Toluene	4.5		mg/kg	1.1	0.61	20
1,2-Dibromoethane	ND		mg/kg	0.56	0.33	20
Ethylbenzene	87.		mg/kg	1.1	0.16	20
p/m-Xylene	290		mg/kg	2.2	0.63	20
o-Xylene	20.		mg/kg	1.1	0.33	20
Xylenes, Total	310		mg/kg	1.1	0.33	20
Isopropylbenzene	7.4		mg/kg	1.1	0.12	20
1,3,5-Trimethylbenzene	160		mg/kg	2.2	0.22	20
1,2,4-Trimethylbenzene	380	E	mg/kg	2.2	0.38	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	66	Q	70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-21 D  
 Client ID: 302-BC06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:50  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/19/22 16:51  
 Analyst: LAC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	11	1.1	100
Benzene	12.		mg/kg	2.8	0.93	100
1,2-Dichloroethane	ND		mg/kg	5.6	1.4	100
Toluene	7.9		mg/kg	5.6	3.0	100
1,2-Dibromoethane	ND		mg/kg	2.8	1.6	100
Ethylbenzene	100		mg/kg	5.6	0.79	100
p/m-Xylene	360		mg/kg	11	3.1	100
o-Xylene	25.		mg/kg	5.6	1.6	100
Xylenes, Total	380		mg/kg	1.1	0.33	100
Isopropylbenzene	9.1		mg/kg	5.6	0.61	100
1,3,5-Trimethylbenzene	200		mg/kg	11	1.1	100
1,2,4-Trimethylbenzene	510		mg/kg	11	1.9	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	78		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/19/22 09:53  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,09,17 Batch: WG1689885-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/19/22 09:53  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,13,15,19,21 Batch: WG1689887-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/21/22 09:57  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,11,13,15,19,21 Batch: WG1690655-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/22/22 17:58  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1691166-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 09/23/22 08:27  
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11 Batch: WG1691278-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	107		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,09,17 Batch: WG1689885-3 WG1689885-4								
Methyl tert butyl ether	116		116		66-130	0		30
Benzene	117		113		70-130	3		30
1,2-Dichloroethane	104		103		70-130	1		30
Toluene	119		116		70-130	3		30
1,2-Dibromoethane	102		102		70-130	0		30
Ethylbenzene	117		114		70-130	3		30
p/m-Xylene	121		118		70-130	3		30
o-Xylene	115		112		70-130	3		30
Isopropylbenzene	128		126		70-130	2		30
1,3,5-Trimethylbenzene	117		116		70-130	1		30
1,2,4-Trimethylbenzene	116		114		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	84		84		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		106		70-130
Dibromofluoromethane	83		81		70-130



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,13,15,19,21 Batch: WG1689887-3 WG1689887-4								
Methyl tert butyl ether	116		116		66-130	0		30
Benzene	117		113		70-130	3		30
1,2-Dichloroethane	104		103		70-130	1		30
Toluene	119		116		70-130	3		30
1,2-Dibromoethane	102		102		70-130	0		30
Ethylbenzene	117		114		70-130	3		30
p/m-Xylene	121		118		70-130	3		30
o-Xylene	115		112		70-130	3		30
Isopropylbenzene	128		126		70-130	2		30
1,3,5-Trimethylbenzene	117		116		70-130	1		30
1,2,4-Trimethylbenzene	116		114		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	84		84		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		106		70-130
Dibromofluoromethane	83		81		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,11,13,15,19,21 Batch: WG1690655-3 WG1690655-4								
Methyl tert butyl ether	111		112		66-130	1		30
Benzene	105		109		70-130	4		30
1,2-Dichloroethane	94		98		70-130	4		30
Toluene	108		111		70-130	3		30
1,2-Dibromoethane	94		96		70-130	2		30
Ethylbenzene	104		108		70-130	4		30
p/m-Xylene	108		113		70-130	5		30
o-Xylene	105		108		70-130	3		30
Isopropylbenzene	116		121		70-130	4		30
1,3,5-Trimethylbenzene	108		112		70-130	4		30
1,2,4-Trimethylbenzene	106		109		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	84		86		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	80		82		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2250829

Project Number: 200.00135.006

Report Date: 09/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1691166-3 WG1691166-4								
Methyl tert butyl ether	85		83		66-130	2		30
Benzene	95		89		70-130	7		30
1,2-Dichloroethane	87		84		70-130	4		30
Toluene	88		83		70-130	6		30
1,2-Dibromoethane	87		87		70-130	0		30
Ethylbenzene	94		88		70-130	7		30
p/m-Xylene	92		86		70-130	7		30
o-Xylene	91		87		70-130	4		30
Isopropylbenzene	96		92		70-130	4		30
1,3,5-Trimethylbenzene	96		92		70-130	4		30
1,2,4-Trimethylbenzene	94		90		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	102		103		70-130
Dibromofluoromethane	95		93		70-130

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11 Batch: WG1691278-3 WG1691278-4								
Methyl tert butyl ether	108		113		66-130	5		30
Benzene	104		107		70-130	3		30
1,2-Dichloroethane	117		122		70-130	4		30
Toluene	101		104		70-130	3		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	105		108		70-130	3		30
p/m-Xylene	108		110		70-130	2		30
o-Xylene	106		110		70-130	4		30
Isopropylbenzene	104		107		70-130	3		30
1,3,5-Trimethylbenzene	106		109		70-130	3		30
1,2,4-Trimethylbenzene	106		109		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	114		115		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	100		100		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-02  
 Client ID: 302-BB08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 10:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 13:21  
 Analyst: MG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.33		mg/kg	0.19	0.023	1
Fluorene	0.39		mg/kg	0.19	0.018	1
Phenanthrene	1.0		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.40		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.21		mg/kg	0.11	0.021	1
Chrysene	0.43		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.34		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.25		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.22		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-04  
 Client ID: 302-BB08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 10:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 16:50  
 Analyst: MG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	2.4		mg/kg	0.19	0.024	1
Fluorene	0.24		mg/kg	0.19	0.019	1
Phenanthrene	0.52		mg/kg	0.12	0.024	1
Anthracene	0.11	J	mg/kg	0.12	0.038	1
Pyrene	0.54		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.43		mg/kg	0.12	0.022	1
Chrysene	0.52		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.56		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.75		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	1.1		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	205	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-06  
 Client ID: 302-BB08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 11:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 05:21  
 Analyst: WR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.079	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.20		mg/kg	0.12	0.023	1
Anthracene	0.052	J	mg/kg	0.12	0.038	1
Pyrene	0.16		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.046	J	mg/kg	0.12	0.022	1
Chrysene	0.071	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-08  
 Client ID: 302-BB07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 11:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 01:00  
 Analyst: WR  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.10	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	66		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-10  
 Client ID: 302-BB07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 12:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 02:38  
 Analyst: WR  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.11	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.28		mg/kg	0.11	0.022	1
Anthracene	0.083	J	mg/kg	0.11	0.036	1
Pyrene	0.32		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.20		mg/kg	0.11	0.021	1
Chrysene	0.19		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.16		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.070	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-12  
 Client ID: 302-BB07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 00:11  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.032	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-14  
 Client ID: 302-BB07-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:10  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/21/22 22:01  
 Analyst: WR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.028	J	mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-16  
 Client ID: 302-BB07-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:20  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/21/22 22:17  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-18  
 Client ID: 302-BC06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/21/22 23:54  
 Analyst: WR  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.069	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.037	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-20  
 Client ID: 302-BC06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:40  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 00:27  
 Analyst: WR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	23.	E	mg/kg	0.19	0.023	1
Fluorene	0.33		mg/kg	0.19	0.019	1
Phenanthrene	0.48		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	149	Q	23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-20 D  
 Client ID: 302-BC06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:40  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 16:27  
 Analyst: MG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	23.		mg/kg	1.9	0.23	10

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-22  
 Client ID: 302-BC06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:50  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/22/22 00:43  
 Analyst: WR  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.86		mg/kg	0.18	0.022	1
Fluorene	0.087	J	mg/kg	0.18	0.018	1
Phenanthrene	0.22		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.029	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	73		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/21/22 21:12  
Analyst: WR

Extraction Method: EPA 3546  
Extraction Date: 09/21/22 00:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1689923-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		25-120
Phenol-d6	78		10-120
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	68		10-136
4-Terphenyl-d14	71		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1689923-2 WG1689923-3								
Naphthalene	66		64		40-140	3		50
Fluorene	70		70		40-140	0		50
Phenanthrene	70		70		40-140	0		50
Anthracene	74		72		40-140	3		50
Pyrene	74		73		35-142	1		50
Benzo(a)anthracene	73		71		40-140	3		50
Chrysene	72		70		40-140	3		50
Benzo(b)fluoranthene	73		71		40-140	3		50
Benzo(a)pyrene	78		82		40-140	5		50
Benzo(ghi)perylene	65		66		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	68		68		25-120
Phenol-d6	73		74		10-120
Nitrobenzene-d5	69		68		23-120
2-Fluorobiphenyl	70		69		30-120
2,4,6-Tribromophenol	67		63		10-136
4-Terphenyl-d14	69		69		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-02  
 Client ID: 302-BB08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 10:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	153		mg/kg	4.56	0.244	2	09/19/22 20:17	09/23/22 09:51	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-04

Date Collected: 09/16/22 10:30

Client ID: 302-BB08-C2-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	792		mg/kg	4.67	0.250	2	09/19/22 20:17	09/23/22 09:55	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-06

Date Collected: 09/16/22 11:00

Client ID: 302-BB08-C3-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.9		mg/kg	4.63	0.248	2	09/19/22 20:17	09/23/22 10:36	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-08

Date Collected: 09/16/22 11:30

Client ID: 302-BB07-C1-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.36		mg/kg	4.42	0.237	2	09/19/22 20:17	09/23/22 10:41	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-10

Date Collected: 09/16/22 12:00

Client ID: 302-BB07-C2-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.3		mg/kg	4.38	0.234	2	09/19/22 20:17	09/23/22 10:46	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-12

Date Collected: 09/16/22 13:00

Client ID: 302-BB07-C3-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.59		mg/kg	4.71	0.253	2	09/19/22 20:17	09/23/22 10:50	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-14

Date Collected: 09/16/22 13:10

Client ID: 302-BB07-C4-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.33		mg/kg	4.80	0.257	2	09/19/22 20:17	09/23/22 10:55	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-16

Date Collected: 09/16/22 13:20

Client ID: 302-BB07-C5-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.63		mg/kg	4.65	0.249	2	09/19/22 20:17	09/23/22 10:59	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-18  
 Client ID: 302-BC06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.30		mg/kg	4.96	0.266	2	09/19/22 20:17	09/23/22 11:04	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-20  
 Client ID: 302-BC06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 13:40  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.46	J	mg/kg	4.54	0.244	2	09/19/22 20:17	09/23/22 11:08	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-22

Date Collected: 09/16/22 13:50

Client ID: 302-BC06-C3-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.22		mg/kg	4.26	0.228	2	09/19/22 20:17	09/23/22 11:13	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1689326-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/19/22 20:17	09/23/22 09:42	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1689326-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128			-





### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22    QC Batch ID: WG1689326-3    QC Sample: L2251056-01    Client ID: MS Sample												
Lead, Total	1.40J	49.6	42.6	86	-	-	-	-	75-125	-	-	20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2250829

**Report Date:** 09/23/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1689326-4 QC Sample: L2251056-01 Client ID: DUP Sample						
Lead, Total	1.40J	1.99J	mg/kg	NC		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-01

Date Collected: 09/16/22 10:00

Client ID: 302-BB08-C1-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2250829

**Project Number:** 200.00135.006

**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-02

Date Collected: 09/16/22 10:00

Client ID: 302-BB08-C1-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.4		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-03

Date Collected: 09/16/22 10:30

Client ID: 302-BB08-C2-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-04

Date Collected: 09/16/22 10:30

Client ID: 302-BB08-C2-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

**Lab ID:** L2250829-05  
**Client ID:** 302-BB08-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/16/22 11:00  
**Date Received:** 09/16/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.6		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-06  
 Client ID: 302-BB08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 11:00  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250829

Project Number: 200.00135.006

Report Date: 09/23/22

## SAMPLE RESULTS

Lab ID: L2250829-07

Date Collected: 09/16/22 11:30

Client ID: 302-BB07-C1-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

**SAMPLE RESULTS**

Lab ID: L2250829-08  
 Client ID: 302-BB07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/16/22 11:30  
 Date Received: 09/16/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-09

Date Collected: 09/16/22 12:00

Client ID: 302-BB07-C2-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.2		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-10

Date Collected: 09/16/22 12:00

Client ID: 302-BB07-C2-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.0		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-11

Date Collected: 09/16/22 13:00

Client ID: 302-BB07-C3-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-12

Date Collected: 09/16/22 13:00

Client ID: 302-BB07-C3-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-13

Date Collected: 09/16/22 13:10

Client ID: 302-BB07-C4-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-14

Date Collected: 09/16/22 13:10

Client ID: 302-BB07-C4-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.5		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250829

Project Number: 200.00135.006

Report Date: 09/23/22

## SAMPLE RESULTS

Lab ID: L2250829-15

Date Collected: 09/16/22 13:20

Client ID: 302-BB07-C5-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250829

Project Number: 200.00135.006

Report Date: 09/23/22

## SAMPLE RESULTS

Lab ID: L2250829-16

Date Collected: 09/16/22 13:20

Client ID: 302-BB07-C5-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-17

Date Collected: 09/16/22 13:30

Client ID: 302-BC06-C1-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-18

Date Collected: 09/16/22 13:30

Client ID: 302-BC06-C1-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-19

Date Collected: 09/16/22 13:40

Client ID: 302-BC06-C2-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.7		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2250829

Project Number: 200.00135.006

Report Date: 09/23/22

## SAMPLE RESULTS

Lab ID: L2250829-20

Date Collected: 09/16/22 13:40

Client ID: 302-BC06-C2-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	09/17/22 10:31	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-21

Date Collected: 09/16/22 13:50

Client ID: 302-BC06-C3-VOC

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	09/17/22 10:17	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**SAMPLE RESULTS**

Lab ID: L2250829-22

Date Collected: 09/16/22 13:50

Client ID: 302-BC06-C3-COMP

Date Received: 09/16/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	09/17/22 10:17	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2250829

Report Date: 09/23/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1688714-1 QC Sample: L2251048-01 Client ID: DUP Sample						
Solids, Total	45.6	41.9	%	8		20
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1688716-1 QC Sample: L2250829-01 Client ID: 302-BB08-C1-VOC						
Solids, Total	84.7	85.2	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2250829-01A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-01B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-01C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-01D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-02B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-03A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-03B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-03C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-03D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-04B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-05A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-05B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-05C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-05D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-06B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-07A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-07B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-07C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-07D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2250829-08B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-09A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2250829-09B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260H(14),PA-8260HLW(14)
L2250829-09C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260H(14),PA-8260HLW(14)
L2250829-09D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-10B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-11A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-11B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-11C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-11D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-12B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-13A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-13B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-13C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-13D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-14B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-15A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-15B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-15C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-15D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-16B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-17A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-17B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-17C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2250829**Project Number:** 200.00135.006**Report Date:** 09/23/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2250829-17D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-18B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-19A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-19B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-19C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-19D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-20B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2250829-21A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2250829-21B	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-21C	Vial water preserved	A	NA		2.5	Y	Absent	17-SEP-22 08:38	PA-8260HLW(14)
L2250829-21D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2250829-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2250829-22B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2250829  
**Report Date:** 09/23/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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# CHAIN OF CUSTODY

PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 09/17/22

ALPHA Job #: 2250829

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES				
		Date	Time																				
50829-01	302-BB08-C1-VOC	9/16	1000	S	ca	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-02	302-BB08-C1-COMP		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-BB08-C2-VOL		1030			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-BB08-C2-COMP		1030			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-BB08-C3-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-BB08-C3-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-BB07-C1-VOC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-BB07-C1-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-09	302-BB07-C2-VOC		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-BB07-C2-COMP		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

Sample Specific Comments

Container Type: G G G - - - - -  
Preservative: F A A - - - - -

Relinquished By: [Signature] Date/Time: 9/16/22 1355  
Received By: [Signature] Date/Time: 9/16/22 1415  
[Signature] Date/Time: 9/16/22 1100  
[Signature] Date/Time: 9/17/22 0028

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



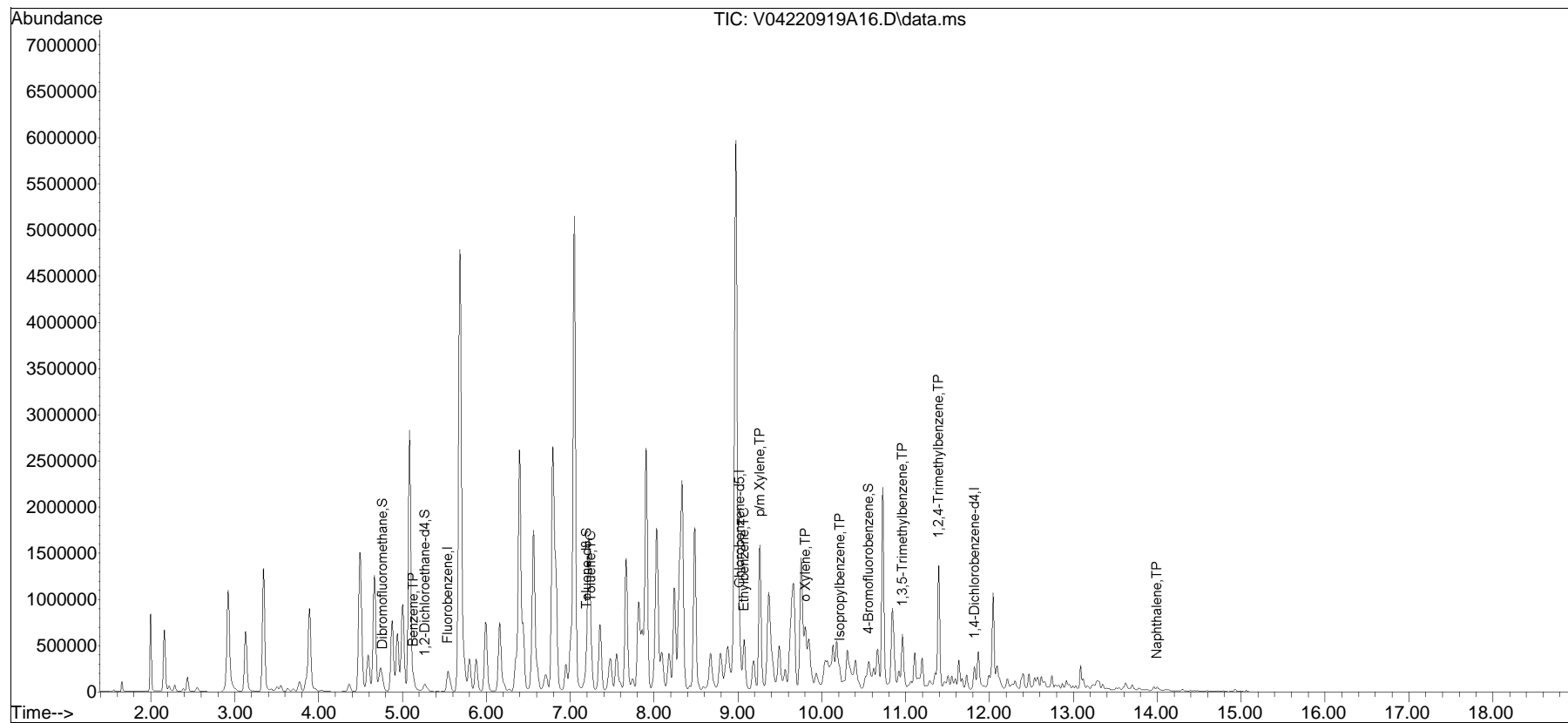


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220919A\  
Data File : V04220919A16.D  
Acq On : 19 Sep 2022 1:48 pm  
Operator : VOA104:LAC  
Sample : L2250829-07D,31H,6.04,5,0.05,,A,R2F  
Misc : WG1689887,ICAL19119  
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Sep 20 19:14:57 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220919A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list19A\V04220919A04.D•

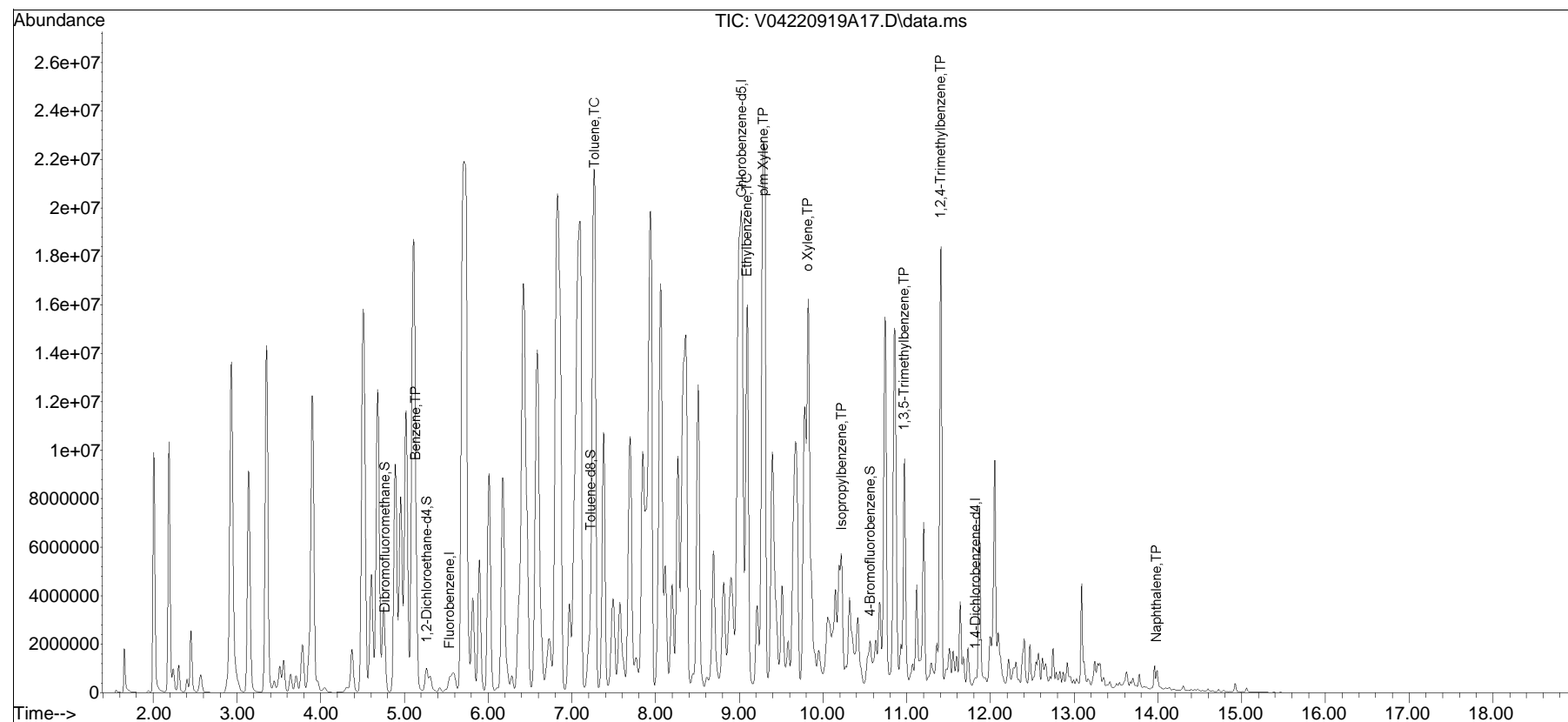


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220919A\  
Data File : V04220919A17.D  
Acq On : 19 Sep 2022 2:15 pm  
Operator : VOA104:LAC  
Sample : L2250829-09,31,5.69,5,,B,R2F  
Misc : WG1689885,ICAL19119  
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Sep 20 20:52:12 2022  
Quant Method : I:\VOLATILES\VOA104\2022\220919A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list19A\V04220919A04.D•





## ANALYTICAL REPORT

Lab Number:	L2251260
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/26/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2251260-01	302-AQ03-C1-VOC	SOIL	PHILADELPHIA, PA	09/19/22 10:00	09/19/22
L2251260-02	302-AQ03-C1-COMP	SOIL	PHILADELPHIA, PA	09/19/22 10:00	09/19/22
L2251260-03	302-AQ03-C2-VOC	SOIL	PHILADELPHIA, PA	09/19/22 10:20	09/19/22
L2251260-04	302-AQ03-C2-COMP	SOIL	PHILADELPHIA, PA	09/19/22 10:20	09/19/22
L2251260-05	302-AR03-C1-VOC	SOIL	PHILADELPHIA, PA	09/19/22 12:00	09/19/22
L2251260-06	302-AR03-C1-COMP	SOIL	PHILADELPHIA, PA	09/19/22 12:00	09/19/22
L2251260-07	302-AR03-C2-VOC	SOIL	PHILADELPHIA, PA	09/19/22 12:10	09/19/22
L2251260-08	302-AR03-C2-COMP	SOIL	PHILADELPHIA, PA	09/19/22 12:10	09/19/22
L2251260-09	302-AR03-C3-VOC	SOIL	PHILADELPHIA, PA	09/19/22 12:20	09/19/22
L2251260-10	302-AR03-C3-COMP	SOIL	PHILADELPHIA, PA	09/19/22 12:20	09/19/22
L2251260-11	302-AR03-C4-VOC	SOIL	PHILADELPHIA, PA	09/19/22 12:30	09/19/22
L2251260-12	302-AR03-C4-COMP	SOIL	PHILADELPHIA, PA	09/19/22 12:30	09/19/22
L2251260-13	302-AR03-C5-VOC	SOIL	PHILADELPHIA, PA	09/19/22 12:40	09/19/22
L2251260-14	302-AR03-C5-COMP	SOIL	PHILADELPHIA, PA	09/19/22 12:40	09/19/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2251260-01, -05, -11, and -13: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2251260-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (131%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251260-03: Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2251260-03: The internal standard (IS) response(s) for fluorobenzene (825%) and the surrogate recoveries for dibromofluoromethane (15%) and 4-bromofluorobenzene (248%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. A high-level analysis was performed, and those results are also reported.

L2251260-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251260-07D and -09D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2251260-07D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (145%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251260-09D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (134%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**Case Narrative (continued)**

chromatogram is included as an attachment to this report.

L2251260-11: The surrogate recoveries are outside the acceptance criteria for 1,2-dichloroethane-d4 (154%), toluene-d8 (153%) and 4-bromofluorobenzene (226%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251260-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (176%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 09/26/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-01  
 Client ID: 302-AQ03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:00  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 18:26  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.014	1
Benzene	ND		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Toluene	ND		mg/kg	0.067	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	ND		mg/kg	0.067	0.0095	1
p/m-Xylene	ND		mg/kg	0.13	0.038	1
o-Xylene	ND		mg/kg	0.067	0.020	1
Xylenes, Total	ND		mg/kg	0.067	0.020	1
Isopropylbenzene	0.011	J	mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	131	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-03  
 Client ID: 302-AQ03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 17:59  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.061	0.016	1
Toluene	ND		mg/kg	0.061	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	ND		mg/kg	0.061	0.0086	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.061	0.018	1
Xylenes, Total	ND		mg/kg	0.061	0.018	1
Isopropylbenzene	0.51		mg/kg	0.061	0.0066	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	90		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-03  
 Client ID: 302-AQ03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/23/22 16:35  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00016	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	0.0016	J	mg/kg	0.0020	0.00055	1
o-Xylene	0.0011		mg/kg	0.00098	0.00029	1
Xylenes, Total	0.0027	J	mg/kg	0.00098	0.00029	1
Isopropylbenzene	0.19		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.00078	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	70		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	248	Q	70-130
Dibromofluoromethane	15	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-05  
 Client ID: 302-AR03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:00  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 17:32  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.11		mg/kg	0.029	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	0.034	J	mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.037	J	mg/kg	0.059	0.0083	1
p/m-Xylene	0.18		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.059	0.017	1
Xylenes, Total	0.18		mg/kg	0.059	0.017	1
Isopropylbenzene	1.4		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	0.024	J	mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	0.082	J	mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-07 D  
 Client ID: 302-AR03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:10  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 17:06  
 Analyst: LAC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.65	0.066	5
Benzene	ND		mg/kg	0.16	0.054	5
1,2-Dichloroethane	ND		mg/kg	0.33	0.084	5
Toluene	ND		mg/kg	0.33	0.18	5
1,2-Dibromoethane	ND		mg/kg	0.16	0.096	5
Ethylbenzene	ND		mg/kg	0.33	0.046	5
p/m-Xylene	ND		mg/kg	0.65	0.18	5
o-Xylene	ND		mg/kg	0.33	0.095	5
Xylenes, Total	ND		mg/kg	0.33	0.095	5
Isopropylbenzene	1.7		mg/kg	0.33	0.036	5
1,3,5-Trimethylbenzene	ND		mg/kg	0.65	0.063	5
1,2,4-Trimethylbenzene	ND		mg/kg	0.65	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	126		70-130
4-Bromofluorobenzene	145	Q	70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-09 D  
 Client ID: 302-AR03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/21/22 17:25  
 Analyst: LAC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	1.2	0.12	10
Benzene	ND		mg/kg	0.30	0.10	10
1,2-Dichloroethane	ND		mg/kg	0.60	0.15	10
Toluene	ND		mg/kg	0.60	0.33	10
1,2-Dibromoethane	ND		mg/kg	0.30	0.18	10
Ethylbenzene	ND		mg/kg	0.60	0.085	10
p/m-Xylene	ND		mg/kg	1.2	0.34	10
o-Xylene	ND		mg/kg	0.60	0.17	10
Xylenes, Total	ND		mg/kg	0.60	0.17	10
Isopropylbenzene	2.8		mg/kg	0.60	0.065	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.2	0.12	10
1,2,4-Trimethylbenzene	ND		mg/kg	1.2	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	126		70-130
4-Bromofluorobenzene	134	Q	70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-11  
 Client ID: 302-AR03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:30  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 18:53  
 Analyst: JC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.013	J	mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Toluene	0.088		mg/kg	0.067	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.020	1
Ethylbenzene	0.030	J	mg/kg	0.067	0.0094	1
p/m-Xylene	0.51		mg/kg	0.13	0.037	1
o-Xylene	0.060	J	mg/kg	0.067	0.019	1
Xylenes, Total	0.57	J	mg/kg	0.067	0.019	1
Isopropylbenzene	6.2		mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	0.014	J	mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	154	Q	70-130
Toluene-d8	153	Q	70-130
4-Bromofluorobenzene	226	Q	70-130
Dibromofluoromethane	77		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-13  
 Client ID: 302-AR03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:40  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/22/22 17:04  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.013	1
Benzene	0.018	J	mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	0.048	J	mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.038	J	mg/kg	0.063	0.0088	1
p/m-Xylene	0.037	J	mg/kg	0.12	0.035	1
o-Xylene	0.019	J	mg/kg	0.063	0.018	1
Xylenes, Total	0.056	J	mg/kg	0.063	0.018	1
Isopropylbenzene	0.65		mg/kg	0.063	0.0068	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.041	J	mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	176	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/21/22 11:32  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,09 Batch: WG1690798-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/22/22 10:13  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,11,13 Batch: WG1691980-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	112		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/23/22 08:27  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1691988-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	115		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,09 Batch: WG1690798-3 WG1690798-4								
Methyl tert butyl ether	82		87		66-130	6		30
Benzene	92		97		70-130	5		30
1,2-Dichloroethane	84		88		70-130	5		30
Toluene	86		90		70-130	5		30
1,2-Dibromoethane	86		90		70-130	5		30
Ethylbenzene	92		96		70-130	4		30
p/m-Xylene	90		94		70-130	4		30
o-Xylene	89		94		70-130	5		30
Isopropylbenzene	94		98		70-130	4		30
1,3,5-Trimethylbenzene	92		98		70-130	6		30
1,2,4-Trimethylbenzene	91		96		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		98		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	101		102		70-130
Dibromofluoromethane	93		94		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,11,13 Batch: WG1691980-3 WG1691980-4								
Methyl tert butyl ether	103		106		66-130	3		30
Benzene	108		107		70-130	1		30
1,2-Dichloroethane	105		105		70-130	0		30
Toluene	101		100		70-130	1		30
1,2-Dibromoethane	102		104		70-130	2		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	104		103		70-130	1		30
o-Xylene	103		102		70-130	1		30
Isopropylbenzene	101		98		70-130	3		30
1,3,5-Trimethylbenzene	104		101		70-130	3		30
1,2,4-Trimethylbenzene	104		101		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		104		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	104		104		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1691988-3 WG1691988-4								
Methyl tert butyl ether	105		103		66-130	2		30
Benzene	95		96		70-130	1		30
1,2-Dichloroethane	100		101		70-130	1		30
Toluene	94		97		70-130	3		30
1,2-Dibromoethane	92		91		70-130	1		30
Ethylbenzene	95		97		70-130	2		30
p/m-Xylene	100		103		70-130	3		30
o-Xylene	101		103		70-130	2		30
Isopropylbenzene	93		97		70-130	4		30
1,3,5-Trimethylbenzene	97		101		70-130	4		30
1,2,4-Trimethylbenzene	96		100		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		101		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	102		103		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-02  
 Client ID: 302-AQ03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:00  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 00:50  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.038	J	mg/kg	0.20	0.025	1
Fluorene	0.067	J	mg/kg	0.20	0.020	1
Phenanthrene	0.24		mg/kg	0.12	0.025	1
Anthracene	0.041	J	mg/kg	0.12	0.040	1
Pyrene	0.11	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.049	J	mg/kg	0.12	0.023	1
Chrysene	0.044	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.038	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-04  
 Client ID: 302-AQ03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 00:26  
 Analyst: CMM  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.039	J	mg/kg	0.20	0.020	1
Phenanthrene	0.067	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	51		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-06  
 Client ID: 302-AR03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:00  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 10:35  
 Analyst: CMM  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.14		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.12		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.054	J	mg/kg	0.12	0.022	1
Chrysene	0.056	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.065	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.053	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.033	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	41		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-08  
 Client ID: 302-AR03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:10  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 10:59  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.096	J	mg/kg	0.19	0.024	1
Fluorene	0.043	J	mg/kg	0.19	0.019	1
Phenanthrene	0.65		mg/kg	0.12	0.024	1
Anthracene	0.13		mg/kg	0.12	0.038	1
Pyrene	0.72		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.37		mg/kg	0.12	0.022	1
Chrysene	0.33		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.41		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.35		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.26		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-10  
 Client ID: 302-AR03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 11:22  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.062	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.063	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.043	J	mg/kg	0.12	0.022	1
Chrysene	0.036	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.044	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-12  
 Client ID: 302-AR03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:30  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 11:46  
 Analyst: CMM  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-14  
 Client ID: 302-AR03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:40  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/24/22 12:09  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/23/22 01:03

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.021	J	mg/kg	0.20	0.019	1
Phenanthrene	0.055	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.029	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.022	J	mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	49		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 09/23/22 09:48  
 Analyst: IM

Extraction Method: EPA 3546  
 Extraction Date: 09/22/22 20:37

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1690951-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.041
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	99		25-120
Phenol-d6	101		10-120
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	93		30-120
2,4,6-Tribromophenol	119		10-136
4-Terphenyl-d14	99		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1690951-2 WG1690951-3								
Naphthalene	62		85		40-140	31		50
Fluorene	63		87		40-140	32		50
Phenanthrene	62		85		40-140	31		50
Anthracene	63		88		40-140	33		50
Pyrene	63		88		35-142	33		50
Benzo(a)anthracene	62		85		40-140	31		50
Chrysene	60		84		40-140	33		50
Benzo(b)fluoranthene	61		85		40-140	33		50
Benzo(a)pyrene	63		89		40-140	34		50
Benzo(ghi)perylene	60		86		40-140	36		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	73		94		25-120
Phenol-d6	72		93		10-120
Nitrobenzene-d5	82		105		23-120
2-Fluorobiphenyl	63		86		30-120
2,4,6-Tribromophenol	78		104		10-136
4-Terphenyl-d14	67		89		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-02  
 Client ID: 302-AQ03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:00  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.54		mg/kg	2.44	0.131	1	09/20/22 20:58	09/21/22 11:35	EPA 3050B	1,6010D	JF





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-04  
 Client ID: 302-AQ03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 10:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.54		mg/kg	2.43	0.130	1	09/20/22 20:58	09/21/22 11:40	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-06  
 Client ID: 302-AR03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:00  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.2		mg/kg	2.36	0.126	1	09/20/22 20:58	09/21/22 12:21	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-08  
 Client ID: 302-AR03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:10  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	712		mg/kg	2.30	0.123	1	09/20/22 20:58	09/21/22 12:26	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-10  
 Client ID: 302-AR03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:20  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	51.4		mg/kg	2.38	0.128	1	09/20/22 20:58	09/21/22 12:30	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-12  
 Client ID: 302-AR03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:30  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	43.4		mg/kg	2.39	0.128	1	09/20/22 20:58	09/21/22 12:35	EPA 3050B	1,6010D	JF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-14  
 Client ID: 302-AR03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:40  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	56.8		mg/kg	2.32	0.124	1	09/20/22 20:58	09/21/22 12:56	EPA 3050B	1,6010D	JF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251260

Project Number: 200.00135.006

Report Date: 09/26/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1689629-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/20/22 20:58	09/21/22 09:03	1,6010D	JF

### Prep Information

Digestion Method: EPA 3050B

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1689629-2 SRM Lot Number: D113-540								
Lead, Total	97		-		72-128	-		





**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251260

**Project Number:** 200.00135.006

**Report Date:** 09/26/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14    QC Batch ID: WG1689629-3    QC Sample: L2248751-01    Client ID: MS Sample												
Lead, Total	51.5	240	300	104		-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2251260

Report Date: 09/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1689629-4 QC Sample: L2248751-01 Client ID: DUP Sample						
Lead, Total	51.5	72.9	mg/kg	34	Q	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-01

Date Collected: 09/19/22 10:00

Client ID: 302-AQ03-C1-VOC

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.0		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251260

Project Number: 200.00135.006

Report Date: 09/26/22

## SAMPLE RESULTS

Lab ID: L2251260-02

Date Collected: 09/19/22 10:00

Client ID: 302-AQ03-C1-COMP

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-03

Date Collected: 09/19/22 10:20

Client ID: 302-AQ03-C2-VOC

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.4		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-04

Date Collected: 09/19/22 10:20

Client ID: 302-AQ03-C2-COMP

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.2		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-05

Date Collected: 09/19/22 12:00

Client ID: 302-AR03-C1-VOC

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.7		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-06

Date Collected: 09/19/22 12:00

Client ID: 302-AR03-C1-COMP

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.9		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-07  
 Client ID: 302-AR03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:10  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.5		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-08

Date Collected: 09/19/22 12:10

Client ID: 302-AR03-C2-COMP

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.3		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-09

Date Collected: 09/19/22 12:20

Client ID: 302-AR03-C3-VOC

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.3		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

**Lab ID:** L2251260-10  
**Client ID:** 302-AR03-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/19/22 12:20  
**Date Received:** 09/19/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.4		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251260

Project Number: 200.00135.006

Report Date: 09/26/22

## SAMPLE RESULTS

Lab ID: L2251260-11

Date Collected: 09/19/22 12:30

Client ID: 302-AR03-C4-VOC

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.6		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

**SAMPLE RESULTS**

Lab ID: L2251260-12  
 Client ID: 302-AR03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/19/22 12:30  
 Date Received: 09/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.7		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251260

Project Number: 200.00135.006

Report Date: 09/26/22

## SAMPLE RESULTS

Lab ID: L2251260-13

Date Collected: 09/19/22 12:40

Client ID: 302-AR03-C5-VOC

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**SAMPLE RESULTS**

Lab ID: L2251260-14

Date Collected: 09/19/22 12:40

Client ID: 302-AR03-C5-COMP

Date Received: 09/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	09/20/22 13:02	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2251260

Report Date: 09/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1689605-1 QC Sample: L2250576-01 Client ID: DUP Sample						
Solids, Total	76.2	75.1	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2251260-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2251260-01B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-01C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-01D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2251260-02B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2251260-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2251260-03B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260H(14),PA-8260HLW(14)
L2251260-03C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260H(14),PA-8260HLW(14)
L2251260-03D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2251260-04B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2251260-05A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2251260-05B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-05C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-05D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2251260-06B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2251260-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2251260-07B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-07C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-07D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251260**Project Number:** 200.00135.006**Report Date:** 09/26/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2251260-08B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2251260-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2251260-09B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-09C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-09D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2251260-10B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2251260-11A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2251260-11B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-11C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-11D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2251260-12B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2251260-13A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2251260-13B	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-13C	Vial water preserved	A	NA		3.2	Y	Absent	20-SEP-22 10:15	PA-8260HLW(14)
L2251260-13D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2251260-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2251260-14B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251260  
**Report Date:** 09/26/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12101~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hllcglobal.com

Date Rec'd in Lab: 9/20/22

ALPHA Job #: L 2251260

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES			
		Date	Time						Sample Specific Comments														
51260-01	302-AR03-C1-VOC	9/19	1000	S	an	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-02	302-AR03-C1-COMP		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
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-04	302-AR03-C2-COMP		1020			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
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-06	302-AR03-C1-COMP		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AR03-C2-VOC		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AR03-C2-COMP		1210			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
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-10	302-AR03-C3-COMP		1220			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 9/19/22  
 Received By: *[Signature]* Date/Time: 9/19/22  
*[Handwritten notes and signatures]*

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

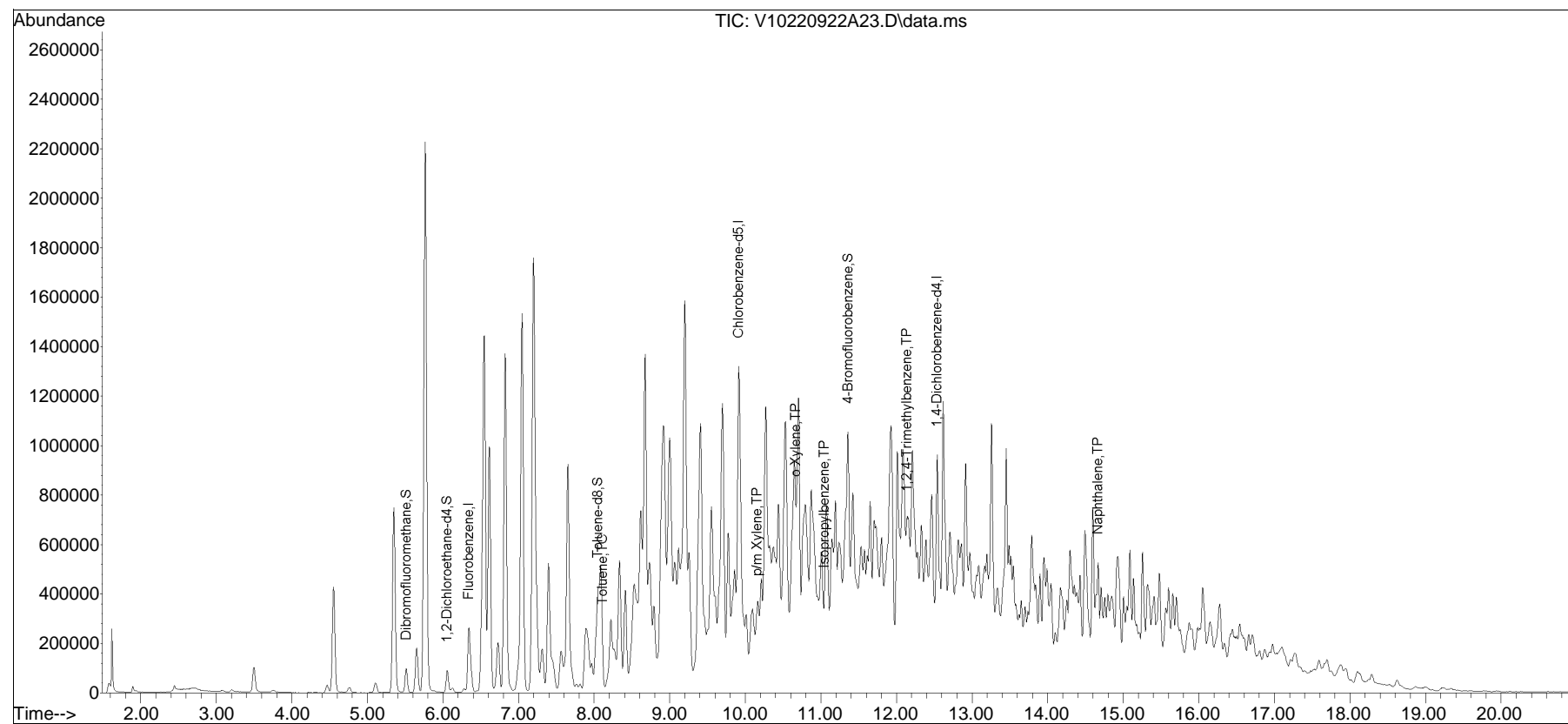


## Quantitation Report (QT Reviewed)

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Data File : V10220922A23.D  
Acq On : 22 Sep 2022 6:26 pm  
Operator : VOA110:AJK  
Sample : 12251260-01,31h,5.70,5,0.100,,a,r2f  
Misc : WG1691980,ICAL19281  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Sep 22 19:12:55 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220922A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list22A\V10220922A01.D•

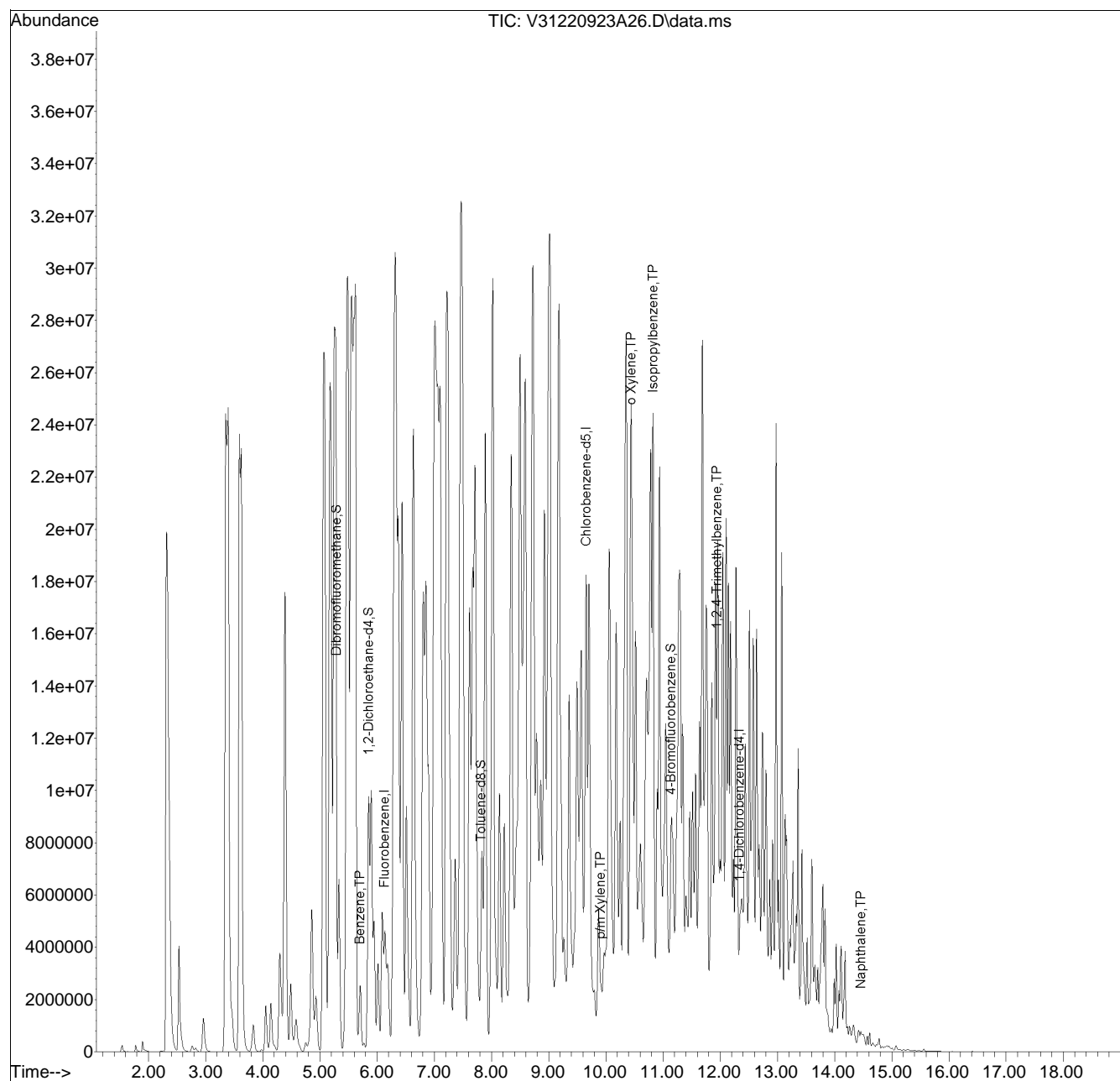


## Quantitation Report (QT Reviewed)

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Acq On : 23 Sep 2022 04:35 pm  
Operator : VOA131:AJK  
Sample : 12251260-03,31,6.23,5,,b,r2f  
Misc : WG1691988,ICAL19336  
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Sep 25 19:34:12 2022  
Quant Method : I:\VOLATILES\VOA131\2022\220923A\V31\_220915N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Sep 16 08:31:24 2022  
Response via : Initial Calibration

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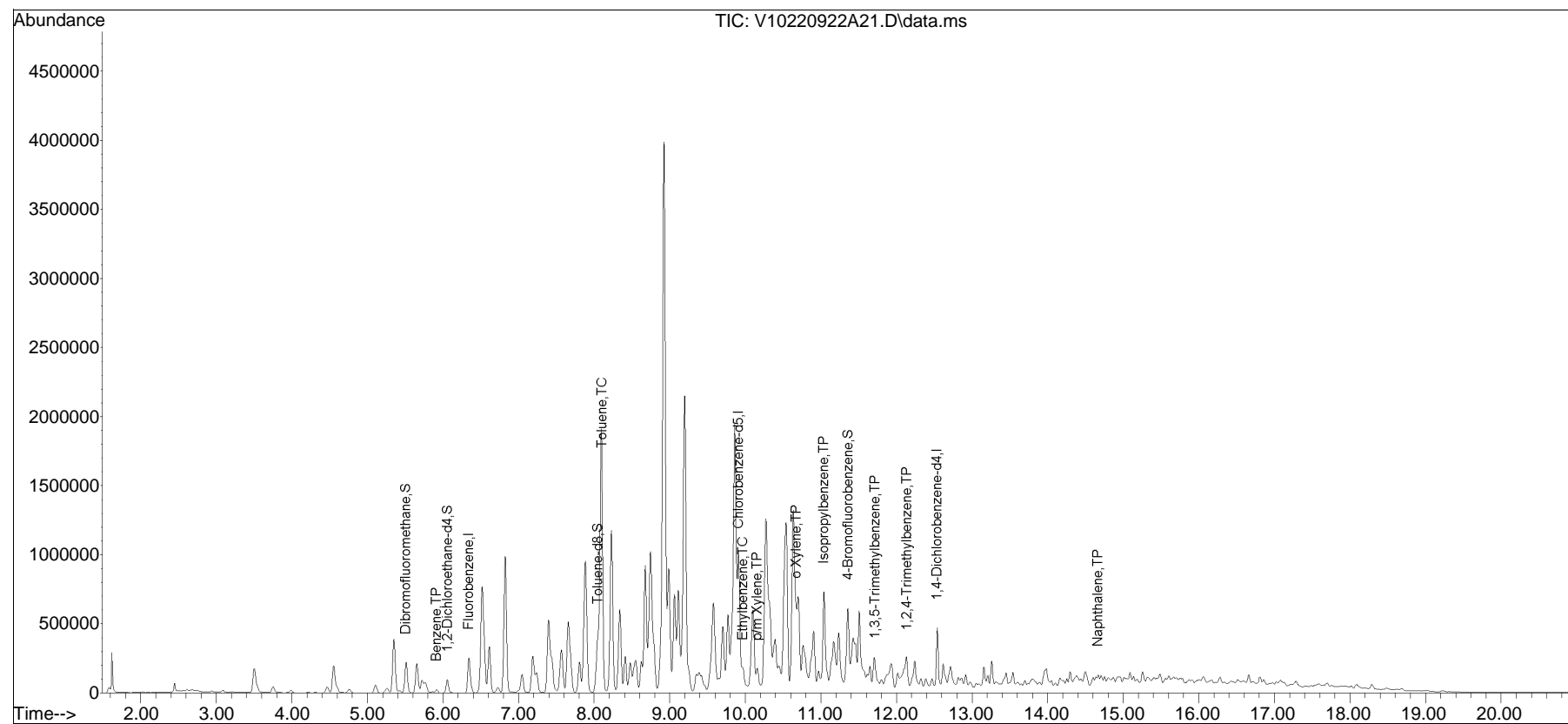


## Quantitation Report (QT Reviewed)

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Data File : V10220922A21.D  
Acq On : 22 Sep 2022 5:32 pm  
Operator : VOA110:AJK  
Sample : 12251260-05,31h,6.09,5,0.100,,a,r2f  
Misc : WG1691980,ICAL19281  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Sep 22 19:11:55 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220922A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

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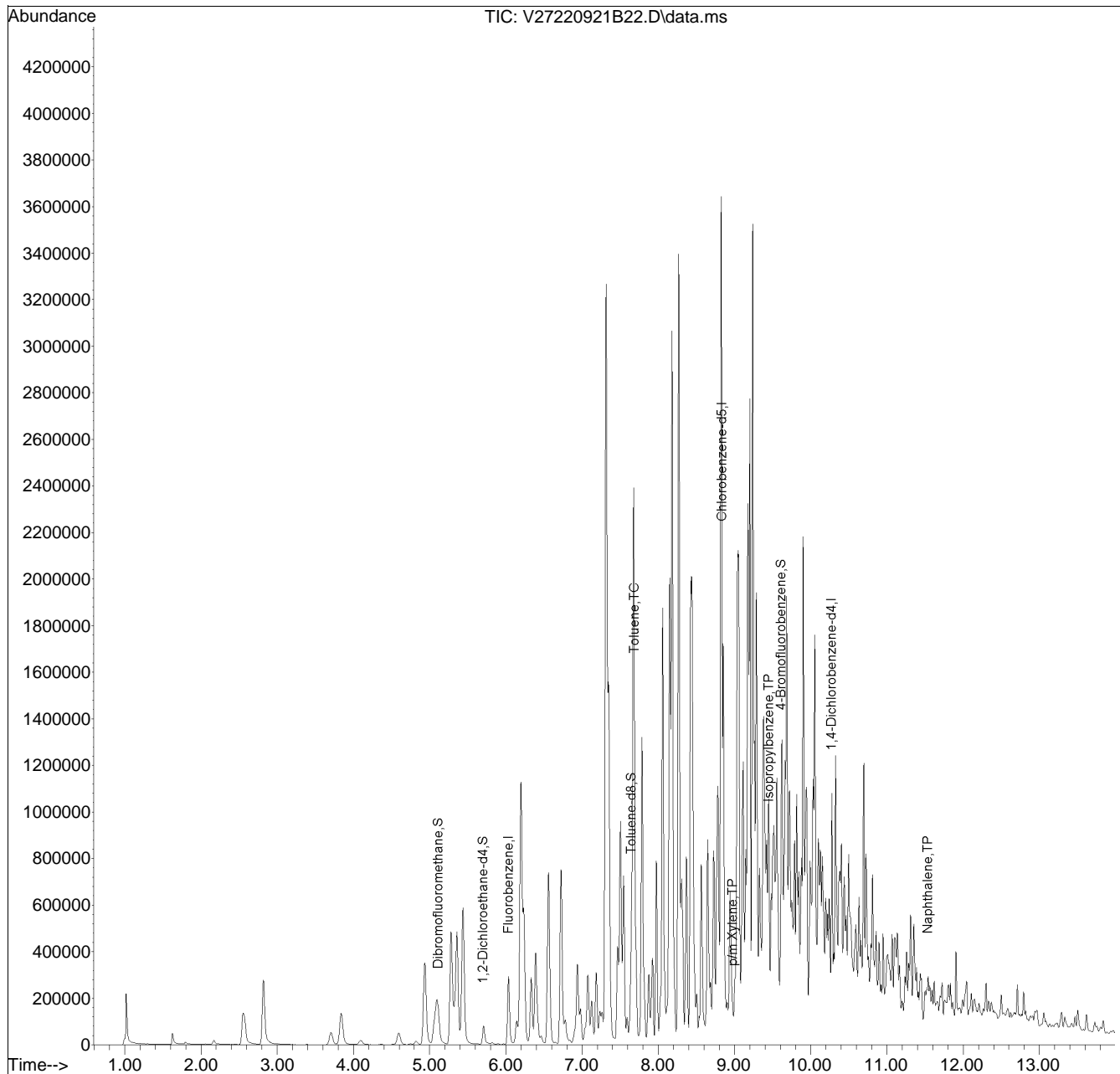


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220921B\  
Data File : V27220921B22.D  
Acq On : 21 Sep 2022 05:06 pm  
Operator : VOA127:LAC  
Sample : L2251260-07D,31H,5.84,5,0.02,,A,R2F  
Misc : WG1690798,ICAL19153  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Sep 21 22:13:23 2022  
Quant Method : I:\VOLATILES\VOA127\2022\220921B\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21B\V27220921B01.D•

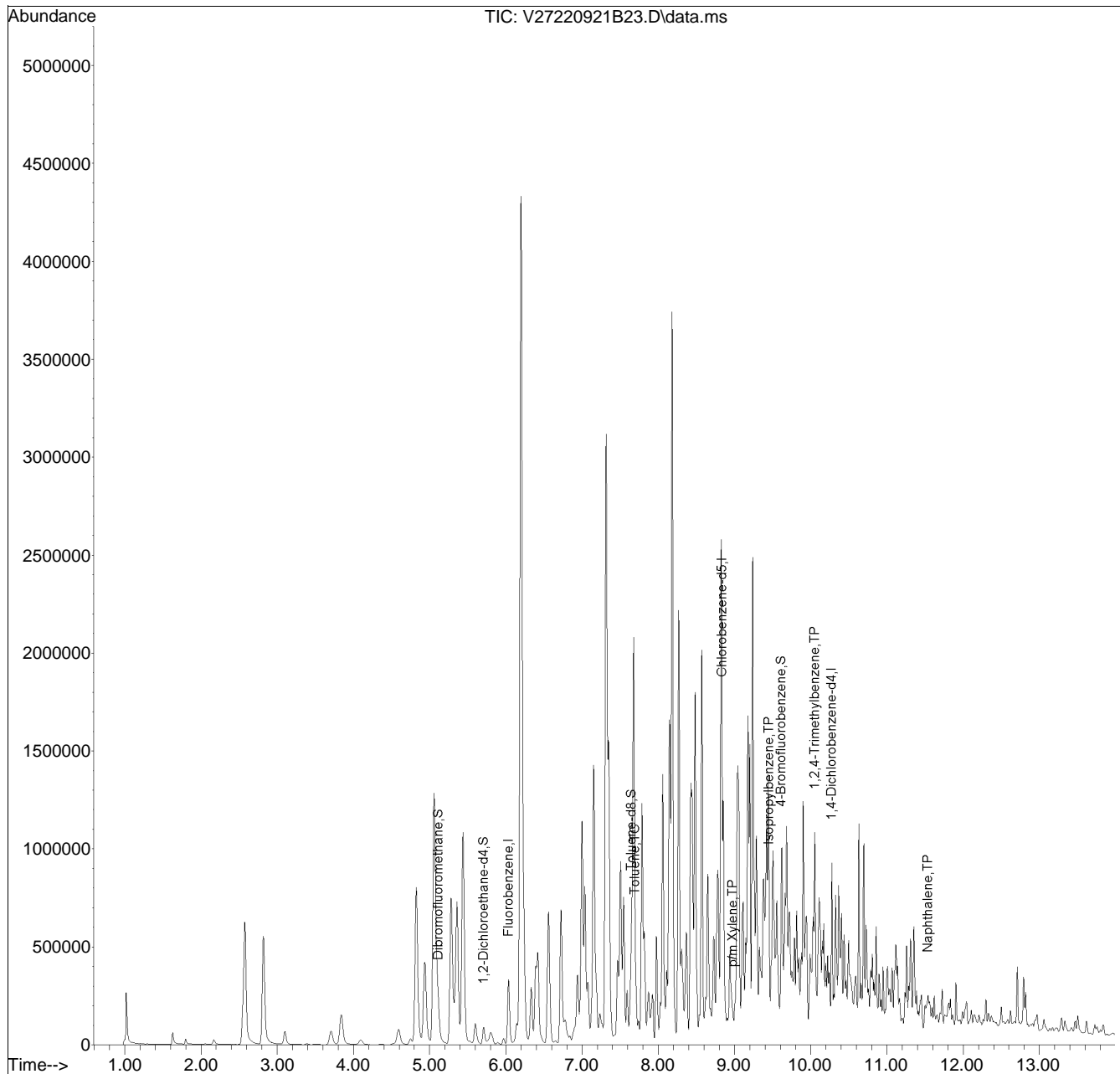


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220921B\  
Data File : V27220921B23.D  
Acq On : 21 Sep 2022 05:25 pm  
Operator : VOA127:LAC  
Sample : L2251260-09D,31H,6.33,5,0.01,,A,R2F  
Misc : WG1690798,ICAL19153  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Sep 21 22:14:09 2022  
Quant Method : I:\VOLATILES\VOA127\2022\220921B\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21B\V27220921B01.D•



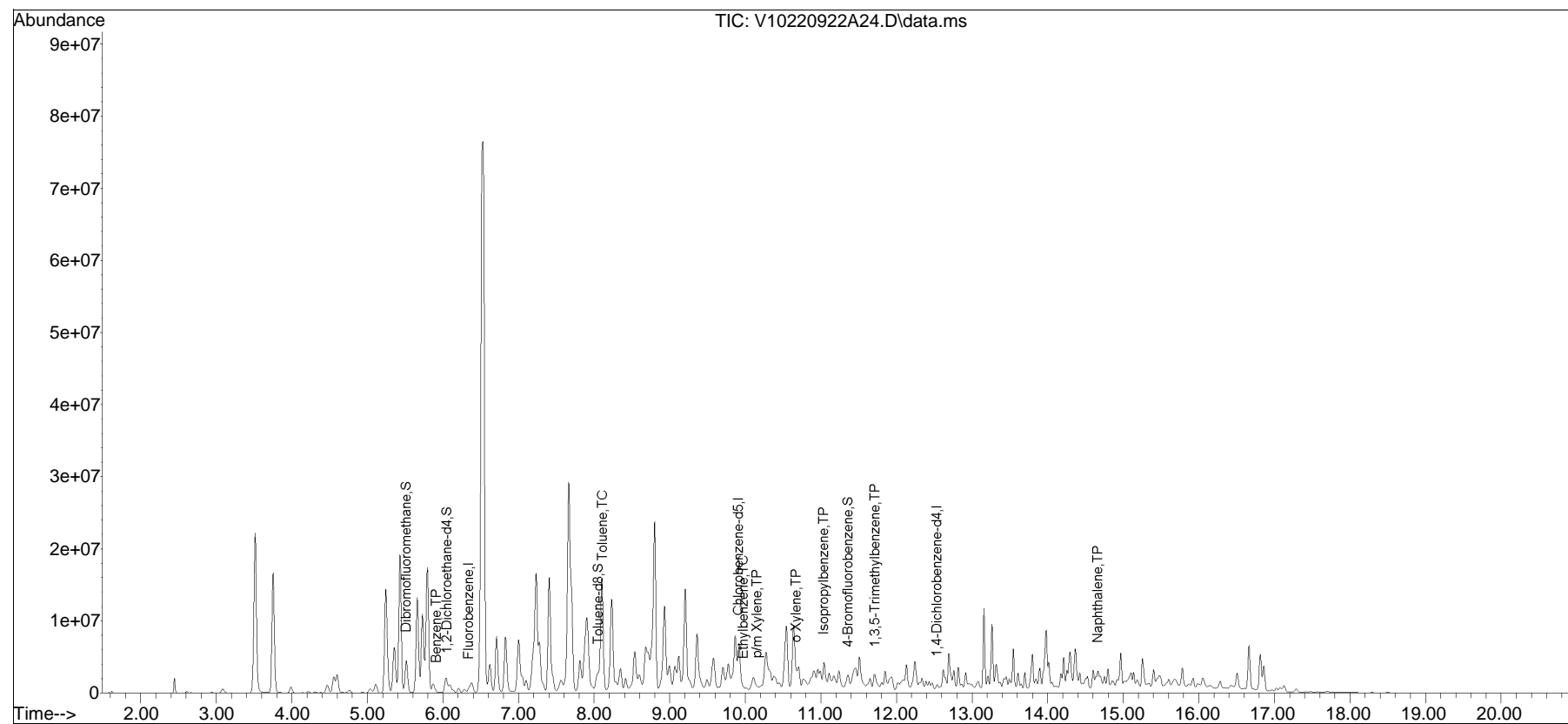


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220922A\  
Data File : V10220922A24.D  
Acq On : 22 Sep 2022 6:53 pm  
Operator : VOA110:JC  
Sample : 12251260-11,31h,5.81,5,0.100,,a,r2f  
Misc : WG1691980,ICAL19281  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 23 10:11:26 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220922A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list22A\V10220922A01.D•

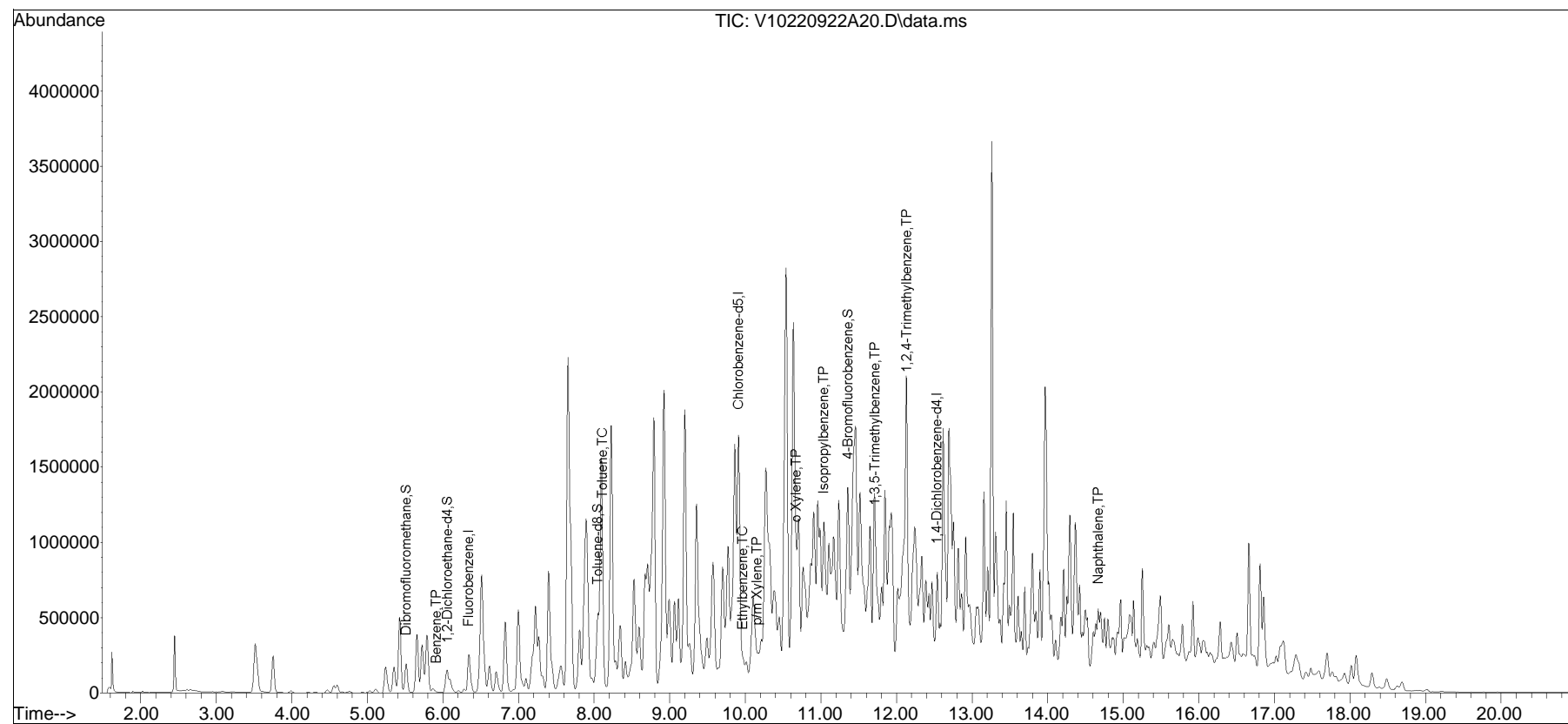


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220922A\  
Data File : V10220922A20.D  
Acq On : 22 Sep 2022 5:04 pm  
Operator : VOA110:AJK  
Sample : 12251260-13,31h,5.54,5,0.100,,a,r2f  
Misc : WG1691980,ICAL19281  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 26 09:34:28 2022  
Quant Method : I:\VOLATILES\VOA110\2022\220922A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list22A\V10220922A01.D•





## ANALYTICAL REPORT

Lab Number:	L2251903
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/29/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2251903-01	302-AS04-C1-VOC	SOIL	PHILADELPHIA, PA	09/21/22 10:00	09/21/22
L2251903-02	302-AS04-C1-COMP	SOIL	PHILADELPHIA, PA	09/21/22 10:00	09/21/22
L2251903-03	302-AS04-C2-VOC	SOIL	PHILADELPHIA, PA	09/21/22 10:10	09/21/22
L2251903-04	302-AS04-C2-COMP	SOIL	PHILADELPHIA, PA	09/21/22 10:10	09/21/22
L2251903-05	302-AS04-C3-VOC	SOIL	PHILADELPHIA, PA	09/21/22 10:20	09/21/22
L2251903-06	302-AS04-C3-COMP	SOIL	PHILADELPHIA, PA	09/21/22 10:20	09/21/22
L2251903-07	302-AS04-C4-VOC	SOIL	PHILADELPHIA, PA	09/21/22 10:30	09/21/22
L2251903-08	302-AS04-C4-COMP	SOIL	PHILADELPHIA, PA	09/21/22 10:30	09/21/22
L2251903-09	302-AS04-C5-VOC	SOIL	PHILADELPHIA, PA	09/21/22 10:40	09/21/22
L2251903-10	302-AS04-C5-COMP	SOIL	PHILADELPHIA, PA	09/21/22 10:40	09/21/22
L2251903-11	302-AS05-C1-VOC	SOIL	PHILADELPHIA, PA	09/21/22 13:00	09/21/22
L2251903-12	302-AS05-C1-COMP	SOIL	PHILADELPHIA, PA	09/21/22 13:00	09/21/22
L2251903-13	302-AS05-C2-VOC	SOIL	PHILADELPHIA, PA	09/21/22 13:10	09/21/22
L2251903-14	302-AS05-C2-COMP	SOIL	PHILADELPHIA, PA	09/21/22 13:10	09/21/22
L2251903-15	302-AS05-C3-VOC	SOIL	PHILADELPHIA, PA	09/21/22 13:20	09/21/22
L2251903-16	302-AS05-C3-COMP	SOIL	PHILADELPHIA, PA	09/21/22 13:20	09/21/22
L2251903-17	302-AS05-C4-VOC	SOIL	PHILADELPHIA, PA	09/21/22 13:30	09/21/22
L2251903-18	302-AS05-C4-COMP	SOIL	PHILADELPHIA, PA	09/21/22 13:30	09/21/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2251903-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (141%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251903-07, -09, -13, and -15: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2251903-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (146%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251903-11D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (184%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251903-11D and -17D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2251903-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (183%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251903-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (223%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2251903-17D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (131%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**Case Narrative (continued)**

Total Metals

L2251903-02, -04, -06, -08, -10, -12, -14, -16, and -18: The sample has an elevated detection limit for lead, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 09/29/22

# ORGANICS



# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-01  
 Client ID: 302-AS04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:00  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 10:28  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-03  
 Client ID: 302-AS04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:10  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 10:54  
 Analyst: AJK  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-05  
 Client ID: 302-AS04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:20  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 11:20  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00041	J	mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00083	0.00021	1
Toluene	ND		mg/kg	0.00083	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	0.00014	J	mg/kg	0.00083	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00083	0.00024	1
Xylenes, Total	ND		mg/kg	0.00083	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00083	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-07  
 Client ID: 302-AS04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:30  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 12:38  
 Analyst: AJK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.12		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	0.080		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.16		mg/kg	0.052	0.0073	1
p/m-Xylene	0.19		mg/kg	0.10	0.029	1
o-Xylene	0.038	J	mg/kg	0.052	0.015	1
Xylenes, Total	0.23	J	mg/kg	0.052	0.015	1
Isopropylbenzene	0.078		mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	0.084	J	mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	0.20		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	141	Q	70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-09  
 Client ID: 302-AS04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:40  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 13:05  
 Analyst: AJK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.17		mg/kg	0.029	0.0096	1
1,2-Dichloroethane	ND		mg/kg	0.058	0.015	1
Toluene	0.13		mg/kg	0.058	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.26		mg/kg	0.058	0.0082	1
p/m-Xylene	0.33		mg/kg	0.12	0.032	1
o-Xylene	0.056	J	mg/kg	0.058	0.017	1
Xylenes, Total	0.39	J	mg/kg	0.058	0.017	1
Isopropylbenzene	0.13		mg/kg	0.058	0.0063	1
1,3,5-Trimethylbenzene	0.15		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	0.39		mg/kg	0.12	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	146	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-11 D  
 Client ID: 302-AS05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:00  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 13:31  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.22	0.022	2
Benzene	0.23		mg/kg	0.055	0.018	2
1,2-Dichloroethane	ND		mg/kg	0.11	0.028	2
Toluene	0.13		mg/kg	0.11	0.060	2
1,2-Dibromoethane	ND		mg/kg	0.055	0.032	2
Ethylbenzene	0.044	J	mg/kg	0.11	0.015	2
p/m-Xylene	0.18	J	mg/kg	0.22	0.062	2
o-Xylene	0.032	J	mg/kg	0.11	0.032	2
Xylenes, Total	0.21	J	mg/kg	0.11	0.032	2
Isopropylbenzene	0.56		mg/kg	0.11	0.012	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.22	0.021	2
1,2,4-Trimethylbenzene	0.058	J	mg/kg	0.22	0.037	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	<b>184</b>	Q	70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-13  
 Client ID: 302-AS05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:10  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 13:57  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.075		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.066	0.017	1
Toluene	ND		mg/kg	0.066	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	ND		mg/kg	0.066	0.0093	1
p/m-Xylene	ND		mg/kg	0.13	0.037	1
o-Xylene	ND		mg/kg	0.066	0.019	1
Xylenes, Total	ND		mg/kg	0.066	0.019	1
Isopropylbenzene	0.55		mg/kg	0.066	0.0072	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	<b>183</b>	Q	70-130
Dibromofluoromethane	97		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-15  
 Client ID: 302-AS05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:20  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 14:23  
 Analyst: AJK  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	ND		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	ND		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	ND		mg/kg	0.068	0.0096	1
p/m-Xylene	ND		mg/kg	0.14	0.038	1
o-Xylene	ND		mg/kg	0.068	0.020	1
Xylenes, Total	ND		mg/kg	0.068	0.020	1
Isopropylbenzene	1.3		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	<b>223</b>	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-17 D  
 Client ID: 302-AS05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:30  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 14:49  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	1.3	0.13	10
Benzene	0.26	J	mg/kg	0.33	0.11	10
1,2-Dichloroethane	ND		mg/kg	0.66	0.17	10
Toluene	ND		mg/kg	0.66	0.36	10
1,2-Dibromoethane	ND		mg/kg	0.33	0.19	10
Ethylbenzene	0.38	J	mg/kg	0.66	0.093	10
p/m-Xylene	ND		mg/kg	1.3	0.37	10
o-Xylene	ND		mg/kg	0.66	0.19	10
Xylenes, Total	ND		mg/kg	0.66	0.19	10
Isopropylbenzene	7.2		mg/kg	0.66	0.072	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.3	0.13	10
1,2,4-Trimethylbenzene	ND		mg/kg	1.3	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	131	Q	70-130
Dibromofluoromethane	88		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/26/22 10:02  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05 Batch: WG1692616-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/26/22 10:02  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,09,11,13,15,17 Batch: WG1692619-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2251903

Project Number: 200.00135.006

Report Date: 09/29/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1692616-3 WG1692616-4									
Methyl tert butyl ether	114		113		66-130	1		30	
Benzene	118		116		70-130	2		30	
1,2-Dichloroethane	108		108		70-130	0		30	
Toluene	113		114		70-130	1		30	
1,2-Dibromoethane	111		111		70-130	0		30	
Ethylbenzene	120		119		70-130	1		30	
p/m-Xylene	118		118		70-130	0		30	
o-Xylene	117		116		70-130	1		30	
Isopropylbenzene	113		113		70-130	0		30	
1,3,5-Trimethylbenzene	116		116		70-130	0		30	
1,2,4-Trimethylbenzene	115		114		70-130	1		30	

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		107		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	100		100		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,09,11,13,15,17 Batch: WG1692619-3 WG1692619-4								
Methyl tert butyl ether	114		113		66-130	1		30
Benzene	118		116		70-130	2		30
1,2-Dichloroethane	108		108		70-130	0		30
Toluene	113		114		70-130	1		30
1,2-Dibromoethane	111		111		70-130	0		30
Ethylbenzene	120		119		70-130	1		30
p/m-Xylene	118		118		70-130	0		30
o-Xylene	117		116		70-130	1		30
Isopropylbenzene	113		113		70-130	0		30
1,3,5-Trimethylbenzene	116		116		70-130	0		30
1,2,4-Trimethylbenzene	115		114		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		107		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	100		100		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-02  
 Client ID: 302-AS04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:00  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 21:54  
 Analyst: ALS  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 03:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	49		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-04  
 Client ID: 302-AS04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:10  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 18:23  
 Analyst: ALS  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 22:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.032	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.022	J	mg/kg	0.12	0.022	1
Chrysene	0.023	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-06  
 Client ID: 302-AS04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:20  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 18:46  
 Analyst: ALS  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 22:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-08  
 Client ID: 302-AS04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:30  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 22:17  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 03:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.079	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.088	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.048	J	mg/kg	0.11	0.022	1
Chrysene	0.057	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.066	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.052	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.038	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	117		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-10  
 Client ID: 302-AS04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:40  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 22:41  
 Analyst: ALS  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 03:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.062	J	mg/kg	0.19	0.023	1
Fluorene	0.048	J	mg/kg	0.19	0.018	1
Phenanthrene	0.26		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.20		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.021	1
Chrysene	0.13		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.13	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	47		30-120
4-Terphenyl-d14	39		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-12  
 Client ID: 302-AS05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:00  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 19:10  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 22:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.091	J	mg/kg	0.19	0.023	1
Fluorene	0.084	J	mg/kg	0.19	0.019	1
Phenanthrene	0.46		mg/kg	0.12	0.023	1
Anthracene	0.12		mg/kg	0.12	0.037	1
Pyrene	0.70		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.40		mg/kg	0.12	0.022	1
Chrysene	0.40		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.42		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.37		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.26		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-14  
 Client ID: 302-AS05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:10  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 19:33  
 Analyst: ALS  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 22:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.036	J	mg/kg	0.19	0.023	1
Fluorene	0.50		mg/kg	0.19	0.018	1
Phenanthrene	0.85		mg/kg	0.11	0.023	1
Anthracene	0.13		mg/kg	0.11	0.037	1
Pyrene	0.062	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.034	J	mg/kg	0.11	0.021	1
Chrysene	0.030	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.044	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.032	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-16  
 Client ID: 302-AS05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:20  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 19:57  
 Analyst: ALS  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 22:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.12	J	mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	0.056	J	mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-18  
 Client ID: 302-AS05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 13:30  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 20:20  
 Analyst: ALS  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 22:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	0.12	J	mg/kg	0.21	0.020	1
Phenanthrene	0.042	J	mg/kg	0.12	0.025	1
Anthracene	0.040	J	mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	74		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/25/22 17:12  
Analyst: ALS

Extraction Method: EPA 3546  
Extraction Date: 09/24/22 19:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1691669-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	81		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1691669-2 WG1691669-3								
Naphthalene	90		92		40-140	2		50
Fluorene	92		95		40-140	3		50
Phenanthrene	88		91		40-140	3		50
Anthracene	90		92		40-140	2		50
Pyrene	91		93		35-142	2		50
Benzo(a)anthracene	89		92		40-140	3		50
Chrysene	86		86		40-140	0		50
Benzo(b)fluoranthene	90		88		40-140	2		50
Benzo(a)pyrene	93		94		40-140	1		50
Benzo(ghi)perylene	89		91		40-140	2		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	137	Q	141	Q	23-120
2-Fluorobiphenyl	92		94		30-120
4-Terphenyl-d14	89		92		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-02  
 Client ID: 302-AS04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:00  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	70.4		mg/kg	4.52	0.242	2	09/22/22 23:33	09/28/22 22:41	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-04  
 Client ID: 302-AS04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:10  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.9		mg/kg	4.58	0.245	2	09/22/22 23:33	09/28/22 22:47	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-06

Date Collected: 09/21/22 10:20

Client ID: 302-AS04-C3-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.73		mg/kg	4.78	0.256	2	09/22/22 23:33	09/28/22 22:52	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-08  
 Client ID: 302-AS04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/21/22 10:30  
 Date Received: 09/21/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	663		mg/kg	4.52	0.242	2	09/22/22 23:33	09/28/22 22:56	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-10

Date Collected: 09/21/22 10:40

Client ID: 302-AS04-C5-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	225		mg/kg	4.40	0.236	2	09/22/22 23:33	09/28/22 23:01	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-12

Date Collected: 09/21/22 13:00

Client ID: 302-AS05-C1-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	151		mg/kg	4.41	0.236	2	09/22/22 23:33	09/28/22 23:06	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-14

Date Collected: 09/21/22 13:10

Client ID: 302-AS05-C2-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	24.5		mg/kg	4.53	0.243	2	09/22/22 23:33	09/29/22 00:58	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-16

Date Collected: 09/21/22 13:20

Client ID: 302-AS05-C3-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.16		mg/kg	4.58	0.246	2	09/22/22 23:33	09/29/22 01:03	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-18

Date Collected: 09/21/22 13:30

Client ID: 302-AS05-C4-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.69		mg/kg	4.84	0.259	2	09/22/22 23:33	09/29/22 01:08	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251903

Project Number: 200.00135.006

Report Date: 09/29/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1690910-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/22/22 23:33	09/26/22 08:49	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2251903

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1690910-2 SRM Lot Number: D113-540								
Lead, Total	81		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1690910-3    QC Sample: L2251793-02    Client ID: MS Sample												
Lead, Total	81.7	45.7	110	62	Q	-	-		75-125	-		20

### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2251903

**Report Date:** 09/29/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1690910-4 QC Sample: L2251793-02 Client ID: DUP Sample						
Lead, Total	81.7	61.7	mg/kg	28	Q	20





**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1690910-6 QC Sample: L2251793-02 Client ID: DUP Sample						
Lead, Total	81.7	104	mg/kg	27	Q	20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-01

Date Collected: 09/21/22 10:00

Client ID: 302-AS04-C1-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.6		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251903

Project Number: 200.00135.006

Report Date: 09/29/22

**SAMPLE RESULTS**

Lab ID: L2251903-02

Date Collected: 09/21/22 10:00

Client ID: 302-AS04-C1-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.7		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-03

Date Collected: 09/21/22 10:10

Client ID: 302-AS04-C2-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-04

Date Collected: 09/21/22 10:10

Client ID: 302-AS04-C2-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.8		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-05

Date Collected: 09/21/22 10:20

Client ID: 302-AS04-C3-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.6		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-06

Date Collected: 09/21/22 10:20

Client ID: 302-AS04-C3-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-07

Date Collected: 09/21/22 10:30

Client ID: 302-AS04-C4-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.8		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-08

Date Collected: 09/21/22 10:30

Client ID: 302-AS04-C4-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.9		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-09

Date Collected: 09/21/22 10:40

Client ID: 302-AS04-C5-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.1		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-10

Date Collected: 09/21/22 10:40

Client ID: 302-AS04-C5-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-11

Date Collected: 09/21/22 13:00

Client ID: 302-AS05-C1-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.9		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-12

Date Collected: 09/21/22 13:00

Client ID: 302-AS05-C1-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-13

Date Collected: 09/21/22 13:10

Client ID: 302-AS05-C2-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.9		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2251903

Project Number: 200.00135.006

Report Date: 09/29/22

## SAMPLE RESULTS

Lab ID: L2251903-14

Date Collected: 09/21/22 13:10

Client ID: 302-AS05-C2-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.5		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-15

Date Collected: 09/21/22 13:20

Client ID: 302-AS05-C3-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.4		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-16

Date Collected: 09/21/22 13:20

Client ID: 302-AS05-C3-COMP

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2251903-17

Date Collected: 09/21/22 13:30

Client ID: 302-AS05-C4-VOC

Date Received: 09/21/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	09/23/22 11:39	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

**Lab ID:** L2251903-18  
**Client ID:** 302-AS05-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/21/22 13:30  
**Date Received:** 09/21/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	09/23/22 11:07	121,2540G	RI



### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1691135-1 QC Sample: L2251903-02 Client ID: 302-AS04-C1-COMP						
Solids, Total	85.7	84.6	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17 QC Batch ID: WG1691140-1 QC Sample: L2251903-01 Client ID: 302-AS04-C1-VOC						
Solids, Total	79.6	79.5	%	0		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2251903-01A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-01B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-01C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-01D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-02B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-03A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-03B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-03C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-03D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-04B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-05A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-05B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-05C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-05D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-06B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-07A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-07B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-07C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-07D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2251903**Project Number:** 200.00135.006**Report Date:** 09/29/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2251903-08B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-09A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-09B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-09C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-09D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-10B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-11A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-11B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-11C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-11D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-12B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-13A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-13B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-13C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-13D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-14B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-15A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-15B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-15C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-15D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-16B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2251903-17A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2251903-17B	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)
L2251903-17C	Vial water preserved	A	NA		3.6	Y	Absent	22-SEP-22 13:11	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:09292214:05  
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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2251903-17D	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		TS(7)
L2251903-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2251903-18B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

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**Report Date:** 09/29/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2251903  
**Report Date:** 09/29/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



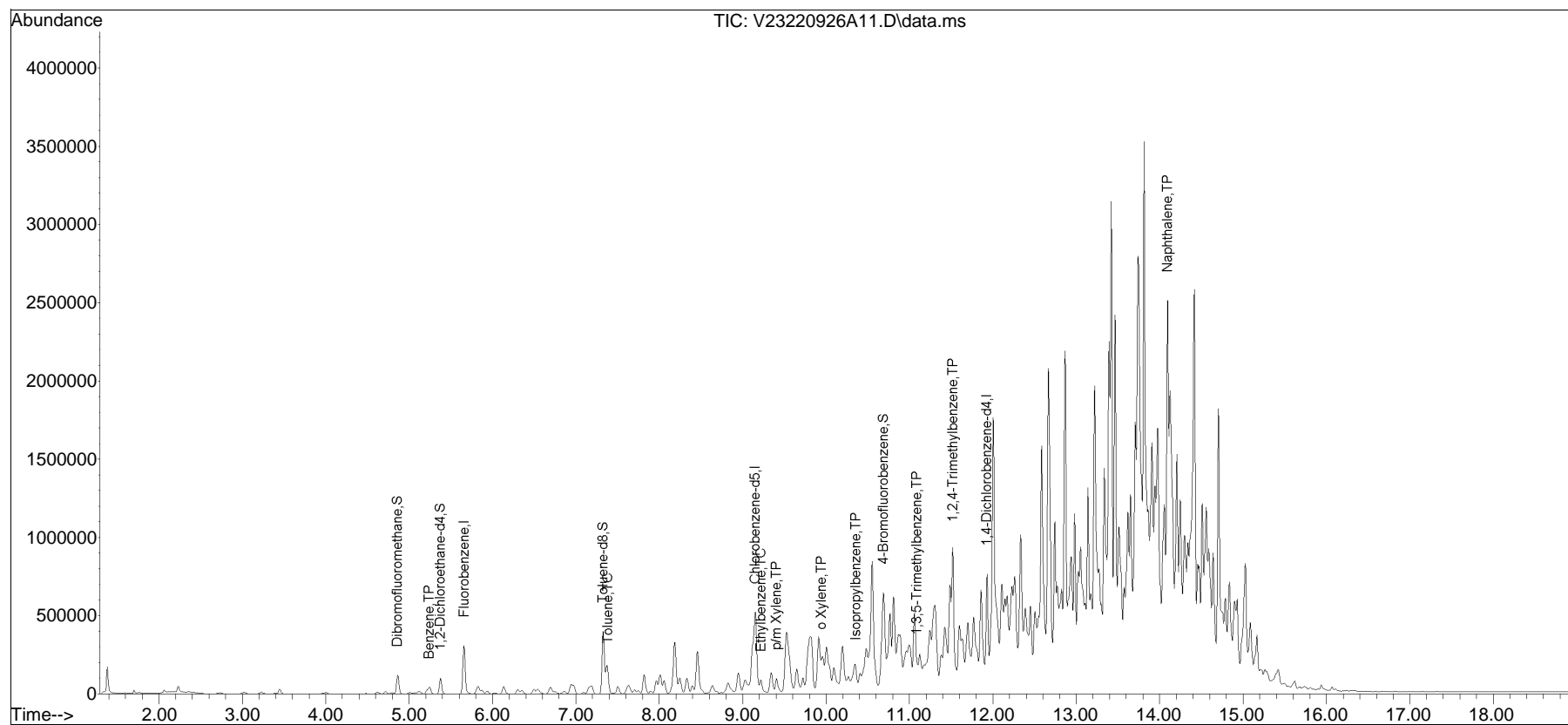


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220926A\  
Data File : V23220926A11.D  
Acq On : 26 Sep 2022 12:38 pm  
Operator : VOA123:AJK  
Sample : 12251903-07,31h,6.04,5,0.100,,a,r2f  
Misc : WG1692619,ICAL19289  
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Sep 27 12:08:02 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220926A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220926A01.D•



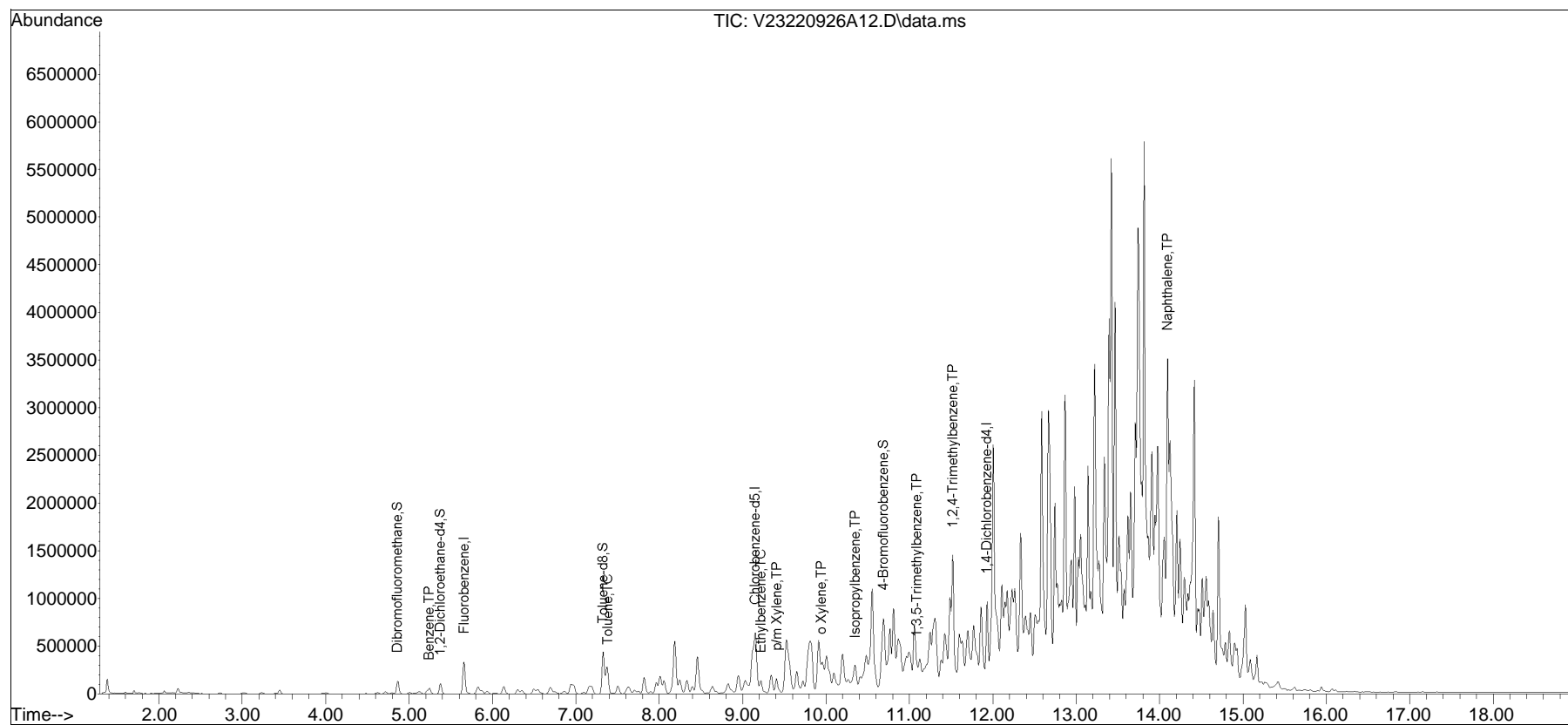


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220926A\  
Data File : V23220926A12.D  
Acq On : 26 Sep 2022 01:05 pm  
Operator : VOA123:AJK  
Sample : 12251903-09,31h,5.17,5,0.100,,a,r2f  
Misc : WG1692619,ICAL19289  
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Sep 27 12:08:07 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220926A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220926A01.D•

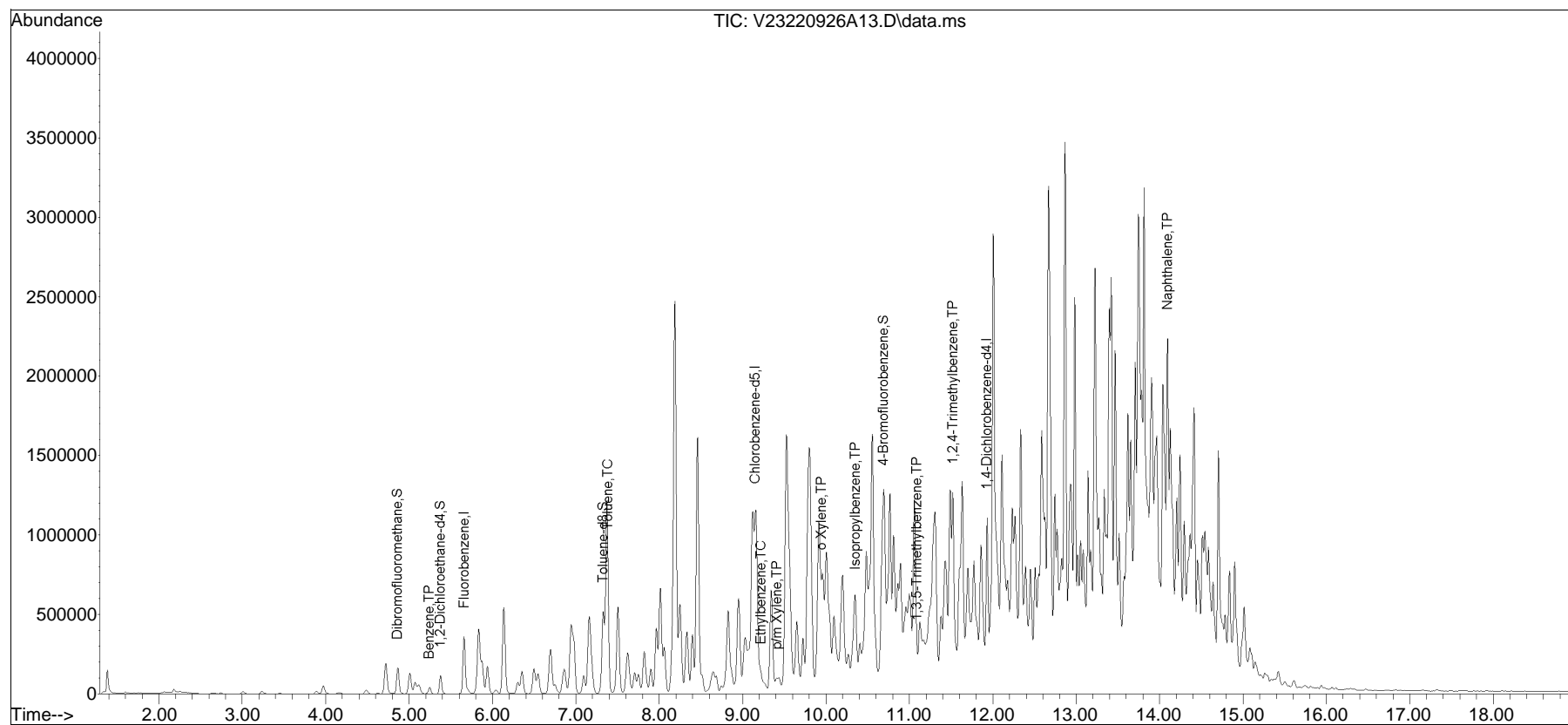


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220926A\  
Data File : V23220926A13.D  
Acq On : 26 Sep 2022 01:31 pm  
Operator : VOA123:AJK  
Sample : 12251903-11d,31h,6.57,5,0.05,,a,r2f  
Misc : WG1692619,ICAL19289  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Sep 27 12:12:38 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220926A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220926A01.D•

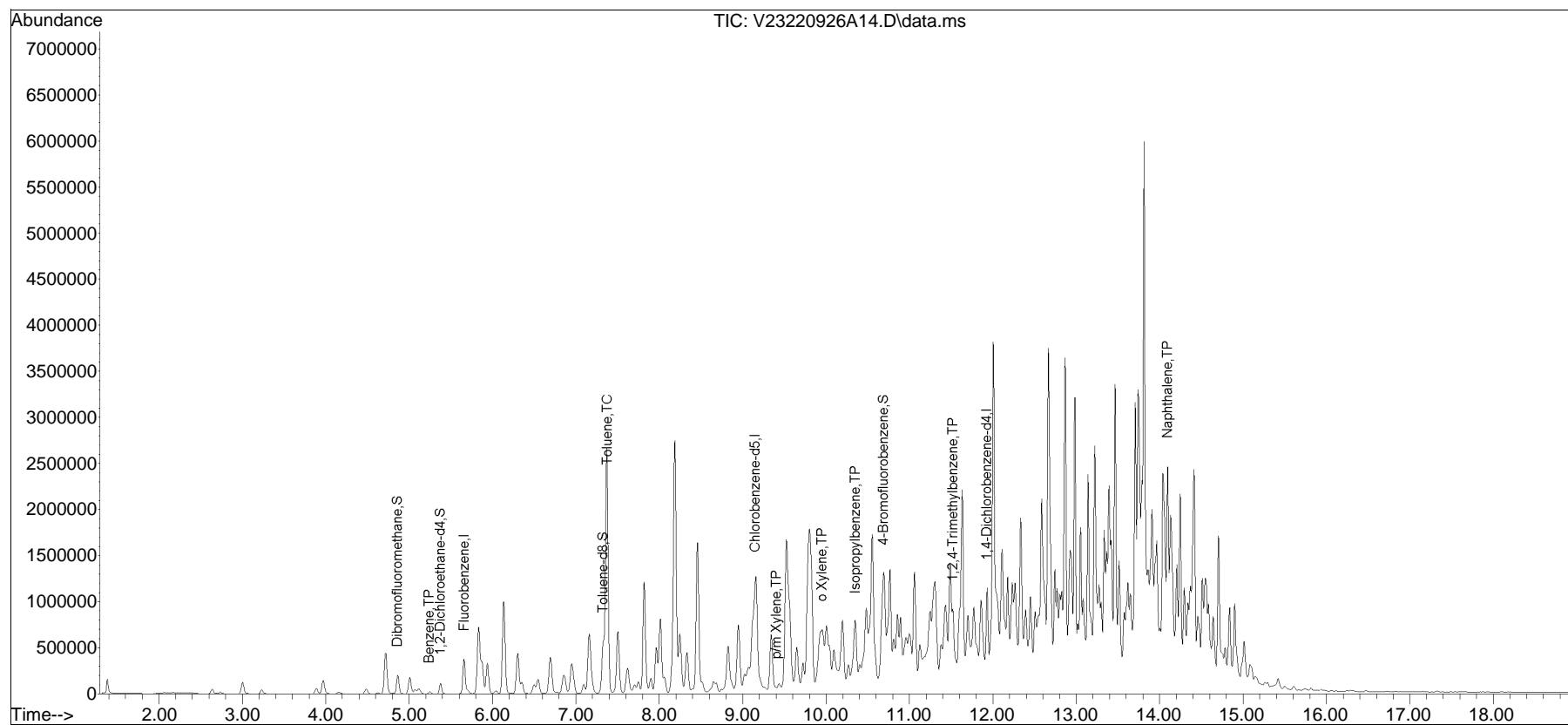


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220926A\  
Data File : V23220926A14.D  
Acq On : 26 Sep 2022 01:57 pm  
Operator : VOA123:AJK  
Sample : 12251903-13,31h,5.83,5,0.100,,a,r2f  
Misc : WG1692619,ICAL19289  
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Sep 27 12:13:01 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220926A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220926A01.D•

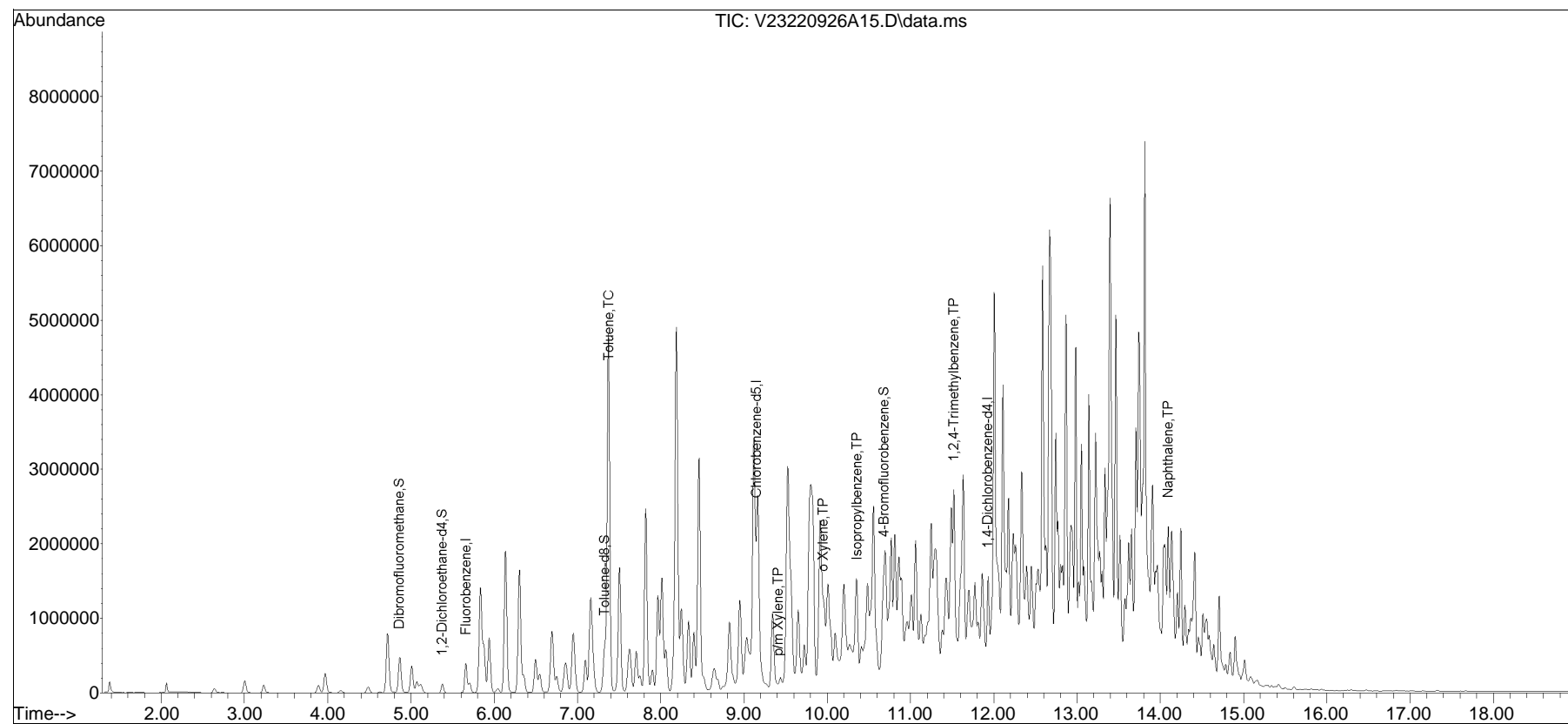


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220926A\  
Data File : V23220926A15.D  
Acq On : 26 Sep 2022 02:23 pm  
Operator : VOA123:AJK  
Sample : 12251903-15,31h,5.90,5,0.100,,a,r2f  
Misc : WG1692619,ICAL19289  
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Sep 27 12:13:21 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220926A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220926A01.D•

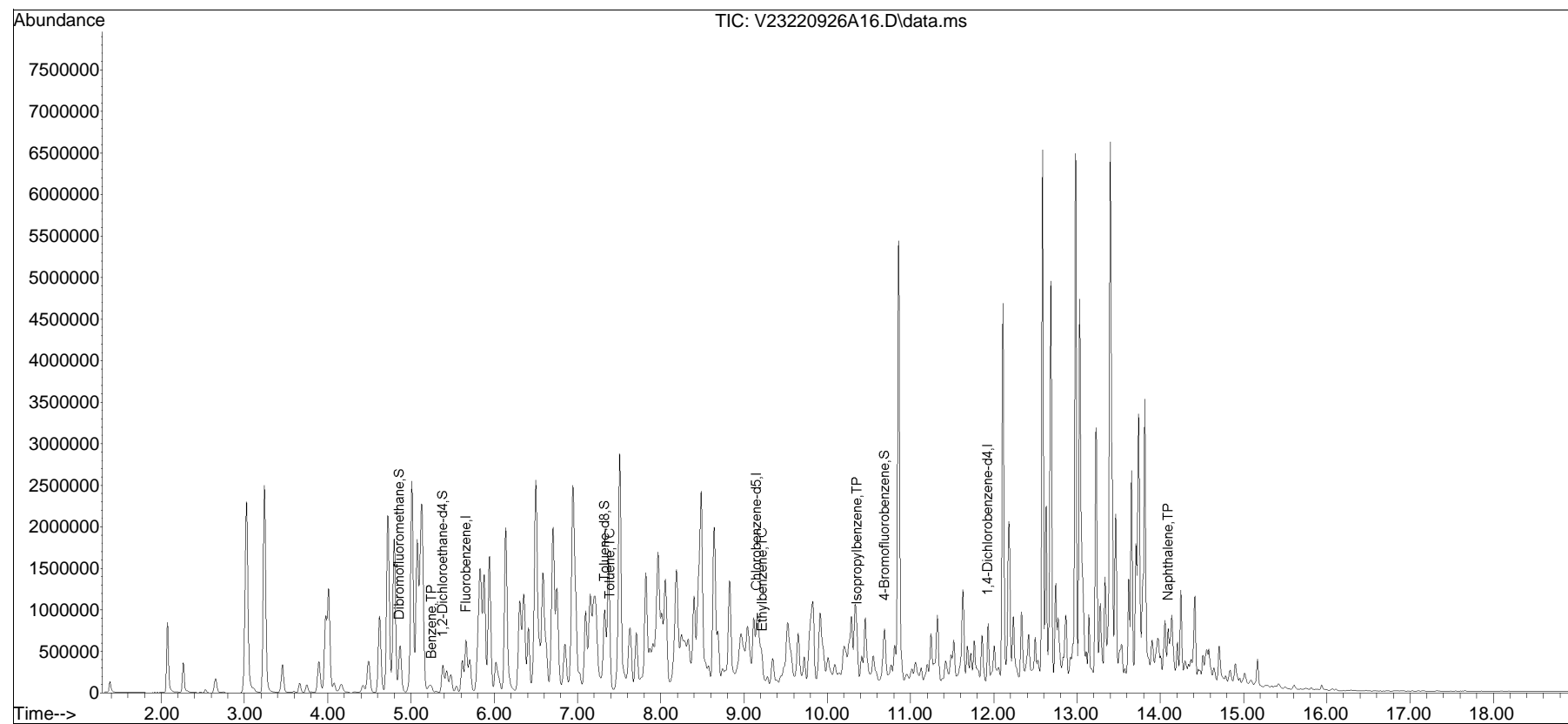


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220926A\  
Data File : V23220926A16.D  
Acq On : 26 Sep 2022 02:49 pm  
Operator : VOA123:AJK  
Sample : 12251903-17d,31h,5.71,5,0.01,,a,r2f  
Misc : WG1692619,ICAL19289  
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Sep 27 12:13:38 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220926A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V23220926A01.D•





## ANALYTICAL REPORT

Lab Number:	L2252203
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	09/29/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2252203-01	302-AT03-C1-VOC	SOIL	PHILADELPHIA, PA	09/22/22 11:00	09/22/22
L2252203-02	302-AT03-C1-COMP	SOIL	PHILADELPHIA, PA	09/22/22 11:00	09/22/22
L2252203-03	302-AT03-C2-VOC	SOIL	PHILADELPHIA, PA	09/22/22 11:15	09/22/22
L2252203-04	302-AT03-C2-COMP	SOIL	PHILADELPHIA, PA	09/22/22 11:15	09/22/22
L2252203-05	302-AT03-C3-VOC	SOIL	PHILADELPHIA, PA	09/22/22 11:30	09/22/22
L2252203-06	302-AT03-C3-COMP	SOIL	PHILADELPHIA, PA	09/22/22 11:30	09/22/22
L2252203-07	302-AT03-C4-VOC	SOIL	PHILADELPHIA, PA	09/22/22 11:45	09/22/22
L2252203-08	302-AT03-C4-COMP	SOIL	PHILADELPHIA, PA	09/22/22 11:45	09/22/22
L2252203-09	302-AT03-C5-VOC	SOIL	PHILADELPHIA, PA	09/22/22 12:00	09/22/22
L2252203-10	302-AT03-C5-COMP	SOIL	PHILADELPHIA, PA	09/22/22 12:00	09/22/22
L2252203-11	302-AT04-C1-VOC	SOIL	PHILADELPHIA, PA	09/22/22 13:00	09/22/22
L2252203-12	302-AT04-C1-COMP	SOIL	PHILADELPHIA, PA	09/22/22 13:00	09/22/22
L2252203-13	302-AT04-C2-VOC	SOIL	PHILADELPHIA, PA	09/22/22 13:30	09/22/22
L2252203-14	302-AT04-C2-COMP	SOIL	PHILADELPHIA, PA	09/22/22 13:30	09/22/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2252203-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252203-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (209%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252203-07 and -09: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2252203-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (140%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252203-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (162%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252203-13: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 09/29/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-01  
 Client ID: 302-AT03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/28/22 09:28  
 Analyst: MKS  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0033	0.00033	1
Benzene	0.00033	J	mg/kg	0.00082	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00042	1
Toluene	0.00090	J	mg/kg	0.0016	0.00089	1
1,2-Dibromoethane	ND		mg/kg	0.00082	0.00048	1
Ethylbenzene	0.00094	J	mg/kg	0.0016	0.00023	1
p/m-Xylene	0.0012	J	mg/kg	0.0033	0.00092	1
o-Xylene	0.0077		mg/kg	0.0016	0.00048	1
Xylenes, Total	0.0089	J	mg/kg	0.0016	0.00048	1
Isopropylbenzene	0.0053		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	0.085		mg/kg	0.0033	0.00032	1
1,2,4-Trimethylbenzene	0.31		mg/kg	0.0033	0.00055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-03  
 Client ID: 302-AT03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:15  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 17:26  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	0.00030	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00030	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.0011		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0014	J	mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0059		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-05  
 Client ID: 302-AT03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:30  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 17:52  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.015		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.00028	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.00020	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.00058	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-07  
 Client ID: 302-AT03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:45  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/28/22 10:20  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	0.034	J	mg/kg	0.064	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.014	J	mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.064	0.018	1
Xylenes, Total	ND		mg/kg	0.064	0.018	1
Isopropylbenzene	3.1		mg/kg	0.064	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.072	J	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	209	Q	70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-09  
 Client ID: 302-AT03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 12:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/28/22 17:19  
 Analyst: KJD  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.013	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.063	0.0089	1
p/m-Xylene	ND		mg/kg	0.12	0.035	1
o-Xylene	ND		mg/kg	0.063	0.018	1
Xylenes, Total	ND		mg/kg	0.063	0.018	1
Isopropylbenzene	1.0		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	140	Q	70-130
Dibromofluoromethane	96		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-11  
 Client ID: 302-AT04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/29/22 09:30  
 Analyst: MKS  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.060		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.069	0.018	1
Toluene	0.051	J	mg/kg	0.069	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.059	J	mg/kg	0.069	0.0097	1
p/m-Xylene	0.26		mg/kg	0.14	0.039	1
o-Xylene	0.052	J	mg/kg	0.069	0.020	1
Xylenes, Total	0.31	J	mg/kg	0.069	0.020	1
Isopropylbenzene	5.2		mg/kg	0.069	0.0075	1
1,3,5-Trimethylbenzene	0.016	J	mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	0.081	J	mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	162	Q	70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-13  
 Client ID: 302-AT04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:30  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/29/22 10:09  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.061	0.016	1
Toluene	ND		mg/kg	0.061	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	ND		mg/kg	0.061	0.0086	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.061	0.018	1
Xylenes, Total	ND		mg/kg	0.061	0.018	1
Isopropylbenzene	0.80		mg/kg	0.061	0.0066	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	129		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 09/26/22 10:02  
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,05 Batch: WG1692616-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/28/22 09:02  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1693215-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/28/22 09:02  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,09 Batch: WG1693219-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/29/22 09:10  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11,13 Batch: WG1693567-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,05 Batch: WG1692616-3 WG1692616-4								
Methyl tert butyl ether	114		113		66-130	1		30
Benzene	118		116		70-130	2		30
1,2-Dichloroethane	108		108		70-130	0		30
Toluene	113		114		70-130	1		30
1,2-Dibromoethane	111		111		70-130	0		30
Ethylbenzene	120		119		70-130	1		30
p/m-Xylene	118		118		70-130	0		30
o-Xylene	117		116		70-130	1		30
Isopropylbenzene	113		113		70-130	0		30
1,3,5-Trimethylbenzene	116		116		70-130	0		30
1,2,4-Trimethylbenzene	115		114		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		107		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	100		100		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2252203

Project Number: 200.00135.006

Report Date: 09/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1693215-3 WG1693215-4								
Methyl tert butyl ether	105		103		66-130	2		30
Benzene	109		106		70-130	3		30
1,2-Dichloroethane	98		97		70-130	1		30
Toluene	105		100		70-130	5		30
1,2-Dibromoethane	105		102		70-130	3		30
Ethylbenzene	110		105		70-130	5		30
p/m-Xylene	109		105		70-130	4		30
o-Xylene	108		104		70-130	4		30
Isopropylbenzene	109		104		70-130	5		30
1,3,5-Trimethylbenzene	108		104		70-130	4		30
1,2,4-Trimethylbenzene	107		102		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	99		98		70-130
Dibromofluoromethane	100		100		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,09 Batch: WG1693219-3 WG1693219-4								
Methyl tert butyl ether	105		103		66-130	2		30
Benzene	109		106		70-130	3		30
1,2-Dichloroethane	98		97		70-130	1		30
Toluene	105		100		70-130	5		30
1,2-Dibromoethane	105		102		70-130	3		30
Ethylbenzene	110		105		70-130	5		30
p/m-Xylene	109		105		70-130	4		30
o-Xylene	108		104		70-130	4		30
Isopropylbenzene	109		104		70-130	5		30
1,3,5-Trimethylbenzene	108		104		70-130	4		30
1,2,4-Trimethylbenzene	107		102		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	99		98		70-130
Dibromofluoromethane	100		100		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11,13 Batch: WG1693567-3 WG1693567-4								
Methyl tert butyl ether	79		76		66-130	4		30
Benzene	88		86		70-130	2		30
1,2-Dichloroethane	81		77		70-130	5		30
Toluene	80		79		70-130	1		30
1,2-Dibromoethane	82		82		70-130	0		30
Ethylbenzene	86		85		70-130	1		30
p/m-Xylene	85		84		70-130	1		30
o-Xylene	85		84		70-130	1		30
Isopropylbenzene	86		85		70-130	1		30
1,3,5-Trimethylbenzene	87		85		70-130	2		30
1,2,4-Trimethylbenzene	86		84		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		95		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	100		99		70-130
Dibromofluoromethane	97		97		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-02  
 Client ID: 302-AT03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 15:38  
 Analyst: JG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-04  
 Client ID: 302-AT03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:15  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 16:02  
 Analyst: JG  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.030	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.044	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.033	J	mg/kg	0.12	0.022	1
Chrysene	0.025	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-06  
 Client ID: 302-AT03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:30  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 16:25  
 Analyst: JG  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	0.074	J	mg/kg	0.22	0.021	1
Phenanthrene	0.14		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.053	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-08  
 Client ID: 302-AT03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 11:45  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 16:48  
 Analyst: JG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	0.037	J	mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.024	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-10  
 Client ID: 302-AT03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 12:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 17:12  
 Analyst: JG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	66		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-12  
 Client ID: 302-AT04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 17:35  
 Analyst: JG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.23		mg/kg	0.20	0.025	1
Fluorene	1.2		mg/kg	0.20	0.020	1
Phenanthrene	2.0		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.084	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-14  
 Client ID: 302-AT04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:30  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/26/22 17:59  
 Analyst: JG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/25/22 18:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.20	0.025	1
Fluorene	0.088	J	mg/kg	0.20	0.020	1
Phenanthrene	0.14		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.023	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/25/22 17:12  
Analyst: ALS

Extraction Method: EPA 3546  
Extraction Date: 09/24/22 19:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1691669-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	81		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1691669-2 WG1691669-3								
Naphthalene	90		92		40-140	2		50
Fluorene	92		95		40-140	3		50
Phenanthrene	88		91		40-140	3		50
Anthracene	90		92		40-140	2		50
Pyrene	91		93		35-142	2		50
Benzo(a)anthracene	89		92		40-140	3		50
Chrysene	86		86		40-140	0		50
Benzo(b)fluoranthene	90		88		40-140	2		50
Benzo(a)pyrene	93		94		40-140	1		50
Benzo(ghi)perylene	89		91		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	137	Q	141	Q	23-120
2-Fluorobiphenyl	92		94		30-120
4-Terphenyl-d14	89		92		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-02

Date Collected: 09/22/22 11:00

Client ID: 302-AT03-C1-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	682		mg/kg	2.40	0.129	1	09/23/22 23:30	09/29/22 11:38	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-04

Date Collected: 09/22/22 11:15

Client ID: 302-AT03-C2-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	198		mg/kg	2.28	0.122	1	09/23/22 23:30	09/29/22 12:09	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-06

Date Collected: 09/22/22 11:30

Client ID: 302-AT03-C3-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.4		mg/kg	2.54	0.136	1	09/23/22 23:30	09/29/22 12:12	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-08

Date Collected: 09/22/22 11:45

Client ID: 302-AT03-C4-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	322		mg/kg	2.38	0.128	1	09/23/22 23:30	09/29/22 12:15	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-10

Date Collected: 09/22/22 12:00

Client ID: 302-AT03-C5-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.65		mg/kg	2.40	0.129	1	09/23/22 23:30	09/29/22 12:19	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-12  
 Client ID: 302-AT04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	14.4		mg/kg	2.44	0.131	1	09/23/22 23:30	09/29/22 12:22	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-14

Date Collected: 09/22/22 13:30

Client ID: 302-AT04-C2-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.4		mg/kg	2.38	0.127	1	09/23/22 23:30	09/29/22 12:26	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252203

Project Number: 200.00135.006

Report Date: 09/29/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1691437-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/23/22 23:30	09/29/22 12:05	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252203

**Project Number:** 200.00135.006

**Report Date:** 09/29/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1691437-2 SRM Lot Number: D113-540								
Lead, Total	101		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14    QC Batch ID: WG1691437-3    QC Sample: L2252175-01    Client ID: MS Sample												
Lead, Total	27.3	47.7	61.1	71	Q	-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2252203

Report Date: 09/29/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1691437-4 QC Sample: L2252175-01 Client ID: DUP Sample						
Lead, Total	27.3	12.2	mg/kg	76	Q	20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-01

Date Collected: 09/22/22 11:00

Client ID: 302-AT03-C1-VOC

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.3		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252203

Project Number: 200.00135.006

Report Date: 09/29/22

## SAMPLE RESULTS

Lab ID: L2252203-02

Date Collected: 09/22/22 11:00

Client ID: 302-AT03-C1-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-03

Date Collected: 09/22/22 11:15

Client ID: 302-AT03-C2-VOC

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252203

Project Number: 200.00135.006

Report Date: 09/29/22

## SAMPLE RESULTS

Lab ID: L2252203-04

Date Collected: 09/22/22 11:15

Client ID: 302-AT03-C2-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-05

Date Collected: 09/22/22 11:30

Client ID: 302-AT03-C3-VOC

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252203

Project Number: 200.00135.006

Report Date: 09/29/22

## SAMPLE RESULTS

Lab ID: L2252203-06

Date Collected: 09/22/22 11:30

Client ID: 302-AT03-C3-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.4		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-07

Date Collected: 09/22/22 11:45

Client ID: 302-AT03-C4-VOC

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.8		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2252203

Project Number: 200.00135.006

Report Date: 09/29/22

## SAMPLE RESULTS

Lab ID: L2252203-08

Date Collected: 09/22/22 11:45

Client ID: 302-AT03-C4-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.7		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-09  
 Client ID: 302-AT03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 12:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-10

Date Collected: 09/22/22 12:00

Client ID: 302-AT03-C5-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-11

Date Collected: 09/22/22 13:00

Client ID: 302-AT04-C1-VOC

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.3		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-12  
 Client ID: 302-AT04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:00  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

**SAMPLE RESULTS**

Lab ID: L2252203-13  
 Client ID: 302-AT04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/22/22 13:30  
 Date Received: 09/22/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**SAMPLE RESULTS**

Lab ID: L2252203-14

Date Collected: 09/22/22 13:30

Client ID: 302-AT04-C2-COMP

Date Received: 09/22/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.2		%	0.100	NA	1	-	09/23/22 13:09	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2252203

**Report Date:** 09/29/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1691265-1 QC Sample: L2252203-01 Client ID: 302-AT03-C1-VOC						
Solids, Total	83.3	82.9	%	0		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2252203-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-01B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-01C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-01D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2252203-02B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2252203-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-03B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-03C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-03D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2252203-04B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2252203-05A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-05B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-05C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-05D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2252203-06B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2252203-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-07B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-07C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-07D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252203**Project Number:** 200.00135.006**Report Date:** 09/29/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2252203-08B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2252203-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-09B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-09C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-09D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2252203-10B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2252203-11A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-11B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-11C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-11D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2252203-12B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)
L2252203-13A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2252203-13B	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-13C	Vial water preserved	A	NA		3.2	Y	Absent	23-SEP-22 10:53	PA-8260HLW(14)
L2252203-13D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2252203-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2252203-14B	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252203  
**Report Date:** 09/29/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 2



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to [edd@terraphase.com](mailto:edd@terraphase.com), [William.Schmidt@ransomenv.com](mailto:William.Schmidt@ransomenv.com), and [jjeray@hilcoglobal.com](mailto:jjeray@hilcoglobal.com)

Date Rec'd in Lab: 9/23/22

ALPHA Job #: L2252203

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Other Analytes												
		Date	Time						1	2	3	4	5	6	7	8	9	10			
52203 -01	30Z-AT03-C1-VOC	9/22	1100	BS	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-02	30Z-AT03-C1-COMP		1100			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-03	30Z-AT03-C2-VOC		1115			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-04	30Z-AT03-C2-COMP		1115			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-05	30Z-AT03-C3-VOC		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-06	30Z-AT03-C3-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-07	30Z-AT03-C4-VOC		1145			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-08	30Z-AT03-C4-COMP		1145			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-09	30Z-AT03-C5-VOC		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	30Z-AT03-C5-COMP		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
52203 -01	30Z-AT03-C1-VOC	9/22	1100	BS	TS
-02	30Z-AT03-C1-COMP		1100		
-03	30Z-AT03-C2-VOC		1115		
-04	30Z-AT03-C2-COMP		1115		
-05	30Z-AT03-C3-VOC		1130		
-06	30Z-AT03-C3-COMP		1130		
-07	30Z-AT03-C4-VOC		1145		
-08	30Z-AT03-C4-COMP		1145		
-09	30Z-AT03-C5-VOC		1200		
-10	30Z-AT03-C5-COMP		1200		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/22	Stan ADL	9/22/22 1430
<i>[Signature]</i>	9/22/22 1800	<i>[Signature]</i> AKC	9/22/22 1800
<i>[Signature]</i>	9/22/22 2100	<i>[Signature]</i>	9/22/22 2100
<i>[Signature]</i>	9/22/22	<i>[Signature]</i>	9/22/22 7210

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1261~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA    Mansfield, MA  
 TEL: 508-896-9220    TEL: 508-822-9300  
 FAX: 508-896-9193    FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/23/22

ALPHA Job #: L22 52203

## Report Information Data Deliverables

FAX  EMAIL  
 ADEK  Add'l Deliverables

## Billing Information

Same as Client info    PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_

Criteria \_\_\_\_\_

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES			
		Date	Time																				
52203	-11 302-AT04-C1-VOC	9/22	1300	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	-12 302-AT04-C1-Comp		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	-13 302-AT04-C2-VOC		1330			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
	-14 302-AT04-C2-Comp		1330			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type G G G - - - - -

Preservative F A A - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/22	STV AA L	9/22/22 19:20
<i>[Signature]</i>	9/22/22 1800	<i>[Signature]</i>	9/22/22 1800
<i>[Signature]</i>	9/22/22 3:06	<i>[Signature]</i>	9/22/22 3:06
<i>[Signature]</i>	9/22/22	<i>[Signature]</i>	9/22/22 22:10

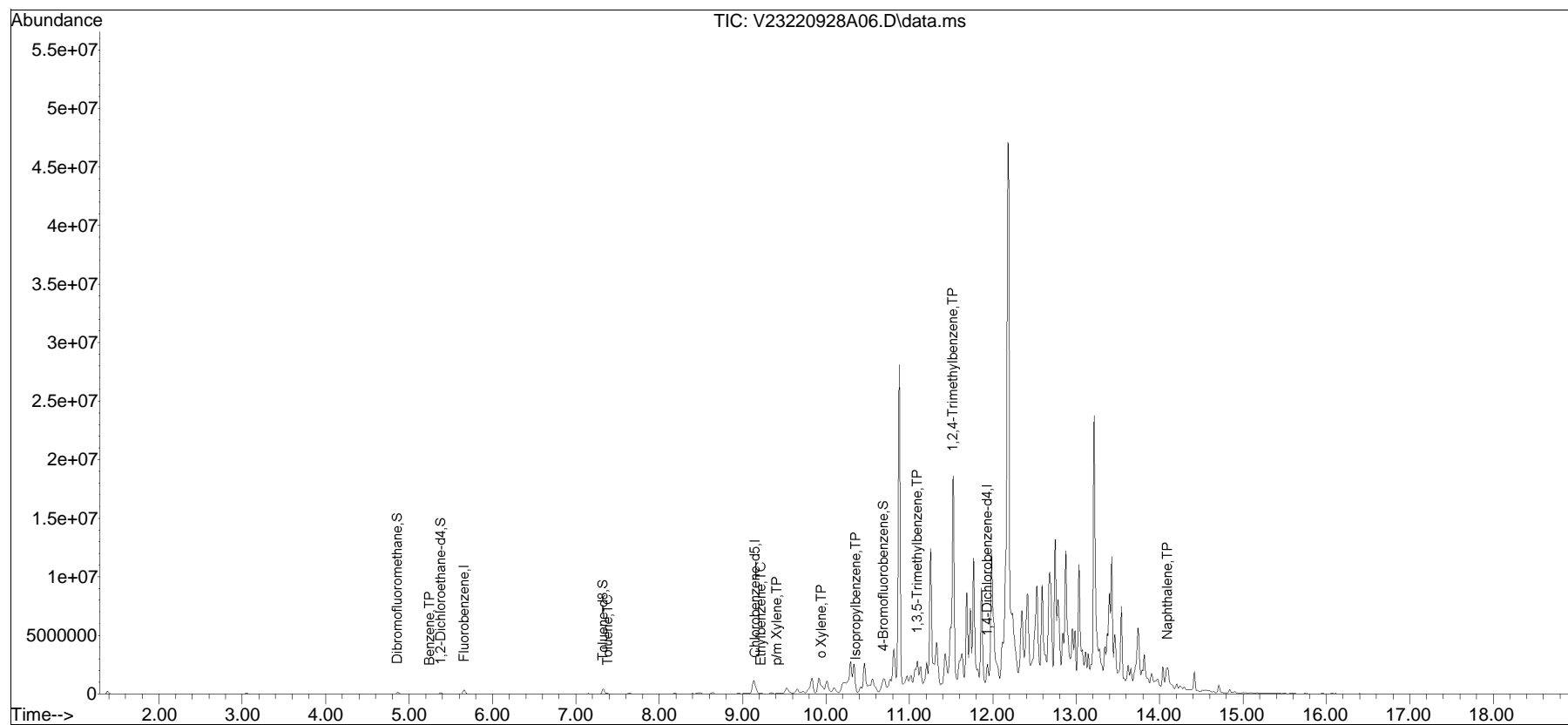
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220928A\  
 Data File : V23220928A06.D  
 Acq On : 28 Sep 2022 09:28 am  
 Operator : VOA123:MKS  
 Sample : 12252203-01,31,3.66,5,,c,r2f  
 Misc : WG1693215,ICAL19289  
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 28 16:42:08 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\220928A\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list28A\V23220928A02.D•

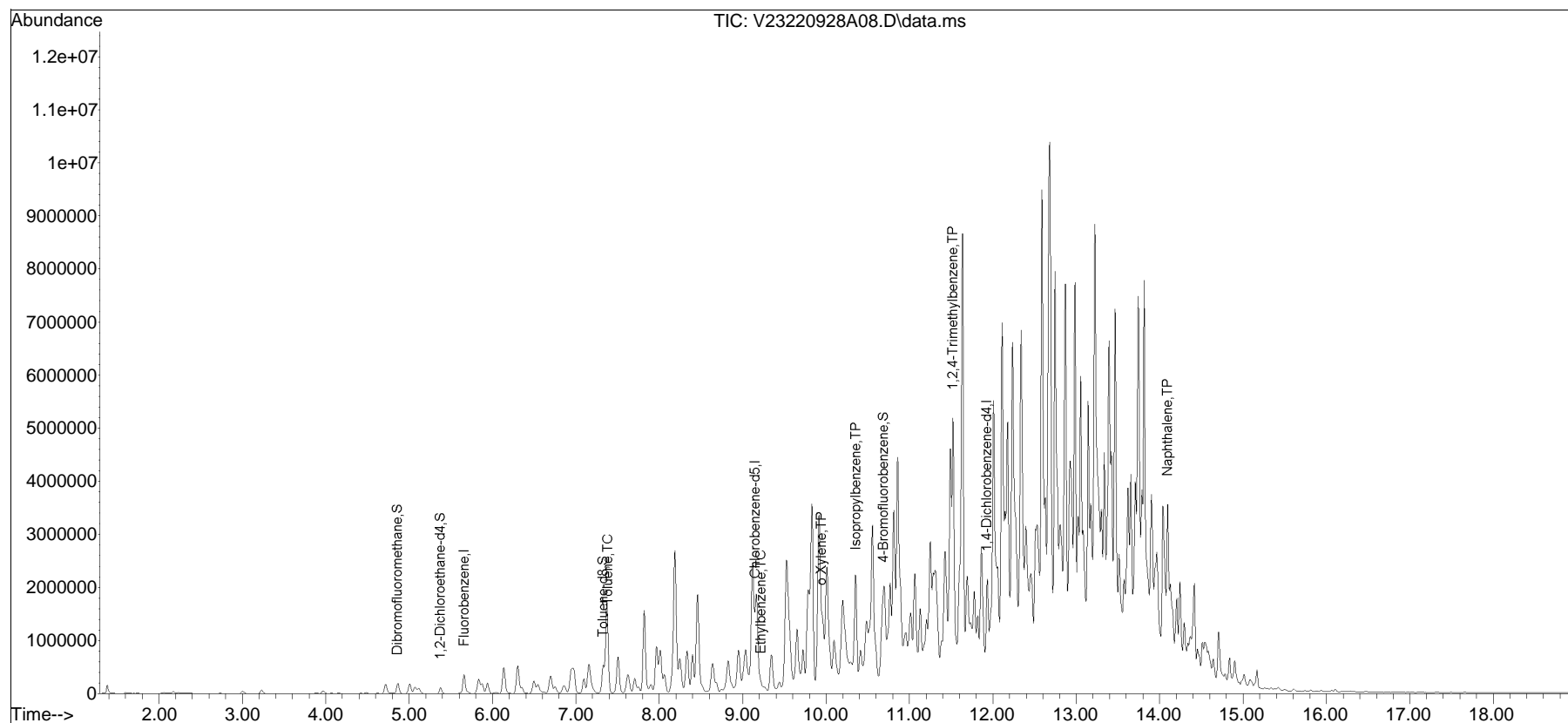


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220928A\  
Data File : V23220928A08.D  
Acq On : 28 Sep 2022 10:20 am  
Operator : VOA123:MKS  
Sample : 12252203-07,31h,5.99,5,0.100,,a,r2f  
Misc : WG1693219,ICAL19289  
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 28 16:45:40 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220928A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list28A\V23220928A02.D•

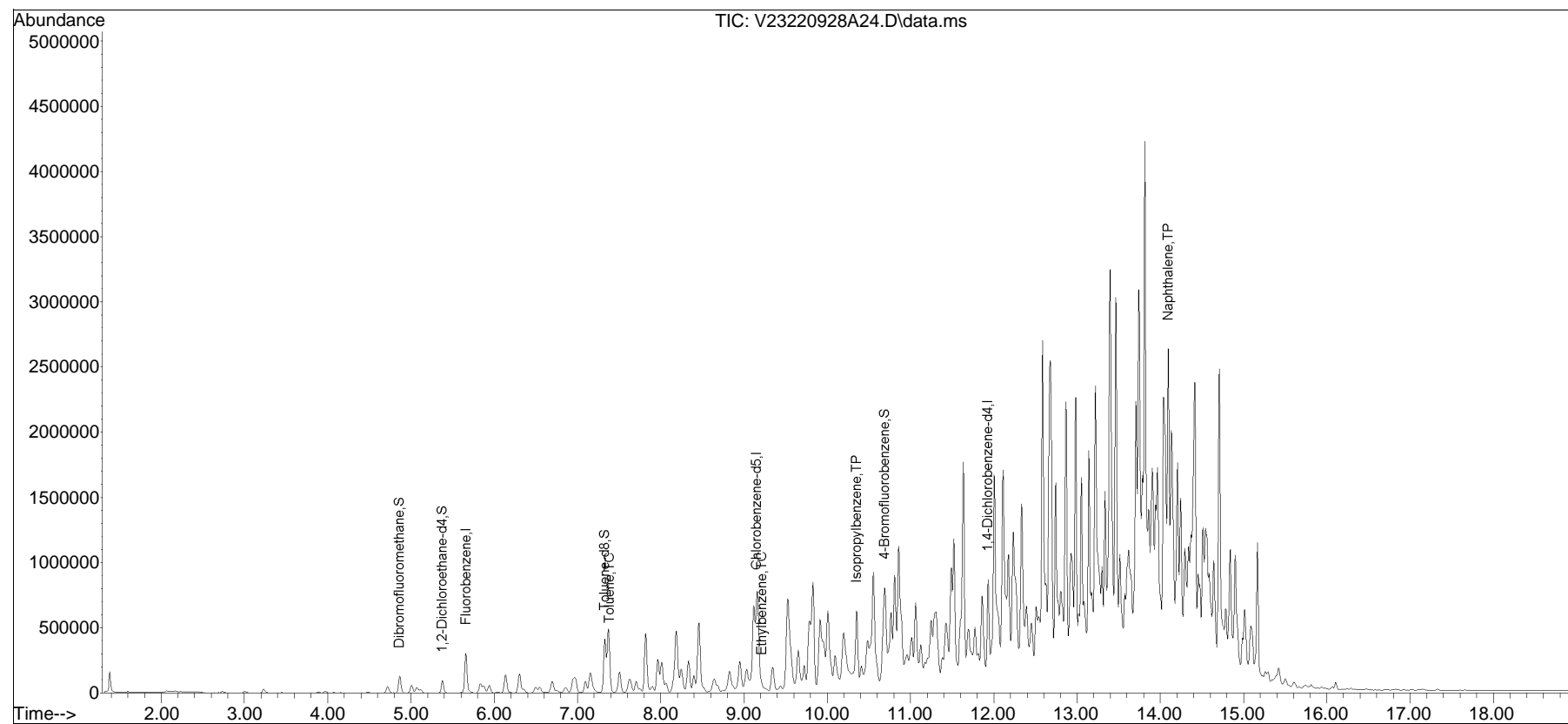


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220928A\  
Data File : V23220928A24.D  
Acq On : 28 Sep 2022 05:19 pm  
Operator : VOA123:KJD  
Sample : 12252203-09,31h,6.33,5,0.100,,a,r2f  
Misc : WG1693219,ICAL19289  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 28 19:16:00 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220928A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list28A\V23220928A02.D•

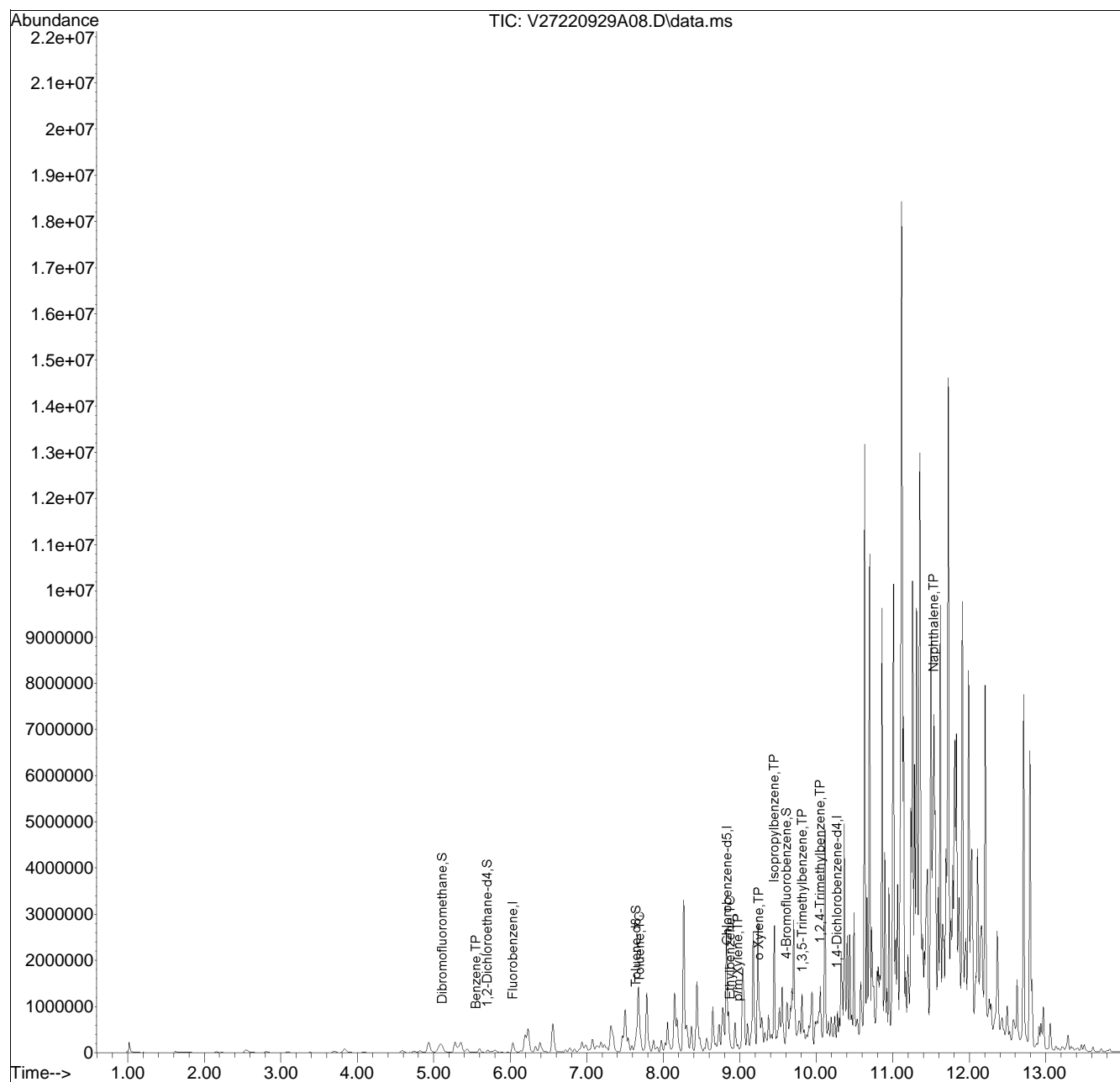


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220929A\  
 Data File : V27220929A08.D  
 Acq On : 29 Sep 2022 09:30 am  
 Operator : VOA127:MKS  
 Sample : 12252203-11,31h,5.49,5,0.100,,a,r2f  
 Misc : WG1693567,ICAL19153  
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Sep 29 11:11:59 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\220929A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list29A\V27220929A02.D•





## ANALYTICAL REPORT

Lab Number:	L2252788
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/03/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2252788

Report Date: 10/03/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2252788-01	302-AU02-C1-VOC	SOIL	PHILADELPHIA, PA	09/23/22 10:00	09/23/22
L2252788-02	302-AU02-C1-COMP	SOIL	PHILADELPHIA, PA	09/23/22 10:00	09/23/22
L2252788-03	302-AU02-C2-VOC	SOIL	PHILADELPHIA, PA	09/23/22 10:20	09/23/22
L2252788-04	302-AU02-C2-COMP	SOIL	PHILADELPHIA, PA	09/23/22 10:20	09/23/22
L2252788-05	302-AU02-C3-VOC	SOIL	PHILADELPHIA, PA	09/23/22 10:40	09/23/22
L2252788-06	302-AU02-C3-COMP	SOIL	PHILADELPHIA, PA	09/23/22 10:40	09/23/22
L2252788-07	302-AU02-C4-VOC	SOIL	PHILADELPHIA, PA	09/23/22 11:00	09/23/22
L2252788-08	302-AU02-C4-COMP	SOIL	PHILADELPHIA, PA	09/23/22 11:00	09/23/22
L2252788-09	302-AU02-C5-VOC	SOIL	PHILADELPHIA, PA	09/23/22 11:10	09/23/22
L2252788-10	302-AU02-C5-COMP	SOIL	PHILADELPHIA, PA	09/23/22 11:10	09/23/22
L2252788-11	302-AU03-C1-VOC	SOIL	PHILADELPHIA, PA	09/23/22 12:00	09/23/22
L2252788-12	302-AU03-C1-COMP	SOIL	PHILADELPHIA, PA	09/23/22 12:00	09/23/22
L2252788-13	302-AU03-C2-VOC	SOIL	PHILADELPHIA, PA	09/23/22 12:10	09/23/22
L2252788-14	302-AU03-C2-COMP	SOIL	PHILADELPHIA, PA	09/23/22 12:10	09/23/22
L2252788-15	302-AU03-C3-VOC	SOIL	PHILADELPHIA, PA	09/23/22 12:20	09/23/22
L2252788-16	302-AU03-C3-COMP	SOIL	PHILADELPHIA, PA	09/23/22 12:20	09/23/22
L2252788-17	302-AU03-C4-VOC	SOIL	PHILADELPHIA, PA	09/23/22 12:40	09/23/22
L2252788-18	302-AU03-C4-COMP	SOIL	PHILADELPHIA, PA	09/23/22 12:40	09/23/22
L2252788-19	302-AU04-C1-VOC	SOIL	PHILADELPHIA, PA	09/23/22 14:00	09/23/22
L2252788-20	302-AU04-C1-COMP	SOIL	PHILADELPHIA, PA	09/23/22 14:00	09/23/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2252788-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (206%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252788-09, -17, and -19: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2252788-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252788-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252788-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (213%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2252788-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (186%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 10/03/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-01  
 Client ID: 302-AU02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 13:52  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-03  
 Client ID: 302-AU02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 14:18  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00071	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00071	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-05  
 Client ID: 302-AU02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:40  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 15:37  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.0011		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00023	1
Toluene	0.0017		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.00060	J	mg/kg	0.00088	0.00012	1
p/m-Xylene	0.0035		mg/kg	0.0018	0.00049	1
o-Xylene	0.0042		mg/kg	0.00088	0.00026	1
Xylenes, Total	0.0077		mg/kg	0.00088	0.00026	1
Isopropylbenzene	0.027		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	0.00078	J	mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0074		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	206	Q	70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-07  
 Client ID: 302-AU02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 11:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 14:44  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0025	0.00069	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-09  
 Client ID: 302-AU02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 11:10  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 16:03  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.061	0.016	1
Toluene	ND		mg/kg	0.061	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.061	0.0086	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.061	0.018	1
Xylenes, Total	ND		mg/kg	0.061	0.018	1
Isopropylbenzene	0.22		mg/kg	0.061	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	99		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-11  
 Client ID: 302-AU03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 15:11  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00022	J	mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	0.00040	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	0.00035	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.00035	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.0016		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00045	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-13  
 Client ID: 302-AU03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:10  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 16:29  
 Analyst: JC  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.095	0.0095	1
Benzene	0.029		mg/kg	0.024	0.0078	1
1,2-Dichloroethane	ND		mg/kg	0.047	0.012	1
Toluene	0.14		mg/kg	0.047	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	0.28		mg/kg	0.047	0.0067	1
p/m-Xylene	1.2		mg/kg	0.095	0.026	1
o-Xylene	0.57		mg/kg	0.047	0.014	1
Xylenes, Total	1.8		mg/kg	0.047	0.014	1
Isopropylbenzene	0.18		mg/kg	0.047	0.0052	1
1,3,5-Trimethylbenzene	1.2		mg/kg	0.095	0.0091	1
1,2,4-Trimethylbenzene	3.5		mg/kg	0.095	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-15  
 Client ID: 302-AU03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 16:55  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.052		mg/kg	0.025	0.0084	1
1,2-Dichloroethane	ND		mg/kg	0.051	0.013	1
Toluene	0.31		mg/kg	0.051	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.025	0.015	1
Ethylbenzene	0.71		mg/kg	0.051	0.0072	1
p/m-Xylene	3.2		mg/kg	0.10	0.028	1
o-Xylene	1.6		mg/kg	0.051	0.015	1
Xylenes, Total	4.8		mg/kg	0.051	0.015	1
Isopropylbenzene	0.51		mg/kg	0.051	0.0055	1
1,3,5-Trimethylbenzene	3.4		mg/kg	0.10	0.0098	1
1,2,4-Trimethylbenzene	9.8		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-17  
 Client ID: 302-AU03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:40  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 17:21  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	ND		mg/kg	0.060	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	0.099		mg/kg	0.060	0.0085	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.060	0.018	1
Xylenes, Total	ND		mg/kg	0.060	0.018	1
Isopropylbenzene	0.074		mg/kg	0.060	0.0066	1
1,3,5-Trimethylbenzene	0.040	J	mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.11	J	mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	213	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-19  
 Client ID: 302-AU04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 14:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/27/22 17:48  
 Analyst: JC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.028	0.0093	1
1,2-Dichloroethane	ND		mg/kg	0.056	0.014	1
Toluene	ND		mg/kg	0.056	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	0.12		mg/kg	0.056	0.0079	1
p/m-Xylene	0.032	J	mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.056	0.016	1
Xylenes, Total	0.032	J	mg/kg	0.056	0.016	1
Isopropylbenzene	0.063		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	0.066	J	mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	0.25		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	186	Q	70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/27/22 09:04  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,11 Batch: WG1693018-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/27/22 09:04  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,13,15,17,19 Batch: WG1693019-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

Parameter	LCS		LCSD		%Recovery Limits		RPD	
	%Recovery	Qual	%Recovery	Qual	RPD	Qual	RPD	Qual
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,11 Batch: WG1693018-3 WG1693018-4								
Methyl tert butyl ether	108		111		66-130		3	30
Benzene	107		112		70-130		5	30
1,2-Dichloroethane	100		104		70-130		4	30
Toluene	103		108		70-130		5	30
1,2-Dibromoethane	104		109		70-130		5	30
Ethylbenzene	107		113		70-130		5	30
p/m-Xylene	107		114		70-130		6	30
o-Xylene	107		112		70-130		5	30
Isopropylbenzene	103		109		70-130		6	30
1,3,5-Trimethylbenzene	106		111		70-130		5	30
1,2,4-Trimethylbenzene	104		109		70-130		5	30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	104		102		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	101		101		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,13,15,17,19 Batch: WG1693019-3 WG1693019-4								
Methyl tert butyl ether	108		111		66-130	3		30
Benzene	107		112		70-130	5		30
1,2-Dichloroethane	100		104		70-130	4		30
Toluene	103		108		70-130	5		30
1,2-Dibromoethane	104		109		70-130	5		30
Ethylbenzene	107		113		70-130	5		30
p/m-Xylene	107		114		70-130	6		30
o-Xylene	107		112		70-130	5		30
Isopropylbenzene	103		109		70-130	6		30
1,3,5-Trimethylbenzene	106		111		70-130	5		30
1,2,4-Trimethylbenzene	104		109		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	104		102		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	101		101		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-02  
 Client ID: 302-AU02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 13:23  
 Analyst: SLR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	44		30-120
4-Terphenyl-d14	41		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-04  
 Client ID: 302-AU02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 13:47  
 Analyst: SLR  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.11		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.40		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.14		mg/kg	0.11	0.020	1
Chrysene	0.28		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.32		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.15		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.15		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-06  
 Client ID: 302-AU02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:40  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 14:11  
 Analyst: SLR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.033	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.098	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.098	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.057	J	mg/kg	0.12	0.023	1
Chrysene	0.058	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.070	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.064	J	mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.034	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-08  
 Client ID: 302-AU02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 11:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 14:34  
 Analyst: SLR  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.055	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.038	J	mg/kg	0.12	0.023	1
Chrysene	0.032	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.047	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.024	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	52		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-10  
 Client ID: 302-AU02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 11:10  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 20:44  
 Analyst: ALS  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 19:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.029	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.11		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.44		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.18		mg/kg	0.11	0.020	1
Chrysene	0.24		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.30		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.15		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.15		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-12  
 Client ID: 302-AU03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 14:59  
 Analyst: SLR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	60		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-14  
 Client ID: 302-AU03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:10  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 15:22  
 Analyst: SLR  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.23		mg/kg	0.22	0.027	1
Fluorene	0.034	J	mg/kg	0.22	0.021	1
Phenanthrene	0.054	J	mg/kg	0.13	0.027	1
Anthracene	ND		mg/kg	0.13	0.043	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.025	1
Chrysene	ND		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.054	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-16  
 Client ID: 302-AU03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 21:07  
 Analyst: ALS  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 19:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.31		mg/kg	0.20	0.024	1
Fluorene	0.085	J	mg/kg	0.20	0.019	1
Phenanthrene	0.17		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.022	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	143	Q	23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	92		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-18  
 Client ID: 302-AU03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:40  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/27/22 15:46  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/26/22 19:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-20  
 Client ID: 302-AU04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 14:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 09/25/22 21:30  
 Analyst: ALS  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 09/24/22 19:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.061	J	mg/kg	0.20	0.020	1
Phenanthrene	0.079	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	89		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/25/22 17:12  
Analyst: ALS

Extraction Method: EPA 3546  
Extraction Date: 09/24/22 19:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 10,16,20 Batch: WG1691669-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	81		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/27/22 08:59  
Analyst: MG

Extraction Method: EPA 3546  
Extraction Date: 09/26/22 18:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,12,14,18 Batch: WG1692232-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		25-120
Phenol-d6	77		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	65		30-120
2,4,6-Tribromophenol	82		10-136
4-Terphenyl-d14	78		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10,16,20 Batch: WG1691669-2 WG1691669-3								
Naphthalene	90		92		40-140	2		50
Fluorene	92		95		40-140	3		50
Phenanthrene	88		91		40-140	3		50
Anthracene	90		92		40-140	2		50
Pyrene	91		93		35-142	2		50
Benzo(a)anthracene	89		92		40-140	3		50
Chrysene	86		86		40-140	0		50
Benzo(b)fluoranthene	90		88		40-140	2		50
Benzo(a)pyrene	93		94		40-140	1		50
Benzo(ghi)perylene	89		91		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	137	Q	141	Q	23-120
2-Fluorobiphenyl	92		94		30-120
4-Terphenyl-d14	89		92		18-120



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,12,14,18 Batch: WG1692232-2 WG1692232-3								
Naphthalene	68		72		40-140	6		50
Fluorene	71		75		40-140	5		50
Phenanthrene	70		77		40-140	10		50
Anthracene	73		78		40-140	7		50
Pyrene	74		84		35-142	13		50
Benzo(a)anthracene	73		76		40-140	4		50
Chrysene	71		76		40-140	7		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	82		91		40-140	10		50
Benzo(ghi)perylene	78		85		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	78		78		25-120
Phenol-d6	76		78		10-120
Nitrobenzene-d5	84		89		23-120
2-Fluorobiphenyl	66		71		30-120
2,4,6-Tribromophenol	79		86		10-136
4-Terphenyl-d14	79		88		18-120





## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-02

Date Collected: 09/23/22 10:00

Client ID: 302-AU02-C1-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	44.8		mg/kg	2.30	0.123	1	09/26/22 20:26	09/30/22 18:47	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-04  
 Client ID: 302-AU02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	256		mg/kg	2.07	0.111	1	09/26/22 20:26	09/30/22 18:50	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-06  
 Client ID: 302-AU02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:40  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	81.2		mg/kg	2.42	0.130	1	09/26/22 20:26	10/01/22 00:47	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-08

Date Collected: 09/23/22 11:00

Client ID: 302-AU02-C4-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	16.8		mg/kg	2.48	0.133	1	09/26/22 20:26	09/30/22 18:57	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-10

Date Collected: 09/23/22 11:10

Client ID: 302-AU02-C5-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	158		mg/kg	2.14	0.115	1	09/26/22 20:26	10/01/22 00:57	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-12  
 Client ID: 302-AU03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	19.8		mg/kg	2.29	0.123	1	09/26/22 20:26	09/30/22 19:33	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-14

Date Collected: 09/23/22 12:10

Client ID: 302-AU03-C2-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	31.5		mg/kg	2.60	0.139	1	09/26/22 20:26	09/30/22 19:36	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-16

Date Collected: 09/23/22 12:20

Client ID: 302-AU03-C3-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.7		mg/kg	2.25	0.121	1	09/26/22 20:26	09/30/22 19:40	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-18

Date Collected: 09/23/22 12:40

Client ID: 302-AU03-C4-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.35		mg/kg	2.23	0.119	1	09/26/22 20:26	09/30/22 19:43	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-20

Date Collected: 09/23/22 14:00

Client ID: 302-AU04-C1-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.0		mg/kg	2.49	0.134	1	09/26/22 20:26	09/30/22 19:46	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252788

Project Number: 200.00135.006

Report Date: 10/03/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1691810-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/26/22 20:26	09/28/22 23:42	1,6010D	DL

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1691810-2 SRM Lot Number: D113-540								
Lead, Total	96		-		72-128			-

**Matrix Spike Analysis**  
**Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20    QC Batch ID: WG1691810-3    QC Sample: L2252612-01    Client ID: MS Sample												
Lead, Total	13.1	45.6	56.2	94		-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2252788

**Report Date:** 10/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1691810-4 QC Sample: L2252612-01 Client ID: DUP Sample						
Lead, Total	13.1	6.26	mg/kg	71	Q	20



# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-01

Date Collected: 09/23/22 10:00

Client ID: 302-AU02-C1-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.3		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-02  
 Client ID: 302-AU02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-03

Date Collected: 09/23/22 10:20

Client ID: 302-AU02-C2-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-04  
 Client ID: 302-AU02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 10:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.7		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-05

Date Collected: 09/23/22 10:40

Client ID: 302-AU02-C3-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.3		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

**Lab ID:** L2252788-06  
**Client ID:** 302-AU02-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/23/22 10:40  
**Date Received:** 09/23/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-07

Date Collected: 09/23/22 11:00

Client ID: 302-AU02-C4-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-08

Date Collected: 09/23/22 11:00

Client ID: 302-AU02-C4-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.5		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-09

Date Collected: 09/23/22 11:10

Client ID: 302-AU02-C5-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-10

Date Collected: 09/23/22 11:10

Client ID: 302-AU02-C5-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.2		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-11

Date Collected: 09/23/22 12:00

Client ID: 302-AU03-C1-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-12  
 Client ID: 302-AU03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.7		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252788

Project Number: 200.00135.006

Report Date: 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-13

Date Collected: 09/23/22 12:10

Client ID: 302-AU03-C2-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.8		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-14

Date Collected: 09/23/22 12:10

Client ID: 302-AU03-C2-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.0		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-15  
 Client ID: 302-AU03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:20  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.6		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252788

Project Number: 200.00135.006

Report Date: 10/03/22

## SAMPLE RESULTS

Lab ID: L2252788-16

Date Collected: 09/23/22 12:20

Client ID: 302-AU03-C3-COMP

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-17

Date Collected: 09/23/22 12:40

Client ID: 302-AU03-C4-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.6		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-18  
 Client ID: 302-AU03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 12:40  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**SAMPLE RESULTS**

Lab ID: L2252788-19

Date Collected: 09/23/22 14:00

Client ID: 302-AU04-C1-VOC

Date Received: 09/23/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.3		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252788-20  
 Client ID: 302-AU04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/23/22 14:00  
 Date Received: 09/23/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.1		%	0.100	NA	1	-	09/24/22 08:55	121,2540G	RI



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2252788

**Report Date:** 10/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1691541-1 QC Sample: L2252788-01 Client ID: 302-AU02-C1-VOC						
Solids, Total	90.3	91.2	%	1		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

Cooler	Custody Seal
A	Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2252788-01A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-01B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-01C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-01D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-02B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-03A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-03B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-03C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-03D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-04B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-05A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-05B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-05C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-05D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-06B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-07A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-07B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-07C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-07D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252788**Project Number:** 200.00135.006**Report Date:** 10/03/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2252788-08B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-09A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-09B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-09C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-09D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-10B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-11A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-11B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-11C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-11D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-12B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-13A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-13B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-13C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-13D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-14B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-15A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-15B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-15C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-15D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-16B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-17A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-17B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-17C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10032209:05  
**Lab Number:** L2252788  
**Report Date:** 10/03/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2252788-17D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-18B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)
L2252788-19A	Vial MeOH preserved	A	NA		2.5	Y	Absent		PA-8260HLW(14)
L2252788-19B	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-19C	Vial water preserved	A	NA		2.5	Y	Absent	24-SEP-22 06:37	PA-8260HLW(14)
L2252788-19D	Plastic 120ml unpreserved	A	NA		2.5	Y	Absent		TS(7)
L2252788-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		PB-TI(180)
L2252788-20B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		TS(7),PA-PAH(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252788  
**Report Date:** 10/03/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252788

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 2 OF 7

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/24/22

ALPHA Job #: L2252788

## Report Information Data Deliverables

FAX  EMAIL  
 ADEK  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8170)	LEAD											
52788-11	9/23	1200	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
12		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
13		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
14		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
15		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
16		1220			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
17		1240			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
18		1240			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
19		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
20		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
52788-11	302-AU03-C1-VOC	9/23	1200	S	TS
12	302-AU03-C1-COMP		1200		
13	302-AU03-C2-VOC		1210		
14	302-AU03-C2-COMP		1210		
15	302-AU03-C3-VOC		1220		
16	302-AU03-C3-COMP		1220		
17	302-AU03-C4-VOC		1240		
18	302-AU03-C4-COMP		1240		
19	302-AU03-C1-VOC		1400		
20	302-AU03-C1-COMP		1400		

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/23 1535	Tom Old	9/23 1535
<i>[Signature]</i>	9/23 1800	<i>[Signature]</i>	9/23/22 1800
<i>[Signature]</i>	9/23/22 1800	<i>[Signature]</i>	9/23/22 1800
<i>[Signature]</i>	9/23/22	<i>[Signature]</i>	9/29/22 0030

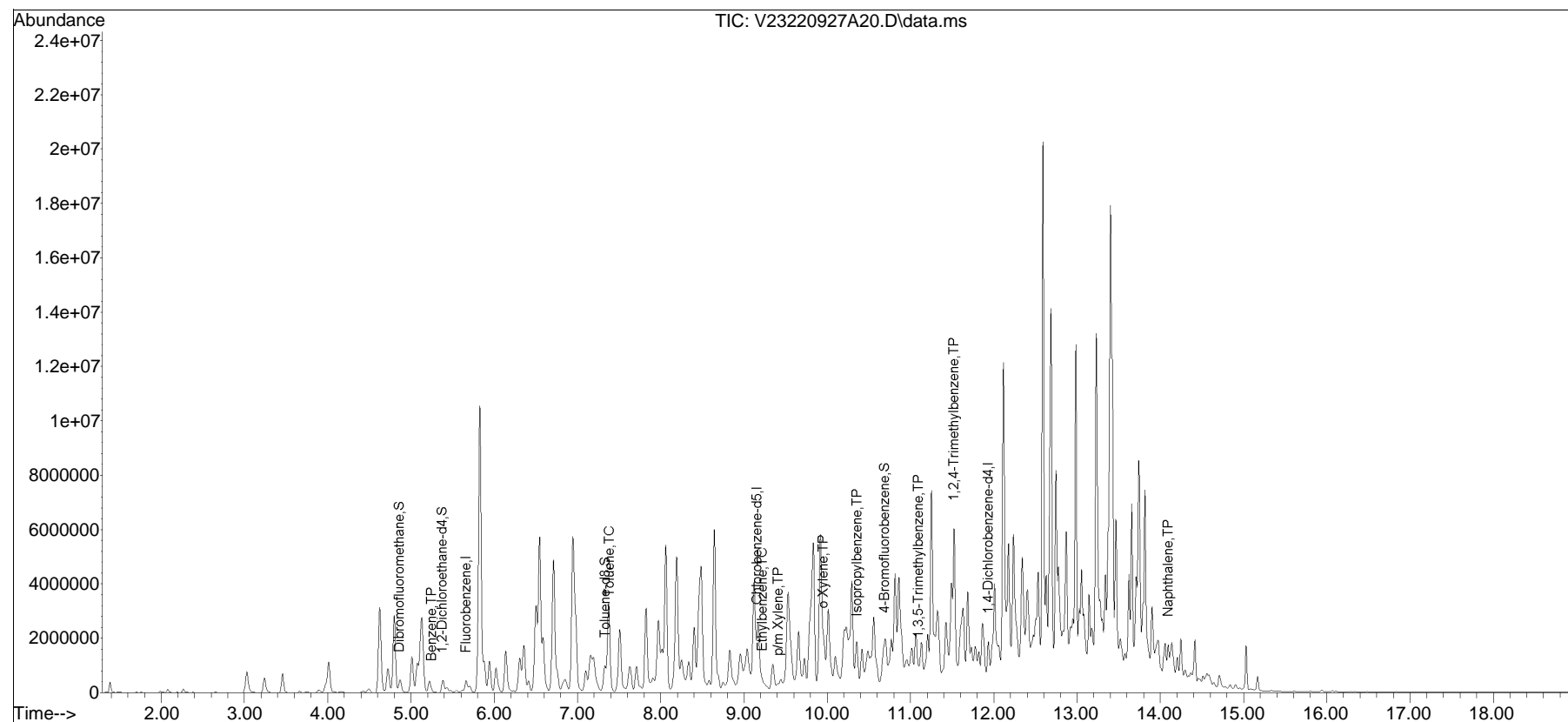
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220927A\  
Data File : V23220927A20.D  
Acq On : 27 Sep 2022 03:37 pm  
Operator : VOA123:JC  
Sample : 12252788-05,31,6.27,5,,c,r2f  
Misc : WG1693018,ICAL19289  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Sep 28 07:20:07 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220927A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list27A\V23220927A01.D•



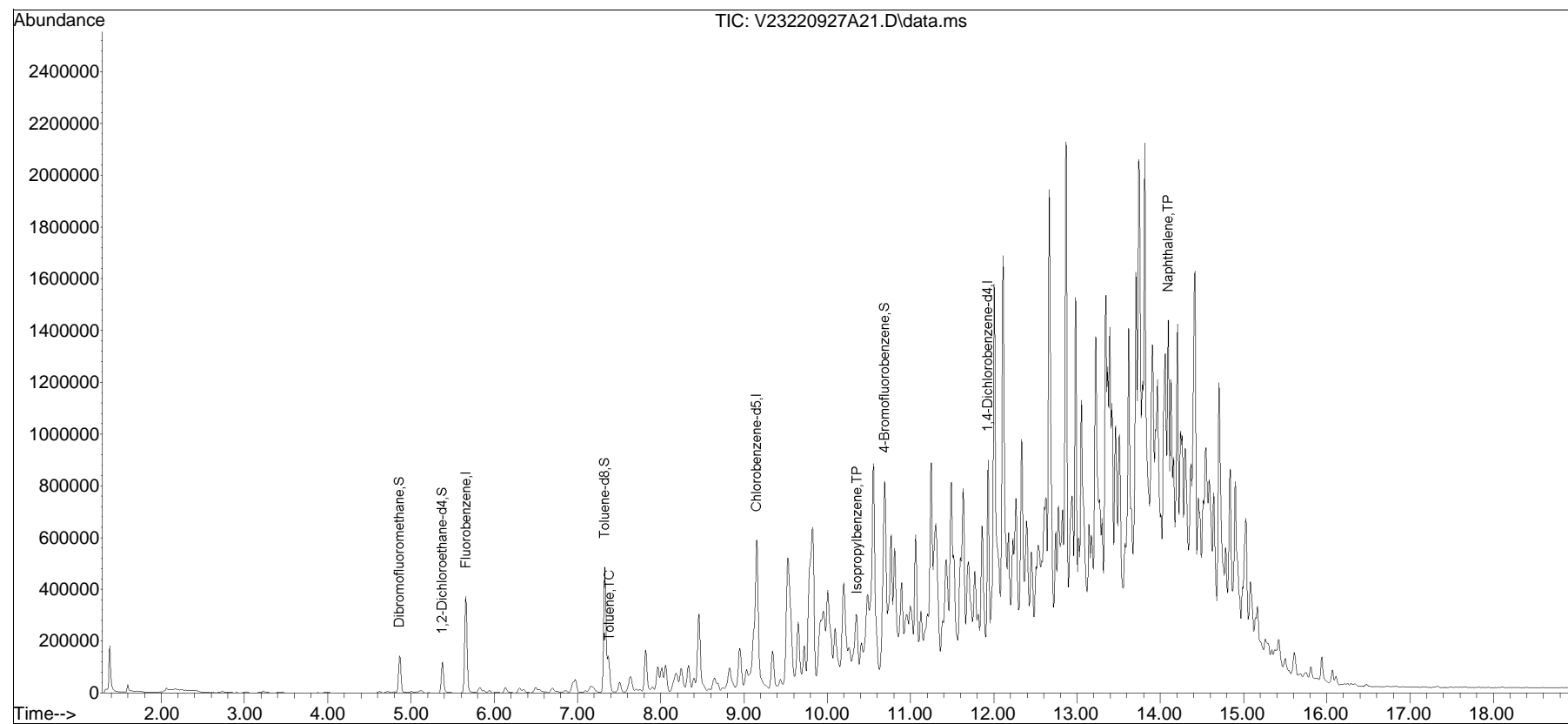


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220927A\  
Data File : V23220927A21.D  
Acq On : 27 Sep 2022 04:03 pm  
Operator : VOA123:JC  
Sample : 12252788-09,31h,5.58,5,0.100,,a,r2f  
Misc : WG1693019,ICAL19289  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Sep 28 07:20:43 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220927A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list27A\V23220927A01.D•

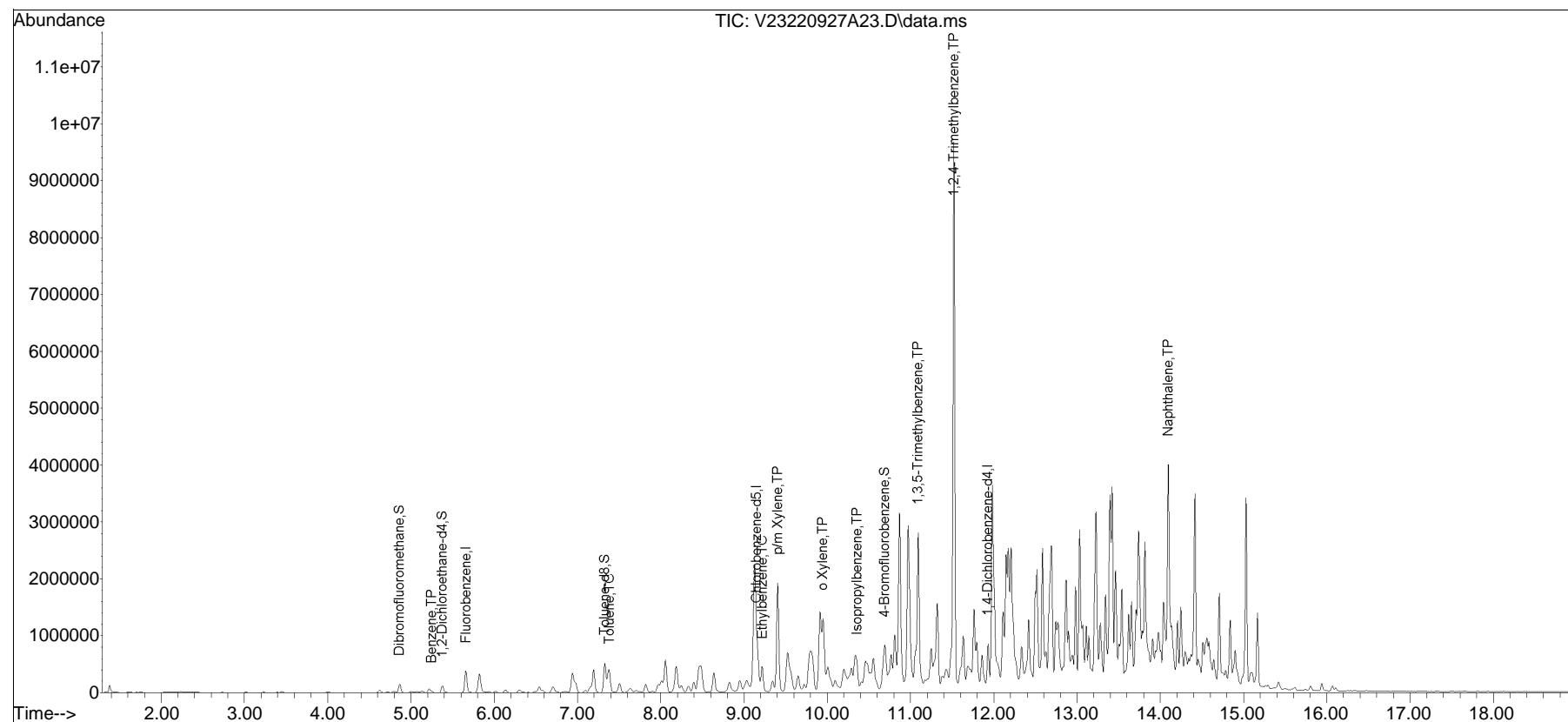


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220927A\  
Data File : V23220927A23.D  
Acq On : 27 Sep 2022 04:55 pm  
Operator : VOA123:JC  
Sample : 12252788-15,31h,6.21,5,0.100,,a,r2f  
Misc : WG1693019,ICAL19289  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Sep 28 06:39:55 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220927A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list27A\V23220927A01.D•

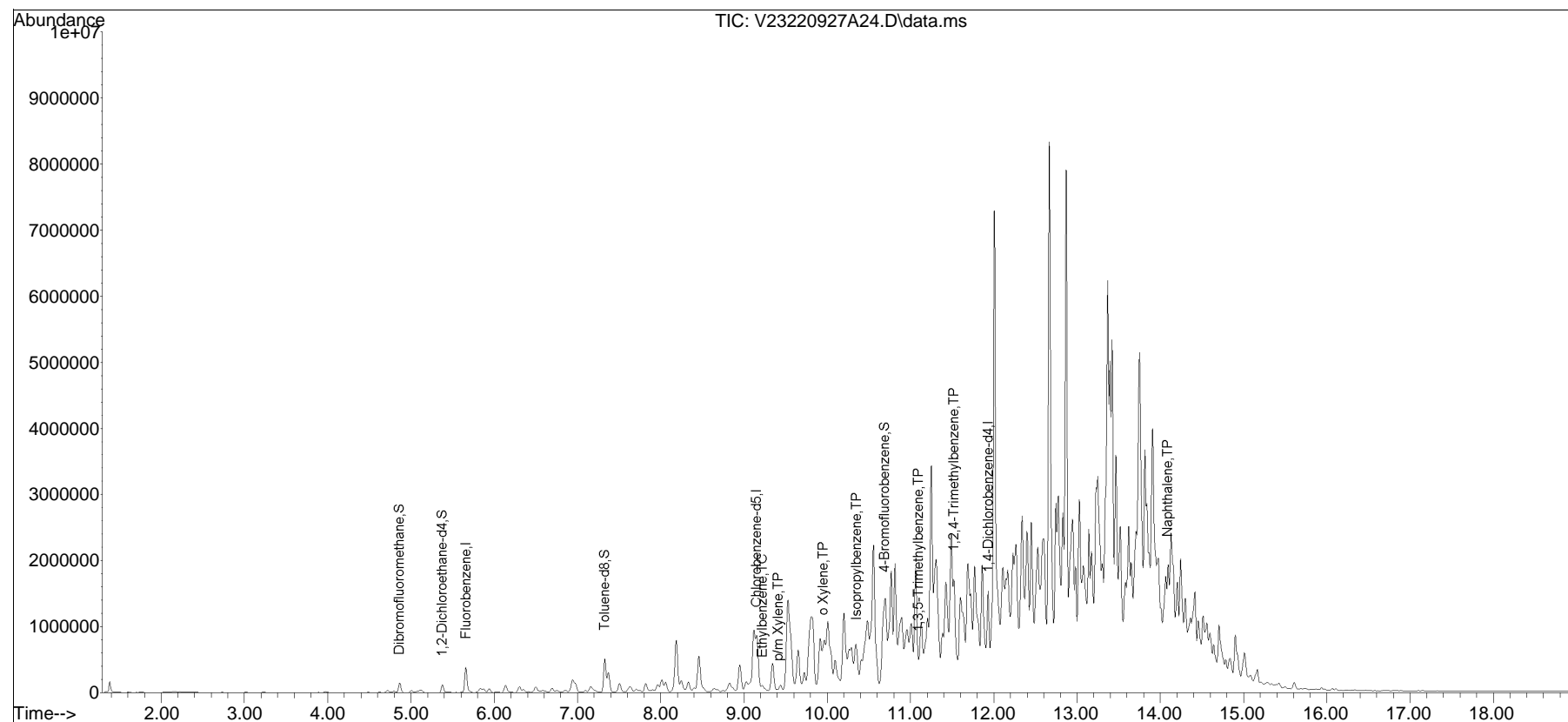


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220927A\  
Data File : V23220927A24.D  
Acq On : 27 Sep 2022 05:21 pm  
Operator : VOA123:JC  
Sample : 12252788-17,31h,5.63,5,0.100,,a,r2f  
Misc : WG1693019,ICAL19289  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Sep 28 06:39:59 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220927A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list27A\V23220927A01.D•

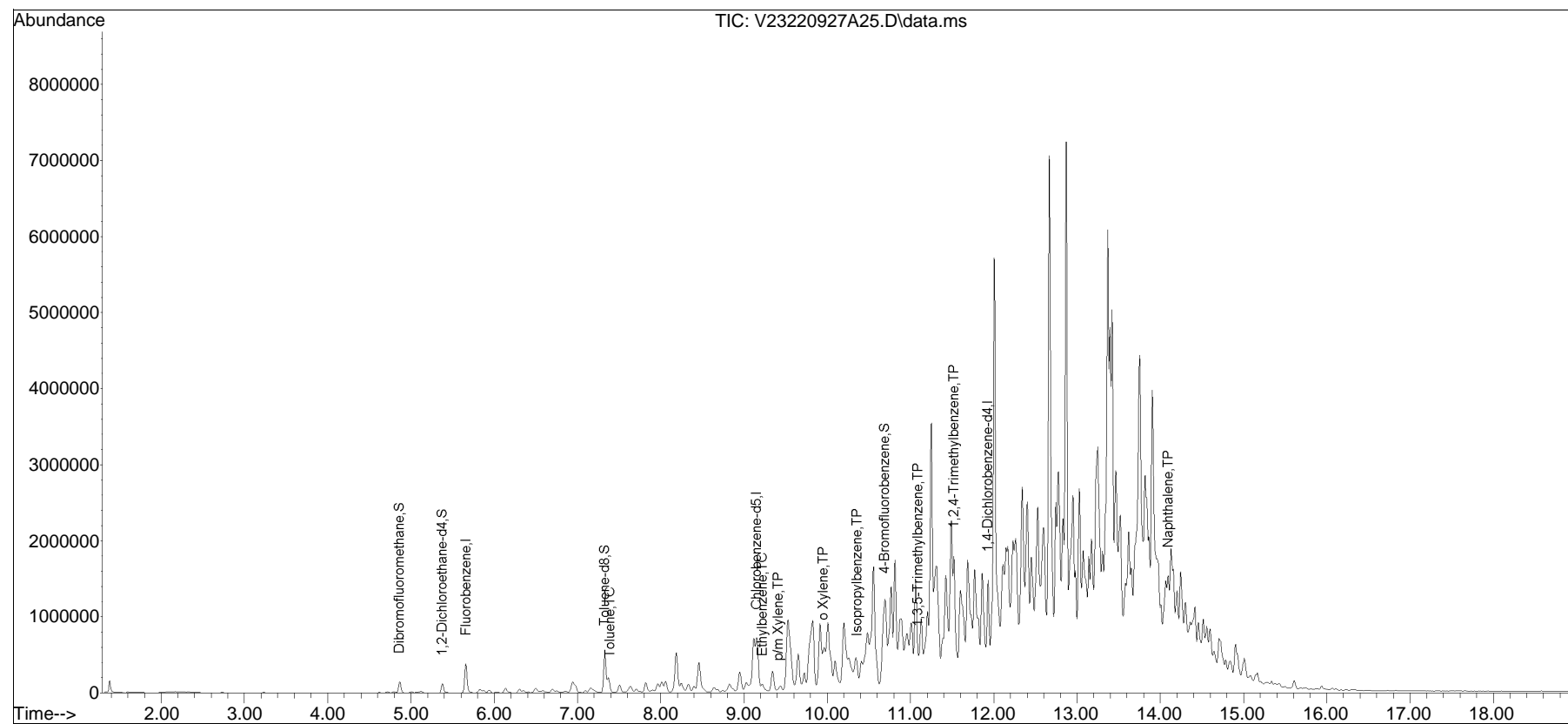


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\220927A\  
Data File : V23220927A25.D  
Acq On : 27 Sep 2022 05:48 pm  
Operator : VOA123:JC  
Sample : 12252788-19,31h,5.48,5,0.100,,a,r2f  
Misc : WG1693019,ICAL19289  
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Sep 28 06:40:02 2022  
Quant Method : I:\VOLATILES\VOA123\2022\220927A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list27A\V23220927A01.D•





## ANALYTICAL REPORT

Lab Number:	L2252968
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/03/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2252968-01	302-AI08-C1-VOC	SOIL	PHILADELPHIA, PA	09/26/22 14:00	09/26/22
L2252968-02	302-AI08-C1-COMP	SOIL	PHILADELPHIA, PA	09/26/22 14:00	09/26/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Total Metals

L2252968-02: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.


The WG1692884-3 MS recovery, performed on L2252968-02, is outside the acceptance criteria for a lead (64%). A post digestion spike was performed and yielded an unacceptable recovery for lead (64%). The serial dilution recovery was not acceptable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

The WG1692884-4 Laboratory Duplicate RPD for lead (54%), performed on L2252968-02, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1692884-6 serial dilution analysis, associated with L2252968-02, had a %D above the acceptance criteria for lead (31%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 10/03/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252968-01  
 Client ID: 302-AI08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/26/22 14:00  
 Date Received: 09/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/29/22 15:44  
 Analyst: AJK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.00056	J	mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/29/22 09:10  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1693714-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1693714-3 WG1693714-4								
Methyl tert butyl ether	79		76		66-130	4		30
Benzene	88		86		70-130	2		30
1,2-Dichloroethane	81		77		70-130	5		30
Toluene	80		79		70-130	1		30
1,2-Dibromoethane	82		82		70-130	0		30
Ethylbenzene	86		85		70-130	1		30
p/m-Xylene	85		84		70-130	1		30
o-Xylene	85		84		70-130	1		30
Isopropylbenzene	86		85		70-130	1		30
1,3,5-Trimethylbenzene	87		85		70-130	2		30
1,2,4-Trimethylbenzene	86		84		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		95		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	101		99		70-130
Dibromofluoromethane	97		97		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252968-02  
 Client ID: 302-AI08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/26/22 14:00  
 Date Received: 09/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 05:22  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	14.	E	mg/kg	0.19	0.023	1
Fluorene	4.1		mg/kg	0.19	0.018	1
Phenanthrene	8.2	E	mg/kg	0.11	0.023	1
Anthracene	0.82		mg/kg	0.11	0.036	1
Pyrene	0.76		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.021	1
Chrysene	0.16		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.12		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.10	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.095	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	177	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252968-02 D  
 Client ID: 302-AI08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/26/22 14:00  
 Date Received: 09/26/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 18:58  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	16.		mg/kg	0.93	0.11	5
Phenanthrene	8.8		mg/kg	0.56	0.11	5



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 09/30/22 20:21  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1693727-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	65		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1693727-2 WG1693727-3								
Naphthalene	58		73		40-140	23		50
Fluorene	60		71		40-140	17		50
Phenanthrene	58		71		40-140	20		50
Anthracene	59		72		40-140	20		50
Pyrene	60		73		35-142	20		50
Benzo(a)anthracene	60		73		40-140	20		50
Chrysene	58		71		40-140	20		50
Benzo(b)fluoranthene	58		71		40-140	20		50
Benzo(a)pyrene	65		78		40-140	18		50
Benzo(ghi)perylene	58		72		40-140	22		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	94		119		23-120
2-Fluorobiphenyl	57		72		30-120
4-Terphenyl-d14	58		70		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252968-02  
 Client ID: 302-AI08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/26/22 14:00  
 Date Received: 09/26/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	116		mg/kg	4.44	0.238	2	09/28/22 10:00	10/02/22 14:56	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252968

Project Number: 200.00135.006

Report Date: 10/03/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1692884-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/28/22 10:00	10/02/22 11:01	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1692884-2 SRM Lot Number: D113-540								
Lead, Total	104		-		72-128	-		

**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02    QC Batch ID: WG1692884-3    QC Sample: L2252968-02    Client ID: 302-AI08-C1-COMP												
Lead, Total	116	48.1	147	<b>64</b>	Q	-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2252968

Report Date: 10/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1692884-4 QC Sample: L2252968-02 Client ID: 302-AI08-C1-COMP						
Lead, Total	116	66.6	mg/kg	54	Q	20



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

Lab Number: L2252968

Report Date: 10/03/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1692884-6 QC Sample: L2252968-02 Client ID: 302-AI08-C1-COMP						
Lead, Total	116	152	mg/kg	31	Q	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

**SAMPLE RESULTS**

**Lab ID:** L2252968-01  
**Client ID:** 302-AI08-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/26/22 14:00  
**Date Received:** 09/26/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.7		%	0.100	NA	1	-	09/27/22 07:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2252968

Project Number: 200.00135.006

Report Date: 10/03/22

**SAMPLE RESULTS**

Lab ID: L2252968-02

Date Collected: 09/26/22 14:00

Client ID: 302-AI08-C1-COMP

Date Received: 09/26/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	09/27/22 11:27	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2252968

Report Date: 10/03/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1692375-1 QC Sample: L2253000-03 Client ID: DUP Sample						
Solids, Total	87.2	84.1	%	4		20
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1692528-1 QC Sample: L2251156-10 Client ID: DUP Sample						
Solids, Total	89.1	89.0	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2252968**Project Number:** 200.00135.006**Report Date:** 10/03/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information****Cooler**                      **Custody Seal**

A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2252968-01A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2252968-01B	Vial water preserved	A	NA		3.1	Y	Absent	27-SEP-22 05:54	PA-8260HLW(14)
L2252968-01C	Vial water preserved	A	NA		3.1	Y	Absent	27-SEP-22 05:54	PA-8260HLW(14)
L2252968-01D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2252968-02A	Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2252968-02B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2252968  
**Report Date:** 10/03/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2252968

**Project Number:** 200.00135.006

**Report Date:** 10/03/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 1

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599 **18559**

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*Report only attached project-specific analyte list\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/27/22

ALPHA Job #: L2252968

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs	SVOCs	LEAD													
52968-01	9/26	1400	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>													
02	9/26	1400	S	TS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
52968-01	302-AL08-C1-VOC	9/26	1400	S	TS
02	302-AL08-C1-Camp	9/26	1400	S	TS

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 9/26/22 1422  
 Received By: *[Signature]* Date/Time: 9/26/22 1422

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2253221
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/04/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2253221-01	302-AV04-C1-VOC	SOIL	PHILADELPHIA, PA	09/27/22 11:00	09/27/22
L2253221-02	302-AV04-C1-COMP	SOIL	PHILADELPHIA, PA	09/27/22 11:00	09/27/22
L2253221-03	302-AV04-C2-VOC	SOIL	PHILADELPHIA, PA	09/27/22 11:20	09/27/22
L2253221-04	302-AV04-C2-COMP	SOIL	PHILADELPHIA, PA	09/27/22 11:20	09/27/22
L2253221-05	302-AV04-C3-VOC	SOIL	PHILADELPHIA, PA	09/27/22 11:30	09/27/22
L2253221-06	302-AV04-C3-COMP	SOIL	PHILADELPHIA, PA	09/27/22 11:30	09/27/22
L2253221-07	302-AV04-C4-VOC	SOIL	PHILADELPHIA, PA	09/27/22 11:40	09/27/22
L2253221-08	302-AV04-C4-COMP	SOIL	PHILADELPHIA, PA	09/27/22 11:40	09/27/22
L2253221-09	302-AW04-C1-VOC	SOIL	PHILADELPHIA, PA	09/27/22 13:00	09/27/22
L2253221-10	302-AW04-C1-COMP	SOIL	PHILADELPHIA, PA	09/27/22 13:00	09/27/22
L2253221-11	302-AW04-C2-VOC	SOIL	PHILADELPHIA, PA	09/27/22 13:20	09/27/22
L2253221-12	302-AW04-C2-COMP	SOIL	PHILADELPHIA, PA	09/27/22 13:20	09/27/22
L2253221-13	302-AW04-C3-VOC	SOIL	PHILADELPHIA, PA	09/27/22 13:30	09/27/22
L2253221-14	302-AW04-C3-COMP	SOIL	PHILADELPHIA, PA	09/27/22 13:30	09/27/22
L2253221-15	302-AW04-C4-VOC	SOIL	PHILADELPHIA, PA	09/27/22 13:40	09/27/22
L2253221-16	302-AW04-C4-COMP	SOIL	PHILADELPHIA, PA	09/27/22 13:40	09/27/22
L2253221-17	302-AW04-C5-VOC	SOIL	PHILADELPHIA, PA	09/27/22 13:50	09/27/22
L2253221-18	302-AW04-C5-COMP	SOIL	PHILADELPHIA, PA	09/27/22 13:50	09/27/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2253221-11: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 10/04/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-01  
 Client ID: 302-AV04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:00  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 09:29  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00074		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.00044	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0012	J	mg/kg	0.0020	0.00057	1
o-Xylene	0.00048	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0017	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00016	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0026		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0015	J	mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-03  
 Client ID: 302-AV04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 09:49  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0035		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.00082	J	mg/kg	0.00099	0.00014	1
p/m-Xylene	0.0024		mg/kg	0.0020	0.00055	1
o-Xylene	0.00088	J	mg/kg	0.00099	0.00029	1
Xylenes, Total	0.0033	J	mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.00043	J	mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	0.013		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.0032		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-05  
 Client ID: 302-AV04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:30  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 10:09  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.0055		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.00016	J	mg/kg	0.00094	0.00013	1
p/m-Xylene	0.00054	J	mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	0.00054	J	mg/kg	0.00094	0.00027	1
Isopropylbenzene	0.00034	J	mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	0.0031		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.00053	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-07  
 Client ID: 302-AV04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:40  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 10:28  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0051		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.00015	J	mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	0.00033	J	mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	0.0022		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.00046	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-09  
 Client ID: 302-AW04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:00  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 10:48  
 Analyst: JC  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00016	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-11  
 Client ID: 302-AW04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 12:07  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	0.055		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	0.0030		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	0.080		mg/kg	0.00097	0.00014	1
p/m-Xylene	0.25		mg/kg	0.0019	0.00054	1
o-Xylene	0.0060		mg/kg	0.00097	0.00028	1
Xylenes, Total	0.26		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.0026		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	0.057		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.17		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	93		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-11  
 Client ID: 302-AW04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 12:27  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.19		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	ND		mg/kg	0.065	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	0.32		mg/kg	0.065	0.0092	1
p/m-Xylene	1.0		mg/kg	0.13	0.037	1
o-Xylene	0.024	J	mg/kg	0.065	0.019	1
Xylenes, Total	1.0	J	mg/kg	0.065	0.019	1
Isopropylbenzene	0.011	J	mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.26		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	0.76		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-13  
 Client ID: 302-AW04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:30  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 11:08  
 Analyst: JC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00019	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-15  
 Client ID: 302-AW04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:40  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 11:27  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-17  
 Client ID: 302-AW04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:50  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 09/30/22 11:47  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/30/22 08:29  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15,17 Batch: WG1694811-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 09/30/22 08:29  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11 Batch: WG1694814-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17 Batch: WG1694811-3 WG1694811-4								
Methyl tert butyl ether	78		79		66-130	1		30
Benzene	89		87		70-130	2		30
1,2-Dichloroethane	82		81		70-130	1		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	83		83		70-130	0		30
Ethylbenzene	87		85		70-130	2		30
p/m-Xylene	86		84		70-130	2		30
o-Xylene	87		85		70-130	2		30
Isopropylbenzene	86		85		70-130	1		30
1,3,5-Trimethylbenzene	87		86		70-130	1		30
1,2,4-Trimethylbenzene	86		84		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	94		97		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	97		98		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11 Batch: WG1694814-3 WG1694814-4								
Methyl tert butyl ether	78		79		66-130	1		30
Benzene	89		87		70-130	2		30
1,2-Dichloroethane	82		81		70-130	1		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	83		83		70-130	0		30
Ethylbenzene	87		85		70-130	2		30
p/m-Xylene	86		84		70-130	2		30
o-Xylene	87		85		70-130	2		30
Isopropylbenzene	86		85		70-130	1		30
1,3,5-Trimethylbenzene	87		86		70-130	1		30
1,2,4-Trimethylbenzene	86		84		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		97		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	97		98		70-130





# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-02  
 Client ID: 302-AV04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:00  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 03:01  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-04  
 Client ID: 302-AV04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 04:12  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.13	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.028	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.021	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-06  
 Client ID: 302-AV04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:30  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 02:37  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-08  
 Client ID: 302-AV04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:40  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 01:50  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-10  
 Client ID: 302-AW04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:00  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 01:26  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.052	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-12  
 Client ID: 302-AW04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 03:24  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.042	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.019	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-14  
 Client ID: 302-AW04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:30  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 02:14  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.042	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	68		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-16  
 Client ID: 302-AW04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:40  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 00:39  
 Analyst: CMM  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	1.0		mg/kg	0.21	0.020	1
Phenanthrene	1.4		mg/kg	0.12	0.025	1
Anthracene	0.16		mg/kg	0.12	0.040	1
Pyrene	0.043	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	152	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-18  
 Client ID: 302-AW04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:50  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/01/22 01:03  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.026	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270D  
 Analytical Date: 09/30/22 20:21  
 Analyst: CMM

Extraction Method: EPA 3546  
 Extraction Date: 09/29/22 18:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1693727-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	65		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1693727-2 WG1693727-3								
Naphthalene	58		73		40-140	23		50
Fluorene	60		71		40-140	17		50
Phenanthrene	58		71		40-140	20		50
Anthracene	59		72		40-140	20		50
Pyrene	60		73		35-142	20		50
Benzo(a)anthracene	60		73		40-140	20		50
Chrysene	58		71		40-140	20		50
Benzo(b)fluoranthene	58		71		40-140	20		50
Benzo(a)pyrene	65		78		40-140	18		50
Benzo(ghi)perylene	58		72		40-140	22		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	94		119		23-120
2-Fluorobiphenyl	57		72		30-120
4-Terphenyl-d14	58		70		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-02  
 Client ID: 302-AV04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:00  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.33		mg/kg	2.27	0.122	1	09/28/22 16:17	10/04/22 00:06	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-04  
 Client ID: 302-AV04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	47.4		mg/kg	2.36	0.127	1	09/28/22 16:17	10/04/22 00:11	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-06

Date Collected: 09/27/22 11:30

Client ID: 302-AV04-C3-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.81		mg/kg	2.31	0.124	1	09/28/22 16:17	10/04/22 00:16	EPA 3050B	1,6010D	DL





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-08  
 Client ID: 302-AV04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 11:40  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.46		mg/kg	2.26	0.121	1	09/28/22 16:17	10/04/22 00:20	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-10  
 Client ID: 302-AW04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:00  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.2		mg/kg	2.22	0.119	1	09/28/22 16:17	10/04/22 00:25	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-12

Date Collected: 09/27/22 13:20

Client ID: 302-AW04-C2-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.7		mg/kg	2.20	0.118	1	09/28/22 16:17	10/04/22 00:30	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-14

Date Collected: 09/27/22 13:30

Client ID: 302-AW04-C3-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.5		mg/kg	2.26	0.121	1	09/28/22 16:17	10/04/22 00:34	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-16

Date Collected: 09/27/22 13:40

Client ID: 302-AW04-C4-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.79		mg/kg	2.44	0.131	1	09/28/22 16:17	10/04/22 00:39	EPA 3050B	1,6010D	DL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-18

Date Collected: 09/27/22 13:50

Client ID: 302-AW04-C5-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	119		mg/kg	2.26	0.121	1	09/28/22 16:17	10/04/22 00:44	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1693030-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/28/22 16:17	09/30/22 20:38	1,6010D	BV

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1693030-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128			-





### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1693030-3    QC Sample: L2253305-01    Client ID: MS Sample												
Lead, Total	3.45	50	45.4	84	-	-	-	-	75-125	-	-	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-01

Date Collected: 09/27/22 11:00

Client ID: 302-AV04-C1-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-02

Date Collected: 09/27/22 11:00

Client ID: 302-AV04-C1-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-03

Date Collected: 09/27/22 11:20

Client ID: 302-AV04-C2-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-04

Date Collected: 09/27/22 11:20

Client ID: 302-AV04-C2-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.6		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## SAMPLE RESULTS

Lab ID: L2253221-05

Date Collected: 09/27/22 11:30

Client ID: 302-AV04-C3-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## SAMPLE RESULTS

Lab ID: L2253221-06

Date Collected: 09/27/22 11:30

Client ID: 302-AV04-C3-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## SAMPLE RESULTS

Lab ID: L2253221-07

Date Collected: 09/27/22 11:40

Client ID: 302-AV04-C4-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.1		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## SAMPLE RESULTS

Lab ID: L2253221-08

Date Collected: 09/27/22 11:40

Client ID: 302-AV04-C4-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-09

Date Collected: 09/27/22 13:00

Client ID: 302-AW04-C1-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-10

Date Collected: 09/27/22 13:00

Client ID: 302-AW04-C1-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.4		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-11

Date Collected: 09/27/22 13:20

Client ID: 302-AW04-C2-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.3		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-12  
 Client ID: 302-AW04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/27/22 13:20  
 Date Received: 09/27/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-13

Date Collected: 09/27/22 13:30

Client ID: 302-AW04-C3-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-14

Date Collected: 09/27/22 13:30

Client ID: 302-AW04-C3-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**SAMPLE RESULTS**

Lab ID: L2253221-15

Date Collected: 09/27/22 13:40

Client ID: 302-AW04-C4-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## SAMPLE RESULTS

Lab ID: L2253221-16

Date Collected: 09/27/22 13:40

Client ID: 302-AW04-C4-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.3		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

## SAMPLE RESULTS

Lab ID: L2253221-17

Date Collected: 09/27/22 13:50

Client ID: 302-AW04-C5-VOC

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253221

Project Number: 200.00135.006

Report Date: 10/04/22

**SAMPLE RESULTS**

Lab ID: L2253221-18

Date Collected: 09/27/22 13:50

Client ID: 302-AW04-C5-COMP

Date Received: 09/27/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	09/28/22 10:24	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2253221

**Report Date:** 10/04/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1692894-1 QC Sample: L2253221-01 Client ID: 302-AV04-C1-VOC						
Solids, Total	84.4	85.3	%	1		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253221-01A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2253221-01B	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-01C	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-01D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2253221-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2253221-02B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2253221-03A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2253221-03B	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-03C	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-03D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2253221-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2253221-04B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2253221-05A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2253221-05B	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-05C	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-05D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2253221-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2253221-06B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2253221-07A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260HLW(14)
L2253221-07B	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-07C	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-07D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253221**Project Number:** 200.00135.006**Report Date:** 10/04/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253221-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2253221-08B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2253221-09A	Vial MeOH preserved	B	NA		5.1	Y	Absent		PA-8260HLW(14)
L2253221-09B	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-09C	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-09D	Plastic 120ml unpreserved	B	NA		5.1	Y	Absent		TS(7)
L2253221-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.1	Y	Absent		PB-TI(180)
L2253221-10B	Glass 120ml/4oz unpreserved	B	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2253221-11A	Vial MeOH preserved	A	NA		3.6	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2253221-11B	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260H(14),PA-8260HLW(14)
L2253221-11C	Vial water preserved	A	NA		3.6	Y	Absent	28-SEP-22 07:38	PA-8260H(14),PA-8260HLW(14)
L2253221-11D	Plastic 120ml unpreserved	A	NA		3.6	Y	Absent		TS(7)
L2253221-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.6	Y	Absent		PB-TI(180)
L2253221-12B	Glass 120ml/4oz unpreserved	A	NA		3.6	Y	Absent		TS(7),PA-PAH(14)
L2253221-13A	Vial MeOH preserved	B	NA		5.1	Y	Absent		PA-8260HLW(14)
L2253221-13B	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-13C	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-13D	Plastic 120ml unpreserved	B	NA		5.1	Y	Absent		TS(7)
L2253221-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.1	Y	Absent		PB-TI(180)
L2253221-14B	Glass 120ml/4oz unpreserved	B	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2253221-15A	Vial MeOH preserved	B	NA		5.1	Y	Absent		PA-8260HLW(14)
L2253221-15B	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-15C	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-15D	Plastic 120ml unpreserved	B	NA		5.1	Y	Absent		TS(7)
L2253221-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.1	Y	Absent		PB-TI(180)
L2253221-16B	Glass 120ml/4oz unpreserved	B	NA		5.1	Y	Absent		TS(7),PA-PAH(14)
L2253221-17A	Vial MeOH preserved	B	NA		5.1	Y	Absent		PA-8260HLW(14)
L2253221-17B	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10042209:23  
**Lab Number:** L2253221  
**Report Date:** 10/04/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253221-17C	Vial water preserved	B	NA		5.1	Y	Absent	28-SEP-22 07:38	PA-8260HLW(14)
L2253221-17D	Plastic 120ml unpreserved	B	NA		5.1	Y	Absent		TS(7)
L2253221-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.1	Y	Absent		PB-TI(180)
L2253221-18B	Glass 120ml/4oz unpreserved	B	NA		5.1	Y	Absent		TS(7),PA-PAH(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253221  
**Report Date:** 10/04/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253221

**Project Number:** 200.00135.006

**Report Date:** 10/04/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1201~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist, Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrafase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/28/22 ALPHA Job #: L2253221

**Report Information Data Deliverables**  
 FAX  EMAIL  
 ADEx  Add'l Deliverables

**Billing Information**  
 Same as Client info PO #: 3562

**Regulatory Requirements/Report Limits**  
 State/Fed Program Criteria

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	SAMPLE HANDLING										TOTAL # BOTTLES				
		Date	Time						Filtration	Done	Not Needed	Lab to do	Preservation	Lab to do	(Please specify below)								
53221-01	302-AV04-C1-VOC	9/27	1100	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-02	302-AV04-C1-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AV04-C2-VOC		1120			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AV04-C2-COMP		1120			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AV04-C3-VOC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AV04-C3-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AV04-C4-VOC		1140			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AV04-C4-COMP		1140			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
53221-01	302-AV04-C1-VOC	9/27	1100	S	TS
-02	302-AV04-C1-COMP		1100		
-03	302-AV04-C2-VOC		1120		
-04	302-AV04-C2-COMP		1120		
-05	302-AV04-C3-VOC		1130		
-06	302-AV04-C3-COMP		1130		
-07	302-AV04-C4-VOC		1140		
-08	302-AV04-C4-COMP		1140		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Refiniquished By: *[Signature]* Date/Time: 9/27  
 Received By: *[Signature]* Date/Time: 9/27/22 15:00  
 9/28/22 0115  
 9/27/22 21:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1200~~ ~~1203~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to add@terrafase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/28/22

ALPHA Job #: L225322

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	ANALYSIS										SAMPLE HANDLING	TOTAL # BOTTLES			
		Date	Time						1	2	3	4	5	6	7	8	9	10			11	12	
53221-09	302-AW04-C1-VOC	9/27	1300	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AW04-C1-COMP		1320			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-11	302-AW04-C2-VOC		1320			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-12	302-AW04-C2-COMP		1320			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-AW04-C3-VOC		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-AW04-C3-COMP		1330			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-AW04-C4-VOC		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-AW04-C4-COMP		1340			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-AW04-C5-VOC		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-AW04-C5-COMP		1350			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time:	Received By:	Date/Time:
<i>[Signature]</i>	9/27	<i>[Signature]</i>	9/27/22 1440
<i>[Signature]</i>	9/27/22 800	<i>[Signature]</i>	9/27/22 2100
<i>[Signature]</i>	9/27/22 2100	<i>[Signature]</i>	9/27/22 2140

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2253555
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/05/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2253555

Report Date: 10/05/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2253555-01	302-AV02-C1-VOC	SOIL	PHILADELPHIA, PA	09/28/22 11:00	09/28/22
L2253555-02	302-AV02-C1-COMP	SOIL	PHILADELPHIA, PA	09/28/22 11:00	09/28/22
L2253555-03	302-AV02-C2-VOC	SOIL	PHILADELPHIA, PA	09/28/22 11:30	09/28/22
L2253555-04	302-AV02-C2-COMP	SOIL	PHILADELPHIA, PA	09/28/22 11:30	09/28/22
L2253555-05	302-AV02-C3-VOC	SOIL	PHILADELPHIA, PA	09/28/22 11:50	09/28/22
L2253555-06	302-AV02-C3-COMP	SOIL	PHILADELPHIA, PA	09/28/22 11:50	09/28/22
L2253555-07	302-AV02-C4-VOC	SOIL	PHILADELPHIA, PA	09/28/22 12:10	09/28/22
L2253555-08	302-AV02-C4-COMP	SOIL	PHILADELPHIA, PA	09/28/22 12:10	09/28/22
L2253555-09	302-AW02-C1-VOC	SOIL	PHILADELPHIA, PA	09/28/22 13:00	09/28/22
L2253555-10	302-AW02-C1-COMP	SOIL	PHILADELPHIA, PA	09/28/22 13:00	09/28/22
L2253555-11	302-AW02-C2-VOC	SOIL	PHILADELPHIA, PA	09/28/22 13:20	09/28/22
L2253555-12	302-AW02-C2-COMP	SOIL	PHILADELPHIA, PA	09/28/22 13:20	09/28/22
L2253555-13	302-AW02-C3-VOC	SOIL	PHILADELPHIA, PA	09/28/22 13:25	09/28/22
L2253555-14	302-AW02-C3-COMP	SOIL	PHILADELPHIA, PA	09/28/22 13:25	09/28/22
L2253555-15	302-AW02-C4-VOC	SOIL	PHILADELPHIA, PA	09/28/22 13:40	09/28/22
L2253555-16	302-AW02-C4-COMP	SOIL	PHILADELPHIA, PA	09/28/22 13:40	09/28/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2253555-15: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2253555-15 (Low-Level): The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2253555-06D, -14D, and -16D: The sample has elevated detection limits due to the dilution required by the sample matrix.

#### Total Metals

L2253555-02, -04, -10, -12, and -14: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 10/05/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-01  
 Client ID: 302-AV02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:00  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 10:18  
 Analyst: JC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00026	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-03  
 Client ID: 302-AV02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:30  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 10:44  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00020	J	mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.0037		mg/kg	0.0021	0.00060	1
o-Xylene	0.0010	J	mg/kg	0.0011	0.00031	1
Xylenes, Total	0.0047	J	mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.0011		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00022	J	mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.00088	J	mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-05  
 Client ID: 302-AV02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:50  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 11:10  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.0044		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	0.0038		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	0.0013		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.0067		mg/kg	0.0022	0.00061	1
o-Xylene	0.0014		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.0081		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.0011		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00042	J	mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	81		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-07  
 Client ID: 302-AV02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 12:10  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 11:36  
 Analyst: JC  
 Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	0.00059	J	mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	0.0011	J	mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	0.00059	J	mg/kg	0.0016	0.00023	1
p/m-Xylene	0.011		mg/kg	0.0032	0.00090	1
o-Xylene	0.0030		mg/kg	0.0016	0.00047	1
Xylenes, Total	0.014		mg/kg	0.0016	0.00047	1
Isopropylbenzene	0.013		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	0.00096	J	mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	0.0031	J	mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	76		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-09  
 Client ID: 302-AW02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:00  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 12:03  
 Analyst: JC  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-11  
 Client ID: 302-AW02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:20  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 12:29  
 Analyst: JC  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-13  
 Client ID: 302-AW02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:25  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 12:55  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	0.0022		mg/kg	0.00077	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00040	1
Toluene	0.0012	J	mg/kg	0.0015	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00077	0.00045	1
Ethylbenzene	0.0011	J	mg/kg	0.0015	0.00022	1
p/m-Xylene	0.0025	J	mg/kg	0.0031	0.00086	1
o-Xylene	0.0014	J	mg/kg	0.0015	0.00045	1
Xylenes, Total	0.0039	J	mg/kg	0.0015	0.00045	1
Isopropylbenzene	0.0023		mg/kg	0.0015	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	0.00077	J	mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-15  
 Client ID: 302-AW02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:40  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 11:28  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.70	0.070	1
Benzene	0.35		mg/kg	0.17	0.058	1
1,2-Dichloroethane	ND		mg/kg	0.35	0.089	1
Toluene	0.55		mg/kg	0.35	0.19	1
1,2-Dibromoethane	ND		mg/kg	0.17	0.10	1
Ethylbenzene	0.58		mg/kg	0.35	0.049	1
p/m-Xylene	1.2		mg/kg	0.70	0.19	1
o-Xylene	0.46		mg/kg	0.35	0.10	1
Xylenes, Total	1.7		mg/kg	0.35	0.10	1
Isopropylbenzene	2.8		mg/kg	0.35	0.038	1
1,3,5-Trimethylbenzene	0.57	J	mg/kg	0.70	0.067	1
1,2,4-Trimethylbenzene	1.2		mg/kg	0.70	0.12	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-15  
 Client ID: 302-AW02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:40  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 09:44  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0038	0.00038	1
Benzene	0.0020		mg/kg	0.00096	0.00032	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00049	1
Toluene	0.0019		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00096	0.00056	1
Ethylbenzene	0.0019		mg/kg	0.0019	0.00027	1
p/m-Xylene	0.0051		mg/kg	0.0038	0.0011	1
o-Xylene	0.0043		mg/kg	0.0019	0.00056	1
Xylenes, Total	0.0094		mg/kg	0.0019	0.00056	1
Isopropylbenzene	0.022		mg/kg	0.0019	0.00021	1
1,3,5-Trimethylbenzene	0.0069		mg/kg	0.0038	0.00037	1
1,2,4-Trimethylbenzene	0.0091		mg/kg	0.0038	0.00064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 10/03/22 09:35  
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13 Batch: WG1695348-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/04/22 08:48  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1695653-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 09:24  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 15 Batch: WG1695804-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13 Batch: WG1695348-3 WG1695348-4								
Methyl tert butyl ether	113		115		66-130	2		30
Benzene	115		114		70-130	1		30
1,2-Dichloroethane	97		94		70-130	3		30
Toluene	111		111		70-130	0		30
1,2-Dibromoethane	96		98		70-130	2		30
Ethylbenzene	109		108		70-130	1		30
p/m-Xylene	114		113		70-130	1		30
o-Xylene	109		109		70-130	0		30
Isopropylbenzene	118		116		70-130	2		30
1,3,5-Trimethylbenzene	109		108		70-130	1		30
1,2,4-Trimethylbenzene	107		106		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	81		78		70-130
Toluene-d8	97		96		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	82		81		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1695653-3 WG1695653-4								
Methyl tert butyl ether	76		76		66-130	0		30
Benzene	82		80		70-130	2		30
1,2-Dichloroethane	77		76		70-130	1		30
Toluene	75		73		70-130	3		30
1,2-Dibromoethane	79		79		70-130	0		30
Ethylbenzene	80		77		70-130	4		30
p/m-Xylene	79		77		70-130	3		30
o-Xylene	80		78		70-130	3		30
Isopropylbenzene	81		78		70-130	4		30
1,3,5-Trimethylbenzene	82		80		70-130	2		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		100		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	96		95		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 15 Batch: WG1695804-3 WG1695804-4								
Methyl tert butyl ether	80		80		66-130	0		30
Benzene	85		86		70-130	1		30
1,2-Dichloroethane	83		83		70-130	0		30
Toluene	78		81		70-130	4		30
1,2-Dibromoethane	84		86		70-130	2		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	84		87		70-130	4		30
o-Xylene	85		88		70-130	3		30
Isopropylbenzene	83		87		70-130	5		30
1,3,5-Trimethylbenzene	85		88		70-130	3		30
1,2,4-Trimethylbenzene	85		87		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	97		95		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-02  
 Client ID: 302-AV02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:00  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 15:20  
 Analyst: MG  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.058	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.17		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.15		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.072	J	mg/kg	0.11	0.020	1
Chrysene	0.092	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.087	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.087	J	mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.081	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	148	Q	23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	89		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-04  
 Client ID: 302-AV02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:30  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 15:44  
 Analyst: MG  
 Percent Solids: 62%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.72		mg/kg	0.27	0.032	1
Fluorene	0.18	J	mg/kg	0.27	0.026	1
Phenanthrene	0.59		mg/kg	0.16	0.032	1
Anthracene	0.18		mg/kg	0.16	0.052	1
Pyrene	0.38		mg/kg	0.16	0.026	1
Benzo(a)anthracene	0.21		mg/kg	0.16	0.030	1
Chrysene	0.46		mg/kg	0.16	0.028	1
Benzo(b)fluoranthene	0.32		mg/kg	0.16	0.045	1
Benzo(a)pyrene	0.41		mg/kg	0.21	0.065	1
Benzo(ghi)perylene	0.56		mg/kg	0.21	0.031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-06 D  
 Client ID: 302-AV02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:50  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 16:07  
 Analyst: MG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.43	J	mg/kg	2.0	0.25	10
Fluorene	ND		mg/kg	2.0	0.20	10
Phenanthrene	ND		mg/kg	1.2	0.25	10
Anthracene	ND		mg/kg	1.2	0.40	10
Pyrene	0.23	J	mg/kg	1.2	0.20	10
Benzo(a)anthracene	ND		mg/kg	1.2	0.23	10
Chrysene	ND		mg/kg	1.2	0.21	10
Benzo(b)fluoranthene	ND		mg/kg	1.2	0.34	10
Benzo(a)pyrene	ND		mg/kg	1.6	0.50	10
Benzo(ghi)perylene	ND		mg/kg	1.6	0.24	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	35		30-120
4-Terphenyl-d14	29		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-08  
 Client ID: 302-AV02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 12:10  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 16:31  
 Analyst: MG  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.075	J	mg/kg	0.17	0.021	1
Fluorene	0.047	J	mg/kg	0.17	0.017	1
Phenanthrene	1.3		mg/kg	0.10	0.021	1
Anthracene	0.32		mg/kg	0.10	0.034	1
Pyrene	2.9		mg/kg	0.10	0.017	1
Benzo(a)anthracene	1.6		mg/kg	0.10	0.020	1
Chrysene	1.8		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	1.8		mg/kg	0.10	0.029	1
Benzo(a)pyrene	1.2		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.77		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-10  
 Client ID: 302-AW02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:00  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 16:54  
 Analyst: MG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.060	J	mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.13		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.32		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.17		mg/kg	0.12	0.022	1
Chrysene	0.20		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.23		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.18		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.13	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-12  
 Client ID: 302-AW02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:20  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 17:18  
 Analyst: MG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.044	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.062	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.078	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.047	J	mg/kg	0.12	0.023	1
Chrysene	0.075	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.065	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-14 D  
 Client ID: 302-AW02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:25  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 17:41  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.37	J	mg/kg	1.9	0.23	10
Fluorene	ND		mg/kg	1.9	0.19	10
Phenanthrene	0.52	J	mg/kg	1.2	0.23	10
Anthracene	ND		mg/kg	1.2	0.38	10
Pyrene	0.58	J	mg/kg	1.2	0.19	10
Benzo(a)anthracene	0.44	J	mg/kg	1.2	0.22	10
Chrysene	0.62	J	mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	0.62	J	mg/kg	1.2	0.32	10
Benzo(a)pyrene	0.47	J	mg/kg	1.5	0.47	10
Benzo(ghi)perylene	0.46	J	mg/kg	1.5	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	47		30-120
4-Terphenyl-d14	46		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-16 D  
 Client ID: 302-AW02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:40  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/03/22 18:05  
 Analyst: SLR  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.27	J	mg/kg	1.8	0.22	10
Fluorene	ND		mg/kg	1.8	0.18	10
Phenanthrene	0.44	J	mg/kg	1.1	0.22	10
Anthracene	ND		mg/kg	1.1	0.35	10
Pyrene	0.45	J	mg/kg	1.1	0.18	10
Benzo(a)anthracene	0.37	J	mg/kg	1.1	0.20	10
Chrysene	0.56	J	mg/kg	1.1	0.19	10
Benzo(b)fluoranthene	0.47	J	mg/kg	1.1	0.30	10
Benzo(a)pyrene	ND		mg/kg	1.4	0.44	10
Benzo(ghi)perylene	0.44	J	mg/kg	1.4	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	32		30-120
4-Terphenyl-d14	28		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 10/03/22 11:50  
Analyst: MG

Extraction Method: EPA 3546  
Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1694549-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	143	Q	23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	91		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1694549-2 WG1694549-3								
Naphthalene	97		104		40-140	7		50
Fluorene	93		106		40-140	13		50
Phenanthrene	92		103		40-140	11		50
Anthracene	94		106		40-140	12		50
Pyrene	95		108		35-142	13		50
Benzo(a)anthracene	96		110		40-140	14		50
Chrysene	92		104		40-140	12		50
Benzo(b)fluoranthene	89		103		40-140	15		50
Benzo(a)pyrene	90		104		40-140	14		50
Benzo(ghi)perylene	87		98		40-140	12		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	135	Q	149	Q	23-120
2-Fluorobiphenyl	83		89		30-120
4-Terphenyl-d14	88		93		18-120



## METALS



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-02

Date Collected: 09/28/22 11:00

Client ID: 302-AV02-C1-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	52.8		mg/kg	4.12	0.221	2	09/29/22 20:52	10/04/22 21:41	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-04

Date Collected: 09/28/22 11:30

Client ID: 302-AV02-C2-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 62%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	44.5		mg/kg	15.4	0.823	5	09/29/22 20:52	10/04/22 21:46	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-06

Date Collected: 09/28/22 11:50

Client ID: 302-AV02-C3-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	1400		mg/kg	2.36	0.127	1	09/29/22 20:52	10/04/22 17:39	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-08

Date Collected: 09/28/22 12:10

Client ID: 302-AV02-C4-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	91.9		mg/kg	2.08	0.111	1	09/29/22 20:52	10/04/22 17:44	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-10

Date Collected: 09/28/22 13:00

Client ID: 302-AW02-C1-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	48.8		mg/kg	11.1	0.594	5	09/29/22 20:52	10/04/22 21:50	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-12  
 Client ID: 302-AW02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:20  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.21		mg/kg	4.78	0.256	2	09/29/22 20:52	10/04/22 21:55	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-14  
 Client ID: 302-AW02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 13:25  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.02		mg/kg	4.63	0.248	2	09/29/22 20:52	10/04/22 21:59	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-16

Date Collected: 09/28/22 13:40

Client ID: 302-AW02-C4-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	62.7		mg/kg	2.14	0.114	1	09/29/22 20:52	10/04/22 20:05	EPA 3050B	1,6010D	BV





Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1693578-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	09/29/22 20:52	10/02/22 10:57	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1693578-2 SRM Lot Number: D113-540								
Lead, Total	82		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1693578-3 QC Sample: L2253554-01 Client ID: MS Sample												
Lead, Total	12.8	47.6	39.6	56	Q	-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2253555

**Report Date:** 10/05/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1693578-4 QC Sample: L2253554-01 Client ID: DUP Sample						
Lead, Total	12.8	9.39	mg/kg	31	Q	20



# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-01

Date Collected: 09/28/22 11:00

Client ID: 302-AV02-C1-VOC

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.3		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-02

Date Collected: 09/28/22 11:00

Client ID: 302-AV02-C1-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.3		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

**Lab ID:** L2253555-03  
**Client ID:** 302-AV02-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/28/22 11:30  
**Date Received:** 09/28/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.7		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-04  
 Client ID: 302-AV02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/28/22 11:30  
 Date Received: 09/28/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	62.2		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253555**Project Number:** 200.00135.006**Report Date:** 10/05/22**SAMPLE RESULTS**

Lab ID: L2253555-05

Date Collected: 09/28/22 11:50

Client ID: 302-AV02-C3-VOC

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.4		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-06

Date Collected: 09/28/22 11:50

Client ID: 302-AV02-C3-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.2		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253555**Project Number:** 200.00135.006**Report Date:** 10/05/22**SAMPLE RESULTS**

Lab ID: L2253555-07

Date Collected: 09/28/22 12:10

Client ID: 302-AV02-C4-VOC

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	67.3		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-08

Date Collected: 09/28/22 12:10

Client ID: 302-AV02-C4-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.4		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

**SAMPLE RESULTS**

Lab ID: L2253555-09

Date Collected: 09/28/22 13:00

Client ID: 302-AW02-C1-VOC

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.8		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

**Lab ID:** L2253555-10  
**Client ID:** 302-AW02-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/28/22 13:00  
**Date Received:** 09/28/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-11

Date Collected: 09/28/22 13:20

Client ID: 302-AW02-C2-VOC

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.9		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-12

Date Collected: 09/28/22 13:20

Client ID: 302-AW02-C2-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

**SAMPLE RESULTS**

**Lab ID:** L2253555-13  
**Client ID:** 302-AW02-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/28/22 13:25  
**Date Received:** 09/28/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-14

Date Collected: 09/28/22 13:25

Client ID: 302-AW02-C3-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-15

Date Collected: 09/28/22 13:40

Client ID: 302-AW02-C4-VOC

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253555

Project Number: 200.00135.006

Report Date: 10/05/22

## SAMPLE RESULTS

Lab ID: L2253555-16

Date Collected: 09/28/22 13:40

Client ID: 302-AW02-C4-COMP

Date Received: 09/28/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.0		%	0.100	NA	1	-	09/29/22 13:40	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2253555

**Report Date:** 10/05/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-16 QC Batch ID: WG1693557-1 QC Sample: L2253555-01 Client ID: 302-AV02-C1-VOC						
Solids, Total	89.3	91.1	%	2		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253555**Project Number:** 200.00135.006**Report Date:** 10/05/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253555-01A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-01B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-01C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-01D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-02B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-03A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-03B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-03C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-03D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-04B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-05A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-05B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-05C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-05D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-06B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-07A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-07B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-07C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-07D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253555**Project Number:** 200.00135.006**Report Date:** 10/05/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253555-08B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-09A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-09B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-09C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-09D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-10B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-11A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-11B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-11C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-11D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-12B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-13A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2253555-13B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-13C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260HLW(14)
L2253555-13D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-14B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2253555-15A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2253555-15B	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260H(14),PA-8260HLW(14)
L2253555-15C	Vial water preserved	A	NA		2.1	Y	Absent	29-SEP-22 10:24	PA-8260H(14),PA-8260HLW(14)
L2253555-15D	Plastic 2oz unpreserved for TS	A	NA		2.1	Y	Absent		TS(7)
L2253555-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2253555-16B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253555  
**Report Date:** 10/05/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253555

**Project Number:** 200.00135.006

**Report Date:** 10/05/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12101~~ ~~12103~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/29/22

ALPHA Job #: L2253555

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES				
		Date	Time																					
53555-01	302-AV02-C1-VOC	9/28	1100	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-02	302-AV02-C1-Camp		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AV02-C2-VOC		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AV02-C2-Camp		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AV02-C3-VOC		1150			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AV02-C3-Camp		1150			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AV02-C4-VOC		1210			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AV02-C4-Camp		1210			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:

Date/Time

Received By:

Date/Time

Relinquished By: [Signature] Date/Time: 9/28/22  
 Received By: [Signature] Date/Time: 9-28 150  
 [Signature] Date/Time: 9-28 180  
 [Signature] Date/Time: 9-28 210  
 [Signature] Date/Time: 9-28-22  
 [Signature] Date/Time: 9-28-22  
 [Signature] Date/Time: 9/29/22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3268

Project Name: Philadelphia Refinery

## Client Information

Project Location: Philadelphia, PA

Client: Ransom Consulting, LLC

Project #: 200.00135.006

Address: 2127 Hamilton Avenue

Project Manager: William Schmidt

Trenton, NJ 08619

ALPHA Quote #: ~~1783~~ 18559

Phone: 215-901-4974

## Turn-Around Time

Fax:  Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/29/22

ALPHA Job #: L2253555

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client Info    PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead												
53555-09	302-AwoZ-C1-VOC	9/28	1300	S	TJ	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-10	302-AwoZ-C1-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-11	302-AwoZ-C2-VOC		1320			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-12	302-AwoZ-C2-COMP		1320			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-13	302-AwoZ-C3-VOC		1325			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-14	302-AwoZ-C3-COMP		1325			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-15	302-AwoZ-CA-VOC		1340			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-16	302-AwoZ-CA-COMP		1340			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**TOTAL # BOTTLES**

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
53555-09	302-AwoZ-C1-VOC	9/28	1300	S	TJ
-10	302-AwoZ-C1-COMP		1300		
-11	302-AwoZ-C2-VOC		1320		
-12	302-AwoZ-C2-COMP		1320		
-13	302-AwoZ-C3-VOC		1325		
-14	302-AwoZ-C3-COMP		1325		
-15	302-AwoZ-CA-VOC		1340		
-16	302-AwoZ-CA-COMP		1340		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 9/28 2:00  
 Received By: *[Signature]* Date/Time: 9-28-15  
*[Signature]* 9-28-18  
*[Signature]* 9-28-22  
 9-29-22

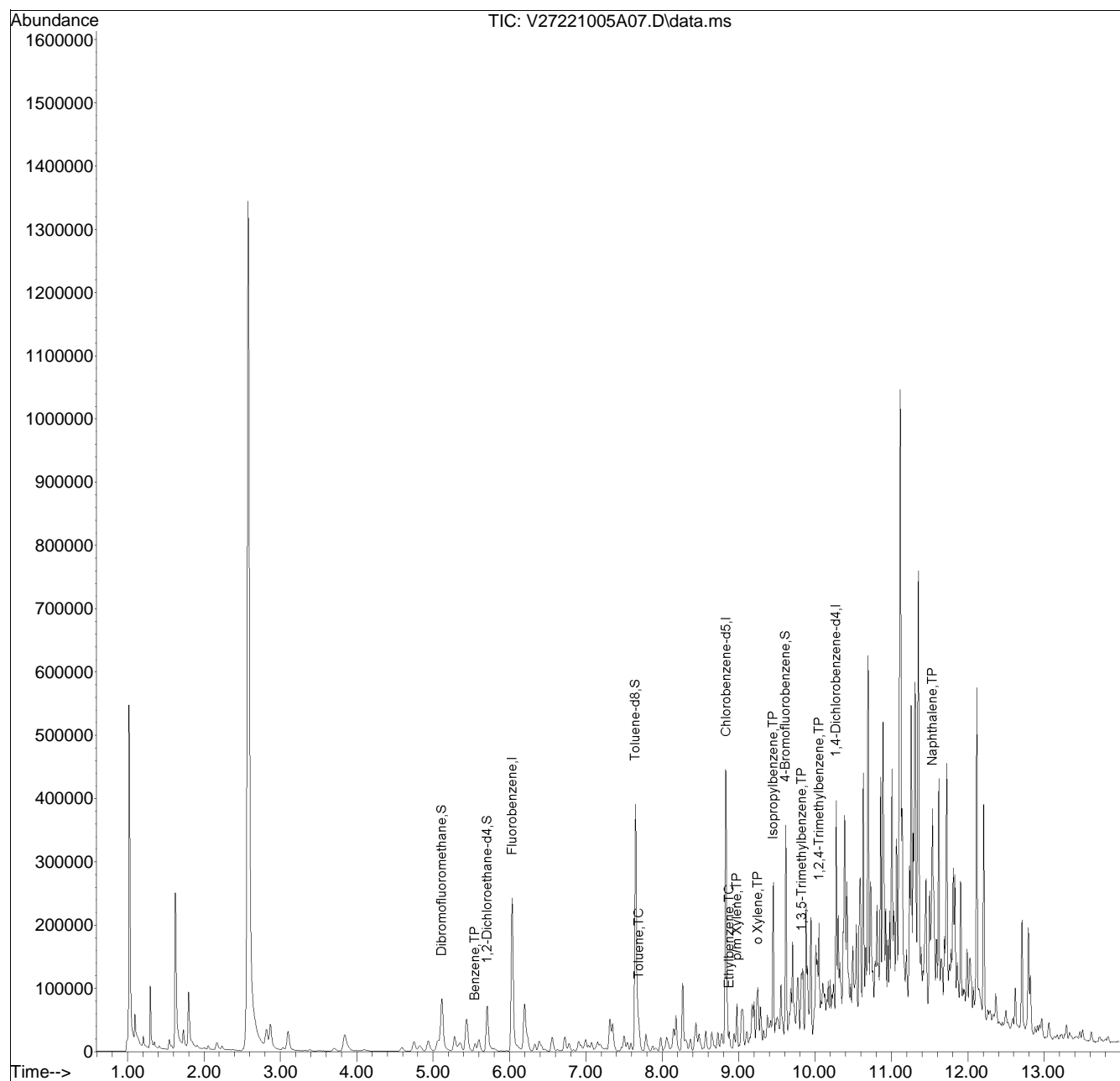
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005A\  
Data File : V27221005A07.D  
Acq On : 05 Oct 2022 09:44 am  
Operator : VOA127:AJK  
Sample : L2253555-15,31,3.14,5,,B,R2F  
Misc : WG1695804,ICAL19153  
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 05 10:09:48 2022  
Quant Method : I:\VOLATILES\VOA127\2022\221005A\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05A\V27221005A03.D•







## ANALYTICAL REPORT

Lab Number:	L2253896
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/06/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2253896

Report Date: 10/06/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2253896-01	302-AX02-C1-VOC	SOIL	PHILADELPHIA, PA	09/29/22 10:30	09/29/22
L2253896-02	302-AX02-C1-COMP	SOIL	PHILADELPHIA, PA	09/29/22 10:30	09/29/22
L2253896-03	302-AX02-C2-VOC	SOIL	PHILADELPHIA, PA	09/29/22 10:45	09/29/22
L2253896-04	302-AX02-C2-COMP	SOIL	PHILADELPHIA, PA	09/29/22 10:45	09/29/22
L2253896-05	302-AX02-C3-VOC	SOIL	PHILADELPHIA, PA	09/29/22 11:00	09/29/22
L2253896-06	302-AX02-C3-COMP	SOIL	PHILADELPHIA, PA	09/29/22 11:00	09/29/22
L2253896-07	302-AX02-C4-VOC	SOIL	PHILADELPHIA, PA	09/29/22 11:15	09/29/22
L2253896-08	302-AX02-C4-COMP	SOIL	PHILADELPHIA, PA	09/29/22 11:15	09/29/22
L2253896-09	302-AX02-C5-VOC	SOIL	PHILADELPHIA, PA	09/29/22 11:30	09/29/22
L2253896-10	302-AX02-C5-COMP	SOIL	PHILADELPHIA, PA	09/29/22 11:30	09/29/22
L2253896-11	302-AX03-C1-VOC	SOIL	PHILADELPHIA, PA	09/29/22 12:00	09/29/22
L2253896-12	302-AX03-C1-COMP	SOIL	PHILADELPHIA, PA	09/29/22 12:00	09/29/22
L2253896-13	302-AX03-C2-VOC	SOIL	PHILADELPHIA, PA	09/29/22 12:15	09/29/22
L2253896-14	302-AX03-C2-COMP	SOIL	PHILADELPHIA, PA	09/29/22 12:15	09/29/22
L2253896-15	302-AX03-C3-VOC	SOIL	PHILADELPHIA, PA	09/29/22 12:30	09/29/22
L2253896-16	302-AX03-C3-COMP	SOIL	PHILADELPHIA, PA	09/29/22 12:30	09/29/22
L2253896-17	302-AY03-C1-VOC	SOIL	PHILADELPHIA, PA	09/29/22 13:00	09/29/22
L2253896-18	302-AY03-C1-COMP	SOIL	PHILADELPHIA, PA	09/29/22 13:00	09/29/22
L2253896-19	302-AY03-C2-VOC	SOIL	PHILADELPHIA, PA	09/29/22 13:10	09/29/22
L2253896-20	302-AY03-C2-COMP	SOIL	PHILADELPHIA, PA	09/29/22 13:10	09/29/22
L2253896-21	302-AY03-C3-VOC	SOIL	PHILADELPHIA, PA	09/29/22 13:30	09/29/22
L2253896-22	302-AY03-C3-COMP	SOIL	PHILADELPHIA, PA	09/29/22 13:30	09/29/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organic

L2253896-03: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (29%) and the surrogate recoveries for toluene-d8 (158%) and 4-bromofluorobenzene (172%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2253896-05: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (137%) and 4-bromofluorobenzene (220%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2253896-06D, -10D, -12D, -14D, and -22D: The sample has elevated detection limits due to the dilution required by the sample matrix.

#### Total Metals

L2253896-06, -14 and -18: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 10/06/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-01  
 Client ID: 302-AX02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 21:43  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.34		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.0085		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.011		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.013		mg/kg	0.0023	0.00064	1
o-Xylene	0.0084		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.021		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0025		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0071		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.016		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	106		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-03  
 Client ID: 302-AX02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:45  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 01:16  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	2.0		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.066	0.017	1
Toluene	0.062	J	mg/kg	0.066	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	0.13		mg/kg	0.066	0.0092	1
p/m-Xylene	0.11	J	mg/kg	0.13	0.037	1
o-Xylene	0.086		mg/kg	0.066	0.019	1
Xylenes, Total	0.20	J	mg/kg	0.066	0.019	1
Isopropylbenzene	0.031	J	mg/kg	0.066	0.0071	1
1,3,5-Trimethylbenzene	0.13		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	0.42		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-03  
 Client ID: 302-AX02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:45  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 12:02  
 Analyst: MKS  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.92	E	mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	0.033		mg/kg	0.0013	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.077		mg/kg	0.0013	0.00018	1
p/m-Xylene	0.064		mg/kg	0.0025	0.00071	1
o-Xylene	0.058		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.12		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.026		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.10		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.30		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	158	Q	70-130
4-Bromofluorobenzene	172	Q	70-130
Dibromofluoromethane	83		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-05  
 Client ID: 302-AX02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 16:58  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	0.00090	J	mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	0.0010		mg/kg	0.00097	0.00014	1
p/m-Xylene	0.0010	J	mg/kg	0.0019	0.00054	1
o-Xylene	0.00052	J	mg/kg	0.00097	0.00028	1
Xylenes, Total	0.0015	J	mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.0025		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.00060	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	137	Q	70-130
4-Bromofluorobenzene	220	Q	70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-07  
 Client ID: 302-AX02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:15  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 17:18  
 Analyst: JC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.21	0.021	1
Benzene	4.7		mg/kg	0.052	0.017	1
1,2-Dichloroethane	ND		mg/kg	0.10	0.026	1
Toluene	0.14		mg/kg	0.10	0.056	1
1,2-Dibromoethane	ND		mg/kg	0.052	0.030	1
Ethylbenzene	0.39		mg/kg	0.10	0.014	1
p/m-Xylene	0.35		mg/kg	0.21	0.058	1
o-Xylene	0.30		mg/kg	0.10	0.030	1
Xylenes, Total	0.65		mg/kg	0.10	0.030	1
Isopropylbenzene	0.086	J	mg/kg	0.10	0.011	1
1,3,5-Trimethylbenzene	0.40		mg/kg	0.21	0.020	1
1,2,4-Trimethylbenzene	1.3		mg/kg	0.21	0.034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-09  
 Client ID: 302-AX02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 00:50  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	84		70-130
Dibromofluoromethane	117		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-11  
 Client ID: 302-AX03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 22:10  
 Analyst: AJK  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	116		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-13  
 Client ID: 302-AX03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:15  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 22:36  
 Analyst: AJK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00078		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	116		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-15  
 Client ID: 302-AX03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 23:03  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0052	0.00052	1
Benzene	ND		mg/kg	0.0013	0.00043	1
1,2-Dichloroethane	ND		mg/kg	0.0026	0.00067	1
Toluene	ND		mg/kg	0.0026	0.0014	1
1,2-Dibromoethane	ND		mg/kg	0.0013	0.00076	1
Ethylbenzene	ND		mg/kg	0.0026	0.00036	1
p/m-Xylene	ND		mg/kg	0.0052	0.0014	1
o-Xylene	ND		mg/kg	0.0026	0.00075	1
Xylenes, Total	ND		mg/kg	0.0026	0.00075	1
Isopropylbenzene	ND		mg/kg	0.0026	0.00028	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0052	0.00050	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0052	0.00087	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	115		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-17  
 Client ID: 302-AY03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 23:30  
 Analyst: AJK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0019		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.00052	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0010	J	mg/kg	0.0020	0.00056	1
o-Xylene	0.00058	J	mg/kg	0.0010	0.00029	1
Xylenes, Total	0.0016	J	mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.00036	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	117		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-19  
 Client ID: 302-AY03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:10  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 00:23  
 Analyst: AJK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	0.010		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	0.0015		mg/kg	0.0014	0.00074	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	0.0026		mg/kg	0.0014	0.00019	1
p/m-Xylene	0.0052		mg/kg	0.0027	0.00076	1
o-Xylene	0.0027		mg/kg	0.0014	0.00039	1
Xylenes, Total	0.0079		mg/kg	0.0014	0.00039	1
Isopropylbenzene	0.00055	J	mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	0.00084	J	mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	0.0026	J	mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-21  
 Client ID: 302-AY03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 23:57  
 Analyst: AJK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	80		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/04/22 16:52  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,09,11,13,15,17,19,21 Batch: WG1695790-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	82		70-130
Dibromofluoromethane	113		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 09:24  
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1695804-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 15:34  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1696157-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 15:34  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07 Batch: WG1696159-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	130		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 10/04/22 16:52  
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03 Batch: WG1696187-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	82		70-130
Dibromofluoromethane	113		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,09,11,13,15,17,19,21 Batch: WG1695790-3 WG1695790-4								
Methyl tert butyl ether	95		95		66-130	0		30
Benzene	100		97		70-130	3		30
1,2-Dichloroethane	97		95		70-130	2		30
Toluene	92		89		70-130	3		30
1,2-Dibromoethane	87		86		70-130	1		30
Ethylbenzene	90		86		70-130	5		30
p/m-Xylene	98		93		70-130	5		30
o-Xylene	95		91		70-130	4		30
Isopropylbenzene	80		75		70-130	6		30
1,3,5-Trimethylbenzene	84		80		70-130	5		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		101		70-130
Toluene-d8	94		95		70-130
4-Bromofluorobenzene	73		72		70-130
Dibromofluoromethane	113		111		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1695804-3 WG1695804-4								
Methyl tert butyl ether	80		80		66-130	0		30
Benzene	85		86		70-130	1		30
1,2-Dichloroethane	83		83		70-130	0		30
Toluene	78		81		70-130	4		30
1,2-Dibromoethane	84		86		70-130	2		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	84		87		70-130	4		30
o-Xylene	85		88		70-130	3		30
Isopropylbenzene	83		87		70-130	5		30
1,3,5-Trimethylbenzene	85		88		70-130	3		30
1,2,4-Trimethylbenzene	85		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	97		95		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1696157-3 WG1696157-4								
Methyl tert butyl ether	102		112		66-130	9		30
Benzene	101		106		70-130	5		30
1,2-Dichloroethane	110		119		70-130	8		30
Toluene	99		102		70-130	3		30
1,2-Dibromoethane	103		110		70-130	7		30
Ethylbenzene	103		108		70-130	5		30
p/m-Xylene	106		111		70-130	5		30
o-Xylene	106		111		70-130	5		30
Isopropylbenzene	98		104		70-130	6		30
1,3,5-Trimethylbenzene	99		106		70-130	7		30
1,2,4-Trimethylbenzene	99		105		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	110		110		70-130
Toluene-d8	101		99		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	97		96		70-130



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07 Batch: WG1696159-3 WG1696159-4								
Methyl tert butyl ether	102		112		66-130	9		30
Benzene	101		106		70-130	5		30
1,2-Dichloroethane	110		119		70-130	8		30
Toluene	99		102		70-130	3		30
1,2-Dibromoethane	103		110		70-130	7		30
Ethylbenzene	103		108		70-130	5		30
p/m-Xylene	106		111		70-130	5		30
o-Xylene	106		111		70-130	5		30
Isopropylbenzene	98		104		70-130	6		30
1,3,5-Trimethylbenzene	99		106		70-130	7		30
1,2,4-Trimethylbenzene	99		105		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	110		110		70-130
Toluene-d8	101		99		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	97		96		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03 Batch: WG1696187-3 WG1696187-4								
Methyl tert butyl ether	95		95		66-130	0		30
Benzene	100		97		70-130	3		30
1,2-Dichloroethane	97		95		70-130	2		30
Toluene	92		89		70-130	3		30
1,2-Dibromoethane	87		86		70-130	1		30
Ethylbenzene	90		86		70-130	5		30
p/m-Xylene	98		93		70-130	5		30
o-Xylene	95		91		70-130	4		30
Isopropylbenzene	80		75		70-130	6		30
1,3,5-Trimethylbenzene	84		80		70-130	5		30
1,2,4-Trimethylbenzene	82		79		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		101		70-130
Toluene-d8	94		95		70-130
4-Bromofluorobenzene	73		72		70-130
Dibromofluoromethane	113		111		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-02  
 Client ID: 302-AX02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 01:17  
 Analyst: SLR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.040	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.13		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.076	J	mg/kg	0.12	0.022	1
Chrysene	0.11	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.11	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.078	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.059	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-04  
 Client ID: 302-AX02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:45  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 10/04/22 06:46  
 Analyst: SLR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.18	J	mg/kg	0.20	0.024	1
Fluorene	0.15	J	mg/kg	0.20	0.019	1
Phenanthrene	0.86		mg/kg	0.12	0.024	1
Anthracene	0.26		mg/kg	0.12	0.039	1
Pyrene	8.0	E	mg/kg	0.12	0.020	1
Benzo(a)anthracene	2.3		mg/kg	0.12	0.022	1
Chrysene	6.0		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	2.5		mg/kg	0.12	0.034	1
Benzo(a)pyrene	5.0		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	2.9		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	52		23-120
2-Fluorobiphenyl	45		30-120
4-Terphenyl-d14	43		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-04 D  
 Client ID: 302-AX02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:45  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 10:35  
 Analyst: WR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Pyrene	15.		mg/kg	1.2	0.20	10



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-06 D  
 Client ID: 302-AX02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 14:59  
 Analyst: MG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	2.0	0.24	10
Fluorene	ND		mg/kg	2.0	0.19	10
Phenanthrene	ND		mg/kg	1.2	0.24	10
Anthracene	ND		mg/kg	1.2	0.38	10
Pyrene	0.37	J	mg/kg	1.2	0.20	10
Benzo(a)anthracene	0.22	J	mg/kg	1.2	0.22	10
Chrysene	0.26	J	mg/kg	1.2	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.2	0.33	10
Benzo(a)pyrene	ND		mg/kg	1.6	0.48	10
Benzo(ghi)perylene	ND		mg/kg	1.6	0.23	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-08  
 Client ID: 302-AX02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:15  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/03/22 23:43  
 Analyst: SLR  
 Percent Solids: 76%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	ND		mg/kg	0.22	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.053	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-10 D  
 Client ID: 302-AX02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 15:23  
 Analyst: MG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.29	J	mg/kg	1.9	0.23	10
Fluorene	ND		mg/kg	1.9	0.18	10
Phenanthrene	ND		mg/kg	1.1	0.23	10
Anthracene	ND		mg/kg	1.1	0.37	10
Pyrene	ND		mg/kg	1.1	0.19	10
Benzo(a)anthracene	ND		mg/kg	1.1	0.21	10
Chrysene	ND		mg/kg	1.1	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.32	10
Benzo(a)pyrene	ND		mg/kg	1.5	0.46	10
Benzo(ghi)perylene	ND		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-12 D  
 Client ID: 302-AX03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 15:21  
 Analyst: MG  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.91	0.11	5
Fluorene	0.10	J	mg/kg	0.91	0.088	5
Phenanthrene	0.25	J	mg/kg	0.55	0.11	5
Anthracene	ND		mg/kg	0.55	0.18	5
Pyrene	1.6		mg/kg	0.55	0.090	5
Benzo(a)anthracene	0.90		mg/kg	0.55	0.10	5
Chrysene	1.3		mg/kg	0.55	0.095	5
Benzo(b)fluoranthene	0.66		mg/kg	0.55	0.15	5
Benzo(a)pyrene	0.76		mg/kg	0.73	0.22	5
Benzo(ghi)perylene	0.45	J	mg/kg	0.73	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-14 D  
 Client ID: 302-AX03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:15  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 14:57  
 Analyst: MG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.92	0.11	5
Fluorene	0.11	J	mg/kg	0.92	0.089	5
Phenanthrene	0.70		mg/kg	0.55	0.11	5
Anthracene	0.18	J	mg/kg	0.55	0.18	5
Pyrene	0.79		mg/kg	0.55	0.091	5
Benzo(a)anthracene	0.50	J	mg/kg	0.55	0.10	5
Chrysene	0.46	J	mg/kg	0.55	0.095	5
Benzo(b)fluoranthene	0.52	J	mg/kg	0.55	0.15	5
Benzo(a)pyrene	0.44	J	mg/kg	0.73	0.22	5
Benzo(ghi)perylene	0.27	J	mg/kg	0.73	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-16  
 Client ID: 302-AX03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 03:37  
 Analyst: SLR  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.12	J	mg/kg	0.18	0.022	1
Fluorene	0.072	J	mg/kg	0.18	0.018	1
Phenanthrene	0.37		mg/kg	0.11	0.022	1
Anthracene	0.090	J	mg/kg	0.11	0.036	1
Pyrene	0.37		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.24		mg/kg	0.11	0.021	1
Chrysene	0.42		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.16		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.20		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.19		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-18  
 Client ID: 302-AY03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/03/22 23:10  
 Analyst: SLR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.023	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	124	Q	23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-20  
 Client ID: 302-AY03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:10  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/03/22 22:45  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	82		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-22 D  
 Client ID: 302-AY03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 14:33  
 Analyst: MG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 02:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.23	J	mg/kg	1.9	0.23	10
Fluorene	0.78	J	mg/kg	1.9	0.19	10
Phenanthrene	9.3		mg/kg	1.1	0.23	10
Anthracene	1.1		mg/kg	1.1	0.37	10
Pyrene	12.		mg/kg	1.1	0.19	10
Benzo(a)anthracene	8.9		mg/kg	1.1	0.22	10
Chrysene	12.		mg/kg	1.1	0.20	10
Benzo(b)fluoranthene	3.2		mg/kg	1.1	0.32	10
Benzo(a)pyrene	6.9		mg/kg	1.5	0.47	10
Benzo(ghi)perylene	4.3		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 10/03/22 11:50  
Analyst: MG

Extraction Method: EPA 3546  
Extraction Date: 10/02/22 11:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1694549-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	143	Q	23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	91		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1694549-2 WG1694549-3								
Naphthalene	97		104		40-140	7		50
Fluorene	93		106		40-140	13		50
Phenanthrene	92		103		40-140	11		50
Anthracene	94		106		40-140	12		50
Pyrene	95		108		35-142	13		50
Benzo(a)anthracene	96		110		40-140	14		50
Chrysene	92		104		40-140	12		50
Benzo(b)fluoranthene	89		103		40-140	15		50
Benzo(a)pyrene	90		104		40-140	14		50
Benzo(ghi)perylene	87		98		40-140	12		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	135	Q	149	Q	23-120
2-Fluorobiphenyl	83		89		30-120
4-Terphenyl-d14	88		93		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-02  
 Client ID: 302-AX02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	23.0		mg/kg	2.34	0.126	1	10/01/22 07:00	10/04/22 19:09	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-04  
 Client ID: 302-AX02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 10:45  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	398		mg/kg	2.32	0.124	1	10/01/22 07:00	10/04/22 19:15	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-06  
 Client ID: 302-AX02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	379		mg/kg	4.62	0.248	2	10/01/22 07:00	10/05/22 01:34	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-08  
 Client ID: 302-AX02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 11:15  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.36		mg/kg	2.54	0.136	1	10/01/22 07:00	10/04/22 19:25	EPA 3050B	1,6010D	BV





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253896

**Project Number:** 200.00135.006

**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-10

Date Collected: 09/29/22 11:30

Client ID: 302-AX02-C5-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	466		mg/kg	2.28	0.122	1	10/01/22 07:00	10/04/22 19:31	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-12  
 Client ID: 302-AX03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:00  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	279		mg/kg	2.17	0.116	1	10/01/22 07:00	10/04/22 19:36	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-14  
 Client ID: 302-AX03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:15  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.7		mg/kg	4.47	0.240	2	10/01/22 07:00	10/05/22 01:39	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-16  
 Client ID: 302-AX03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 12:30  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	273		mg/kg	2.15	0.115	1	10/01/22 07:00	10/04/22 20:12	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253896

**Project Number:** 200.00135.006

**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-18

Date Collected: 09/29/22 13:00

Client ID: 302-AY03-C1-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.1		mg/kg	11.1	0.594	5	10/01/22 07:00	10/06/22 08:09	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-20  
 Client ID: 302-AY03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/29/22 13:10  
 Date Received: 09/29/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.12		mg/kg	2.22	0.119	1	10/01/22 07:00	10/04/22 20:23	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253896

**Project Number:** 200.00135.006

**Report Date:** 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-22

Date Collected: 09/29/22 13:30

Client ID: 302-AY03-C3-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	325		mg/kg	2.25	0.121	1	10/01/22 07:00	10/04/22 20:28	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253896

Project Number: 200.00135.006

Report Date: 10/06/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1694070-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/01/22 07:00	10/04/22 18:04	1,6010D	BV

### Prep Information

Digestion Method: EPA 3050B





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1694070-2 SRM Lot Number: D113-540								
Lead, Total	95		-		72-128			-



**Matrix Spike Analysis**  
**Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>MSD Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>MSD Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>RPD Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22    QC Batch ID: WG1694070-3    QC Sample: L2253772-01    Client ID: MS Sample												
Lead, Total	508	52.5	566	110	-	-	-	-	75-125	-	-	20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2253896

**Report Date:** 10/06/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1694070-4 QC Sample: L2253772-01 Client ID: DUP Sample						
Lead, Total	508	506	mg/kg	0		20



**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1694070-6 QC Sample: L2253772-01 Client ID: DUP Sample						
Lead, Total	508	555	mg/kg	9		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-01

Date Collected: 09/29/22 10:30

Client ID: 302-AX02-C1-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.3		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-02

Date Collected: 09/29/22 10:30

Client ID: 302-AX02-C1-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.0		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-03

Date Collected: 09/29/22 10:45

Client ID: 302-AX02-C2-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-04

Date Collected: 09/29/22 10:45

Client ID: 302-AX02-C2-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-05

Date Collected: 09/29/22 11:00

Client ID: 302-AX02-C3-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.9		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2253896

Project Number: 200.00135.006

Report Date: 10/06/22

**SAMPLE RESULTS**

Lab ID: L2253896-06

Date Collected: 09/29/22 11:00

Client ID: 302-AX02-C3-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.5		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-07

Date Collected: 09/29/22 11:15

Client ID: 302-AX02-C4-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.3		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-08

Date Collected: 09/29/22 11:15

Client ID: 302-AX02-C4-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	76.4		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-09

Date Collected: 09/29/22 11:30

Client ID: 302-AX02-C5-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-10

Date Collected: 09/29/22 11:30

Client ID: 302-AX02-C5-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-11

Date Collected: 09/29/22 12:00

Client ID: 302-AX03-C1-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.5		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

**Lab ID:** L2253896-12  
**Client ID:** 302-AX03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/29/22 12:00  
**Date Received:** 09/29/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.3		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-13

Date Collected: 09/29/22 12:15

Client ID: 302-AX03-C2-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.9		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-14

Date Collected: 09/29/22 12:15

Client ID: 302-AX03-C2-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.4		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-15

Date Collected: 09/29/22 12:30

Client ID: 302-AX03-C3-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.1		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-16

Date Collected: 09/29/22 12:30

Client ID: 302-AX03-C3-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.0		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

**Lab ID:** L2253896-17  
**Client ID:** 302-AY03-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/29/22 13:00  
**Date Received:** 09/29/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.5		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

**Lab ID:** L2253896-18  
**Client ID:** 302-AY03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/29/22 13:00  
**Date Received:** 09/29/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.7		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-19

Date Collected: 09/29/22 13:10

Client ID: 302-AY03-C2-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

**SAMPLE RESULTS**

**Lab ID:** L2253896-20  
**Client ID:** 302-AY03-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/29/22 13:10  
**Date Received:** 09/29/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	09/30/22 09:45	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-21

Date Collected: 09/29/22 13:30

Client ID: 302-AY03-C3-VOC

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	09/30/22 09:54	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**SAMPLE RESULTS**

Lab ID: L2253896-22

Date Collected: 09/29/22 13:30

Client ID: 302-AY03-C3-COMP

Date Received: 09/29/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.4		%	0.100	NA	1	-	09/30/22 09:54	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2253896

Report Date: 10/06/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1693943-1 QC Sample: L2253896-01 Client ID: 302-AX02-C1-VOC						
Solids, Total	84.3	79.6	%	6		20
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1693944-1 QC Sample: L2253243-03 Client ID: DUP Sample						
Solids, Total	81.1	86.1	%	6		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

Cooler	Custody Seal
A	Absent
B	Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2253896-01A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2253896-01B	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-01C	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-01D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2253896-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2253896-02B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2253896-03A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2253896-03B	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260H(14),PA-8260HLW(14)
L2253896-03C	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260H(14),PA-8260HLW(14)
L2253896-03D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2253896-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2253896-04B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2253896-05A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2253896-05B	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-05C	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-05D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2253896-06A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2253896-06B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2253896-07A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2253896-07B	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-07C	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-07D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2253896**Project Number:** 200.00135.006**Report Date:** 10/06/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253896-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2253896-08B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2253896-09A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2253896-09B	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-09C	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-09D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2253896-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2253896-10B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2253896-11A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2253896-11B	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-11C	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-11D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2253896-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2253896-12B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2253896-13A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2253896-13B	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-13C	Vial water preserved	A	NA		3.1	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-13D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2253896-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2253896-14B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2253896-15A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2253896-15B	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-15C	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-15D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2253896-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2253896-16B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2253896-17A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2253896-17B	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10062213:52  
**Lab Number:** L2253896  
**Report Date:** 10/06/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2253896-17C	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-17D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2253896-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2253896-18B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2253896-19A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2253896-19B	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-19C	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-19D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2253896-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2253896-20B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2253896-21A	Vial MeOH preserved	B	NA		2.0	Y	Absent		PA-8260HLW(14)
L2253896-21B	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-21C	Vial water preserved	B	NA		2.0	Y	Absent	30-SEP-22 08:24	PA-8260HLW(14)
L2253896-21D	Plastic 120ml unpreserved	B	NA		2.0	Y	Absent		TS(7)
L2253896-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.0	Y	Absent		PB-TI(180)
L2253896-22B	Glass 120ml/4oz unpreserved	B	NA		2.0	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2253896  
**Report Date:** 10/06/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2253896

**Project Number:** 200.00135.006

**Report Date:** 10/06/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1261~~ ~~1283~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to add@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd In Lab: 9/30/22

ALPHA Job #: L2253896

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

**SAMPLE HANDLING**  
 Done  
 Not Needed  
 Lab to do  
**Preservation**  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead															
		Date	Time																				
53896-01	302-AX02-C1-VOC	9/29	1030	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
02	302-AX02-C1-Camp		1030			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
03	302-AX02-C2-VOC		1045			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
04	302-AX02-C2-Camp		1045			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
05	302-AX02-C3-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
06	302-AX02-C3-Camp		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
07	302-AX02-C4-VOC		1115			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
08	302-AX02-C4-Camp		1115			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
09	302-AX02-C5-VOC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
10	302-AX02-C5-Camp		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:

Date/Time

Received By:

Date/Time

<i>[Signature]</i>	9/29 1450	STONES AA	9/29 1450
STONES	8/29/22	AMP	9/29/22
AMP	9/29 210	gbs	9/29 22 210
gbs	9/29 22	add memo	9/29 22 210

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~17853~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 Mansfield, MA  
 TEL: 508-898-9220  
 TEL: 508-822-9300  
 FAX: 508-898-9193  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 9/30/22

ALPHA Job #: 2253896

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program	Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES		
		Date	Time																			
53896-21	302-AY03-C1-VOC	9/29	1330	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
22	302-AY03-C3-Camp	↓	1330	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
53896-21	302-AY03-C1-VOC	9/29	1330	S	TS
22	302-AY03-C3-Camp	↓	1330	↓	↓

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/29/22 1450	Stones MAI	9/29/22 1450
<i>[Signature]</i>	9/29/22 1630	<i>[Signature]</i>	9/29/22 1800
<i>[Signature]</i>	9/29/22 2100	<i>[Signature]</i>	9/29/22 2100

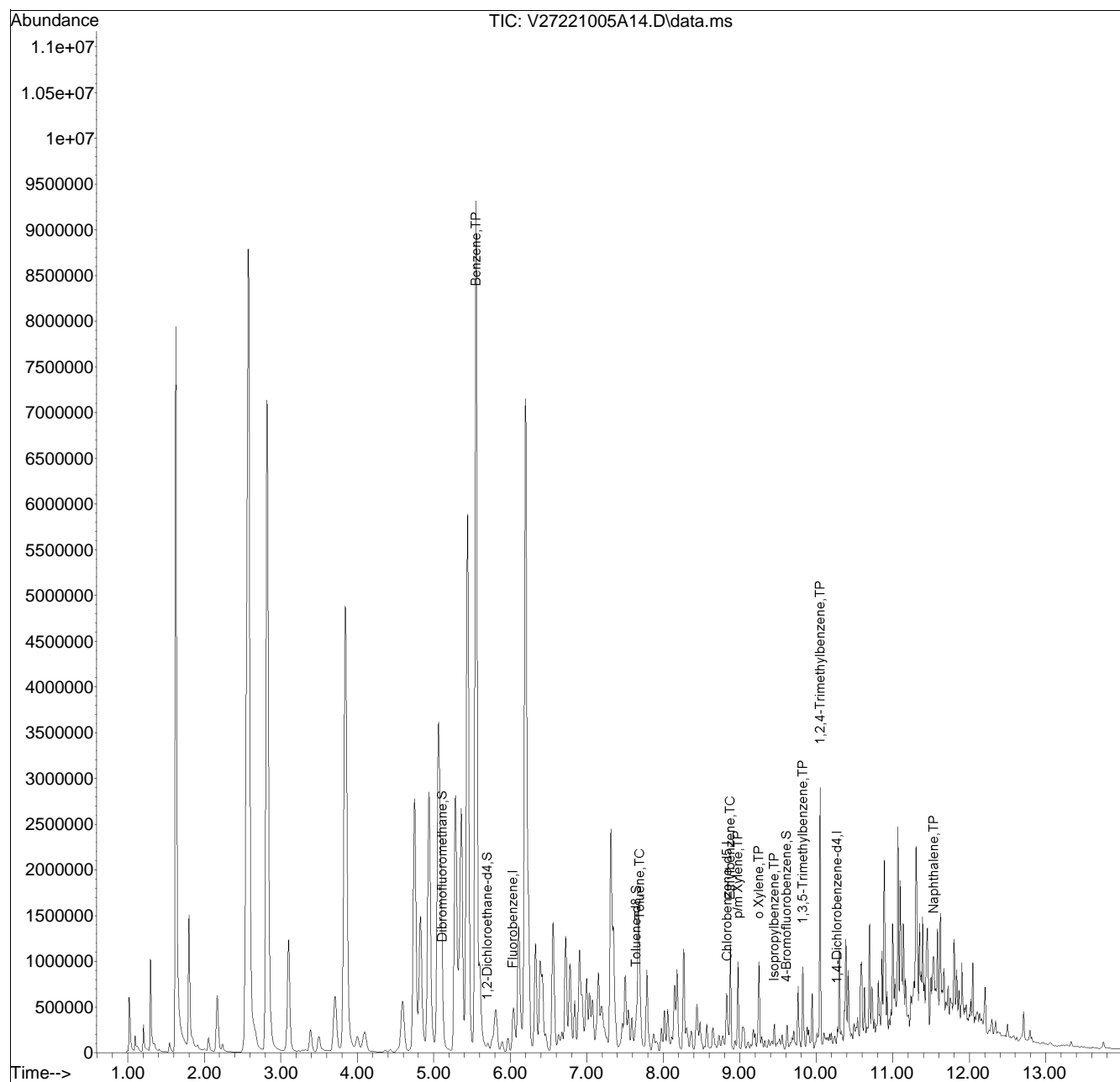
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005A\  
 Data File : V27221005A14.D  
 Acq On : 05 Oct 2022 12:02 pm  
 Operator : VOA127:MKS  
 Sample : L2253896-03,31,4.77,5,,C,R2F  
 Misc : WG1695804,ICAL19153  
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 05 14:18:11 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\221005A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05A\V27221005A03.D•



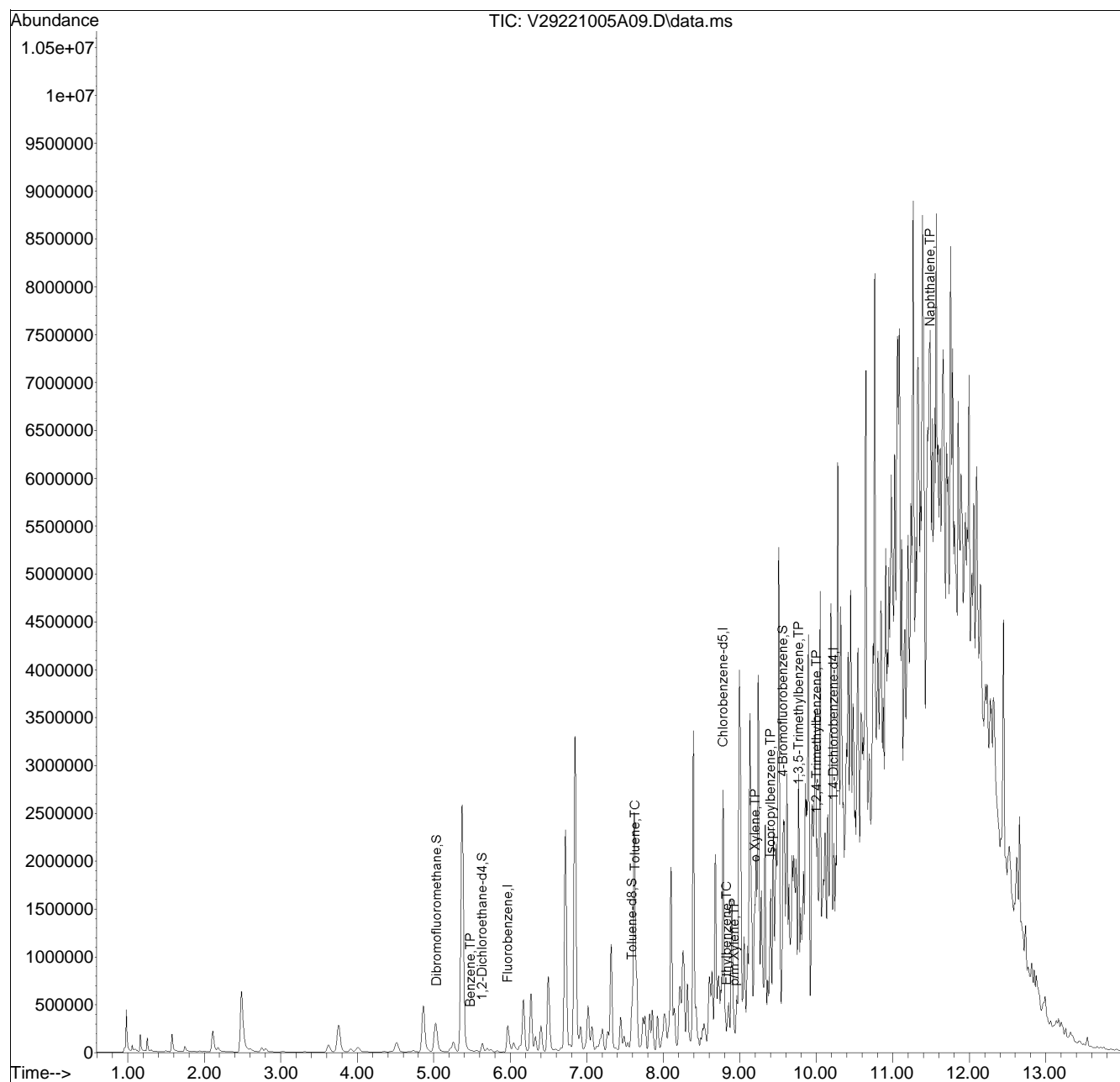


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221005A\  
 Data File : V29221005A09.D  
 Acq On : 05 Oct 2022 04:58 pm  
 Operator : VOA129:JC  
 Sample : L2253896-05,31,6.13,5,,B,R2F  
 Misc : WG1696157,ICAL19353  
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 06 06:27:04 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221005A\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05A\V29221005A01.D•





## ANALYTICAL REPORT

Lab Number:	L2254192
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/07/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2254192-01	302-AY04-C1-VOC	SOIL	PHILADELPHIA, PA	09/30/22 11:00	09/30/22
L2254192-02	302-AY04-C1-COMP	SOIL	PHILADELPHIA, PA	09/30/22 11:00	09/30/22
L2254192-03	302-AY04-C2-VOC	SOIL	PHILADELPHIA, PA	09/30/22 11:30	09/30/22
L2254192-04	302-AY04-C2-COMP	SOIL	PHILADELPHIA, PA	09/30/22 11:30	09/30/22
L2254192-05	302-AY04-C3-VOC	SOIL	PHILADELPHIA, PA	09/30/22 12:00	09/30/22
L2254192-06	302-AY04-C3-COMP	SOIL	PHILADELPHIA, PA	09/30/22 12:00	09/30/22
L2254192-07	302-AY05-C1-VOC	SOIL	PHILADELPHIA, PA	09/30/22 13:00	09/30/22
L2254192-08	302-AY05-C1-COMP	SOIL	PHILADELPHIA, PA	09/30/22 13:00	09/30/22
L2254192-09	302-AY05-C2-VOC	SOIL	PHILADELPHIA, PA	09/30/22 13:20	09/30/22
L2254192-10	302-AY05-C2-COMP	SOIL	PHILADELPHIA, PA	09/30/22 13:20	09/30/22
L2254192-11	302-AY05-C3-VOC	SOIL	PHILADELPHIA, PA	09/30/22 13:40	09/30/22
L2254192-12	302-AY05-C3-COMP	SOIL	PHILADELPHIA, PA	09/30/22 13:40	09/30/22
L2254192-13	302-AY05-C4-VOC	SOIL	PHILADELPHIA, PA	09/30/22 13:50	09/30/22
L2254192-14	302-AY05-C4-COMP	SOIL	PHILADELPHIA, PA	09/30/22 13:50	09/30/22
L2254192-15	302-AY05-C5-VOC	SOIL	PHILADELPHIA, PA	09/30/22 14:00	09/30/22
L2254192-16	302-AY05-C5-COMP	SOIL	PHILADELPHIA, PA	09/30/22 14:00	09/30/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2254192-01: The surrogate recoveries are outside the method acceptance criteria for 1,2-dichloroethane-d4 (60%) and dibromofluoromethane (66%) due to interference with the Internal Standard.

L2254192-01: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (141%) and 4-bromofluorobenzene (296%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2254192-03 and -05: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2254192-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.


L2254192-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (137%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Total Metals

L2254192-02, -04, -06, -08, -10, -12, -14, and -16: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 10/07/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-01  
 Client ID: 302-AY04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 11:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 13:01  
 Analyst: MKS  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.053		mg/kg	0.035	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.069	0.018	1
Toluene	0.10		mg/kg	0.069	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.035	0.020	1
Ethylbenzene	13.		mg/kg	0.069	0.0098	1
p/m-Xylene	3.2		mg/kg	0.14	0.039	1
o-Xylene	0.16		mg/kg	0.069	0.020	1
Xylenes, Total	3.4		mg/kg	0.069	0.020	1
Isopropylbenzene	5.6		mg/kg	0.069	0.0076	1
1,3,5-Trimethylbenzene	1.8		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	60	Q	70-130
Toluene-d8	141	Q	70-130
4-Bromofluorobenzene	296	Q	70-130
Dibromofluoromethane	66	Q	70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-03  
 Client ID: 302-AY04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 11:30  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 02:04  
 Analyst: JC  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.094	0.0095	1
Benzene	ND		mg/kg	0.024	0.0078	1
1,2-Dichloroethane	ND		mg/kg	0.047	0.012	1
Toluene	ND		mg/kg	0.047	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	0.053		mg/kg	0.047	0.0066	1
p/m-Xylene	ND		mg/kg	0.094	0.026	1
o-Xylene	ND		mg/kg	0.047	0.014	1
Xylenes, Total	ND		mg/kg	0.047	0.014	1
Isopropylbenzene	0.18		mg/kg	0.047	0.0051	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.094	0.0091	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.094	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-05  
 Client ID: 302-AY04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 12:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 13:21  
 Analyst: MKS  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.029	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	ND		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.020	J	mg/kg	0.059	0.0083	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.059	0.017	1
Xylenes, Total	ND		mg/kg	0.059	0.017	1
Isopropylbenzene	ND		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	0.024	J	mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	137	Q	70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-07  
 Client ID: 302-AY05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 10:43  
 Analyst: MKS  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00021	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00046	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-09  
 Client ID: 302-AY05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:20  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 11:03  
 Analyst: MKS  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00089	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00096	1
1,2-Dibromoethane	ND		mg/kg	0.00089	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00034	1
1,2,4-Trimethylbenzene	0.00080	J	mg/kg	0.0036	0.00059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-11  
 Client ID: 302-AY05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:40  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 11:23  
 Analyst: MKS  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-13  
 Client ID: 302-AY05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:50  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 11:42  
 Analyst: MKS  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-15  
 Client ID: 302-AY05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 14:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 01:44  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 09:24  
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,09,11,13 Batch: WG1695804-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 09:24  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,05 Batch: WG1696127-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 20:08  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 15 Batch: WG1696339-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 20:08  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 03 Batch: WG1696340-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,09,11,13 Batch: WG1695804-3 WG1695804-4								
Methyl tert butyl ether	80		80		66-130	0		30
Benzene	85		86		70-130	1		30
1,2-Dichloroethane	83		83		70-130	0		30
Toluene	78		81		70-130	4		30
1,2-Dibromoethane	84		86		70-130	2		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	84		87		70-130	4		30
o-Xylene	85		88		70-130	3		30
Isopropylbenzene	83		87		70-130	5		30
1,3,5-Trimethylbenzene	85		88		70-130	3		30
1,2,4-Trimethylbenzene	85		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	97		95		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,05 Batch: WG1696127-3 WG1696127-4								
Methyl tert butyl ether	80		80		66-130	0		30
Benzene	85		86		70-130	1		30
1,2-Dichloroethane	83		83		70-130	0		30
Toluene	78		81		70-130	4		30
1,2-Dibromoethane	84		86		70-130	2		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	84		87		70-130	4		30
o-Xylene	85		88		70-130	3		30
Isopropylbenzene	83		87		70-130	5		30
1,3,5-Trimethylbenzene	85		88		70-130	3		30
1,2,4-Trimethylbenzene	85		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	97		95		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 15 Batch: WG1696339-3 WG1696339-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	90		87		70-130	3		30
Toluene	86		84		70-130	2		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	92		90		70-130	2		30
p/m-Xylene	91		89		70-130	2		30
o-Xylene	92		91		70-130	1		30
Isopropylbenzene	95		92		70-130	3		30
1,3,5-Trimethylbenzene	95		93		70-130	2		30
1,2,4-Trimethylbenzene	94		92		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	100		102		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	96		98		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 03 Batch: WG1696340-3 WG1696340-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	90		87		70-130	3		30
Toluene	86		84		70-130	2		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	92		90		70-130	2		30
p/m-Xylene	91		89		70-130	2		30
o-Xylene	92		91		70-130	1		30
Isopropylbenzene	95		92		70-130	3		30
1,3,5-Trimethylbenzene	95		93		70-130	2		30
1,2,4-Trimethylbenzene	94		92		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	100		102		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	96		98		70-130



# SEMIVOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-02  
 Client ID: 302-AY04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 11:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 04:25  
 Analyst: WR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.42		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-04  
 Client ID: 302-AY04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 11:30  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 03:36  
 Analyst: WR  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	6.9		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-06  
 Client ID: 302-AY04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 12:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 01:58  
 Analyst: WR  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.12	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-08  
 Client ID: 302-AY05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 05:14  
 Analyst: WR  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-10  
 Client ID: 302-AY05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:20  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 05:52  
 Analyst: JG  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	54		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-12  
 Client ID: 302-AY05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:40  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 03:03  
 Analyst: WR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-14  
 Client ID: 302-AY05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:50  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 04:41  
 Analyst: WR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-16  
 Client ID: 302-AY05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 14:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/04/22 04:57  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	76		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/03/22 23:32  
Analyst: WR

Extraction Method: EPA 3546  
Extraction Date: 10/03/22 16:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1694973-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		25-120
Phenol-d6	70		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	71		10-136
4-Terphenyl-d14	78		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1694973-2 WG1694973-3								
Naphthalene	53		54		40-140	2		50
Fluorene	58		57		40-140	2		50
Phenanthrene	58		55		40-140	5		50
Anthracene	60		58		40-140	3		50
Pyrene	60		56		35-142	7		50
Benzo(a)anthracene	58		57		40-140	2		50
Chrysene	57		55		40-140	4		50
Benzo(b)fluoranthene	56		52		40-140	7		50
Benzo(a)pyrene	60		58		40-140	3		50
Benzo(ghi)perylene	49		48		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	59		60		25-120
Phenol-d6	64		66		10-120
Nitrobenzene-d5	65		68		23-120
2-Fluorobiphenyl	59		62		30-120
2,4,6-Tribromophenol	58		58		10-136
4-Terphenyl-d14	59		57		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-02  
 Client ID: 302-AY04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 11:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.16		mg/kg	4.98	0.267	2	10/02/22 13:37	10/07/22 11:56	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-04

Date Collected: 09/30/22 11:30

Client ID: 302-AY04-C2-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	34.7		mg/kg	24.1	1.29	10	10/02/22 13:37	10/07/22 12:46	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-06

Date Collected: 09/30/22 12:00

Client ID: 302-AY04-C3-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.54		mg/kg	4.65	0.249	2	10/02/22 13:37	10/07/22 12:06	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-08

Date Collected: 09/30/22 13:00

Client ID: 302-AY05-C1-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.19		mg/kg	5.01	0.268	2	10/02/22 13:37	10/07/22 12:11	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-10

Date Collected: 09/30/22 13:20

Client ID: 302-AY05-C2-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.14		mg/kg	4.31	0.231	2	10/02/22 13:37	10/07/22 12:16	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-12

Date Collected: 09/30/22 13:40

Client ID: 302-AY05-C3-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.95		mg/kg	4.71	0.252	2	10/02/22 13:37	10/07/22 12:21	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-14

Date Collected: 09/30/22 13:50

Client ID: 302-AY05-C4-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.20		mg/kg	4.65	0.249	2	10/02/22 13:37	10/07/22 12:26	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-16  
 Client ID: 302-AY05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 14:00  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.10		mg/kg	4.65	0.249	2	10/02/22 13:37	10/07/22 12:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2254192

Project Number: 200.00135.006

Report Date: 10/07/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16 Batch: WG1694483-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/02/22 13:37	10/06/22 08:01	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 Batch: WG1694483-2 SRM Lot Number: D113-540								
Lead, Total	110		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1694483-3 QC Sample: L2254098-02 Client ID: MS Sample												
Lead, Total	444	67.7	624	266	Q	-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2254192

Report Date: 10/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1694483-4 QC Sample: L2254098-02 Client ID: DUP Sample						
Lead, Total	444	493	mg/kg	10		20

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16 QC Batch ID: WG1694483-6 QC Sample: L2254098-02 Client ID: DUP Sample						
Lead, Total	444	469	mg/kg	6		20





# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2254192

Project Number: 200.00135.006

Report Date: 10/07/22

## SAMPLE RESULTS

Lab ID: L2254192-01

Date Collected: 09/30/22 11:00

Client ID: 302-AY04-C1-VOC

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.0		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

**Lab ID:** L2254192-02  
**Client ID:** 302-AY04-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/30/22 11:00  
**Date Received:** 09/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.3		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

**Lab ID:** L2254192-03  
**Client ID:** 302-AY04-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/30/22 11:30  
**Date Received:** 09/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.1		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-04

Date Collected: 09/30/22 11:30

Client ID: 302-AY04-C2-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.7		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

**Lab ID:** L2254192-05  
**Client ID:** 302-AY04-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/30/22 12:00  
**Date Received:** 09/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.7		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-06

Date Collected: 09/30/22 12:00

Client ID: 302-AY04-C3-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.2		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-07

Date Collected: 09/30/22 13:00

Client ID: 302-AY05-C1-VOC

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2254192

Project Number: 200.00135.006

Report Date: 10/07/22

## SAMPLE RESULTS

Lab ID: L2254192-08

Date Collected: 09/30/22 13:00

Client ID: 302-AY05-C1-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.2		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2254192

Project Number: 200.00135.006

Report Date: 10/07/22

## SAMPLE RESULTS

Lab ID: L2254192-09

Date Collected: 09/30/22 13:20

Client ID: 302-AY05-C2-VOC

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.1		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

Lab ID: L2254192-10  
 Client ID: 302-AY05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 09/30/22 13:20  
 Date Received: 09/30/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-11

Date Collected: 09/30/22 13:40

Client ID: 302-AY05-C3-VOC

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-12

Date Collected: 09/30/22 13:40

Client ID: 302-AY05-C3-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

**Lab ID:** L2254192-13  
**Client ID:** 302-AY05-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/30/22 13:50  
**Date Received:** 09/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.6		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-14

Date Collected: 09/30/22 13:50

Client ID: 302-AY05-C4-COMP

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	10/01/22 09:57	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**SAMPLE RESULTS**

Lab ID: L2254192-15

Date Collected: 09/30/22 14:00

Client ID: 302-AY05-C5-VOC

Date Received: 09/30/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	10/01/22 10:11	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

**SAMPLE RESULTS**

**Lab ID:** L2254192-16  
**Client ID:** 302-AY05-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 09/30/22 14:00  
**Date Received:** 09/30/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.3		%	0.100	NA	1	-	10/01/22 10:11	121,2540G	RI



### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2254192

**Report Date:** 10/07/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1694307-1 QC Sample: L2251006-38 Client ID: DUP Sample						
Solids, Total	89.8	89.4	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 15-16 QC Batch ID: WG1694308-1 QC Sample: L2253070-07 Client ID: DUP Sample						
Solids, Total	87.4	89.0	%	2		20



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10072215:29  
**Lab Number:** L2254192  
**Report Date:** 10/07/22

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254192-01A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-01B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-01C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-01D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-02A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-02B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-03A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-03B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-03C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-03D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-04A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-04B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-05A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-05B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-05C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-05D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-06A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-06B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-07A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-07B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-07C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-07D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-08A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254192**Project Number:** 200.00135.006**Report Date:** 10/07/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254192-08B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-09A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-09B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-09C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-09D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-10A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-10B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-11A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-11B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-11C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-11D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-12A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-12B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-13A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-13B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-13C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-13D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-14A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-14B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2254192-15A	Vial MeOH preserved	A	NA		2.1	Y	Absent		PA-8260HLW(14)
L2254192-15B	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-15C	Vial water preserved	A	NA		2.1	Y	Absent	01-OCT-22 05:31	PA-8260HLW(14)
L2254192-15D	Plastic 120ml unpreserved	A	NA		2.1	Y	Absent		TS(7)
L2254192-16A	Glass 60mL/2oz unpreserved	A	NA		2.1	Y	Absent		PB-TI(180)
L2254192-16B	Glass 120ml/4oz unpreserved	A	NA		2.1	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254192  
**Report Date:** 10/07/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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**Lab Number:** L2254192  
**Report Date:** 10/07/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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**Lab Number:** L2254192  
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#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254192

**Project Number:** 200.00135.006

**Report Date:** 10/07/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery  
 Project Location: Philadelphia, PA  
 Project #: 200.00135.000  
 Project Manager: William Schmidt  
 ALPHA Quote #: ~~1783~~ ~~1783~~ 18559

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)  
 Due Date:                      Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hlcoglobal.com

### Client Information

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974  
 Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Date Rec'd in Lab: 10/1/22    ALPHA Job #: L2254192

### Report Information Data Deliverables Billing Information

FAX     EMAIL  
 ADEX     Add'l Deliverables

Same as Client info    PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program    Criteria

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
54192-01	302-AY04-C1-VOC	9/30	1100	S	TS
02	302-AY04-C1-COMP		1100		
03	302-AY04-C2-VOC		1130		
04	302-AY04-C2-COMP		1130		
05	302-AY04-C3-VOC		1200		
06	302-AY04-C3-COMP		1200		
07	302-AY05-C1-VOC		1300		
08	302-AY05-C1-COMP		1300		
09	302-AY05-C2-VOC		1320		
10	302-AY05-C2-COMP		1320		

ANALYSIS												SAMPLE HANDLING <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
VOCs (8260)	SVOCs (8270)	Lead											
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		1
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		1
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2

Container Type    G    G    G    -    -    -    -    -    -    -    -  
 Preservative    F    A    A    -    -    -    -    -    -    -    -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/30 14:15	STILES AAI	9/30 22 1435
<i>[Signature]</i>	9/30 12:10	AMP	9/30 22 910
<i>[Signature]</i>	9/30 20:20	<i>[Signature]</i>	9/30 22 310

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1261~~ ~~1283~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/1/22

ALPHA Job #: L2254192

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

## ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead																
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
54192-11	302-AM05-C3-VOC	9/30	1340	S	TJ
12	302-AM05-C3-Camp		1340		
13	302-AM05-C4-VOC		1350		
14	302-AM05-C4-Camp		1350		
15	302-AM05-C5-VOC		1400		
16	302-AM05-C5-Camp		1400		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	9/30 1435	<i>[Signature]</i>	9/30 221435
<i>[Signature]</i>	9/30/22	<i>[Signature]</i>	9/30/22
<i>[Signature]</i>	9/30 2/01	<i>[Signature]</i>	9/30 22 2/00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

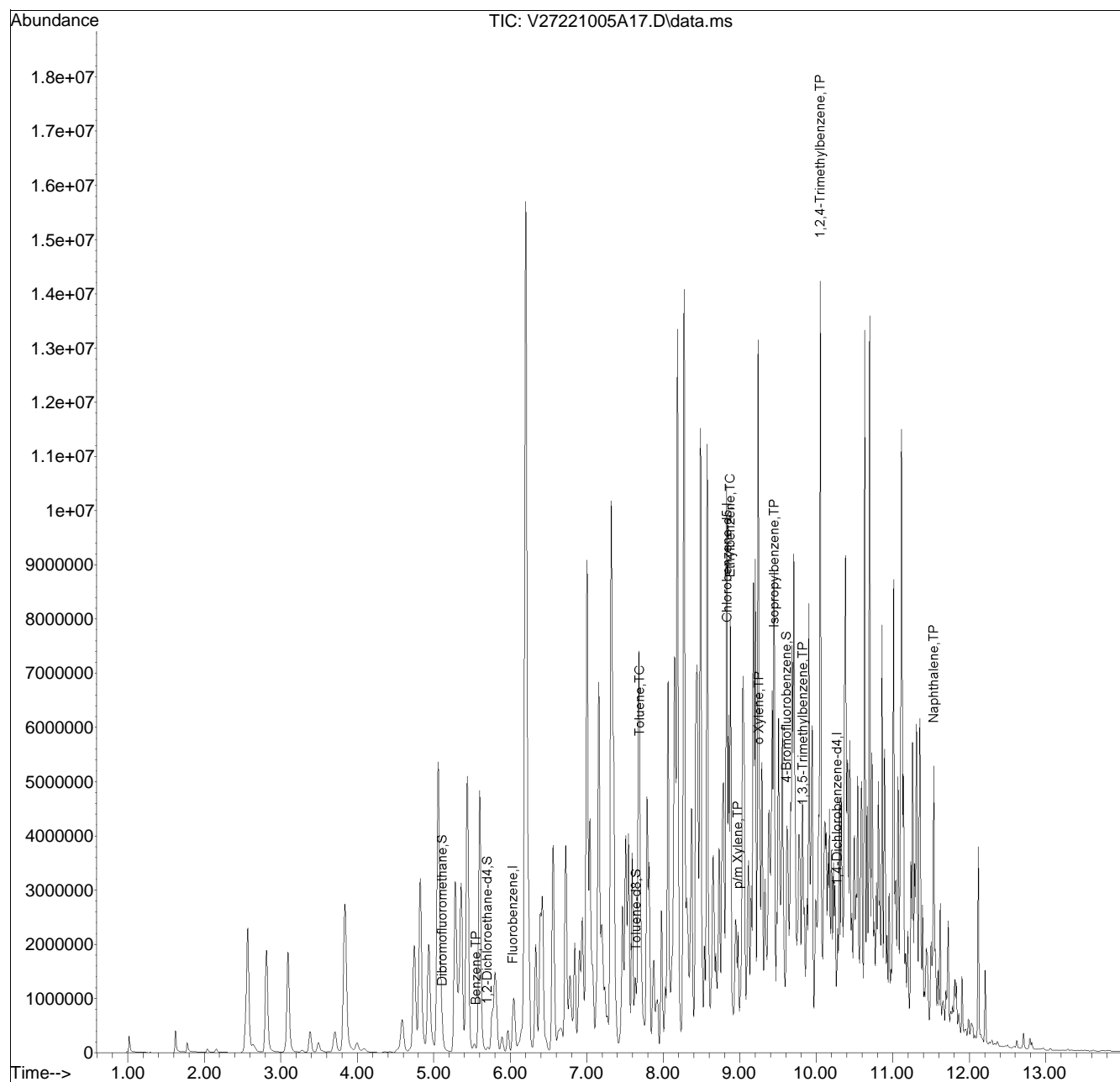
10/1/22

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005A\  
 Data File : V27221005A17.D  
 Acq On : 05 Oct 2022 01:01 pm  
 Operator : VOA127:MKS  
 Sample : L2254192-01,31H,5.49,5,0.100,,A,R2F  
 Misc : WG1696127,ICAL19153  
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: Oct 05 14:22:09 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\221005A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05A\V27221005A03.D•

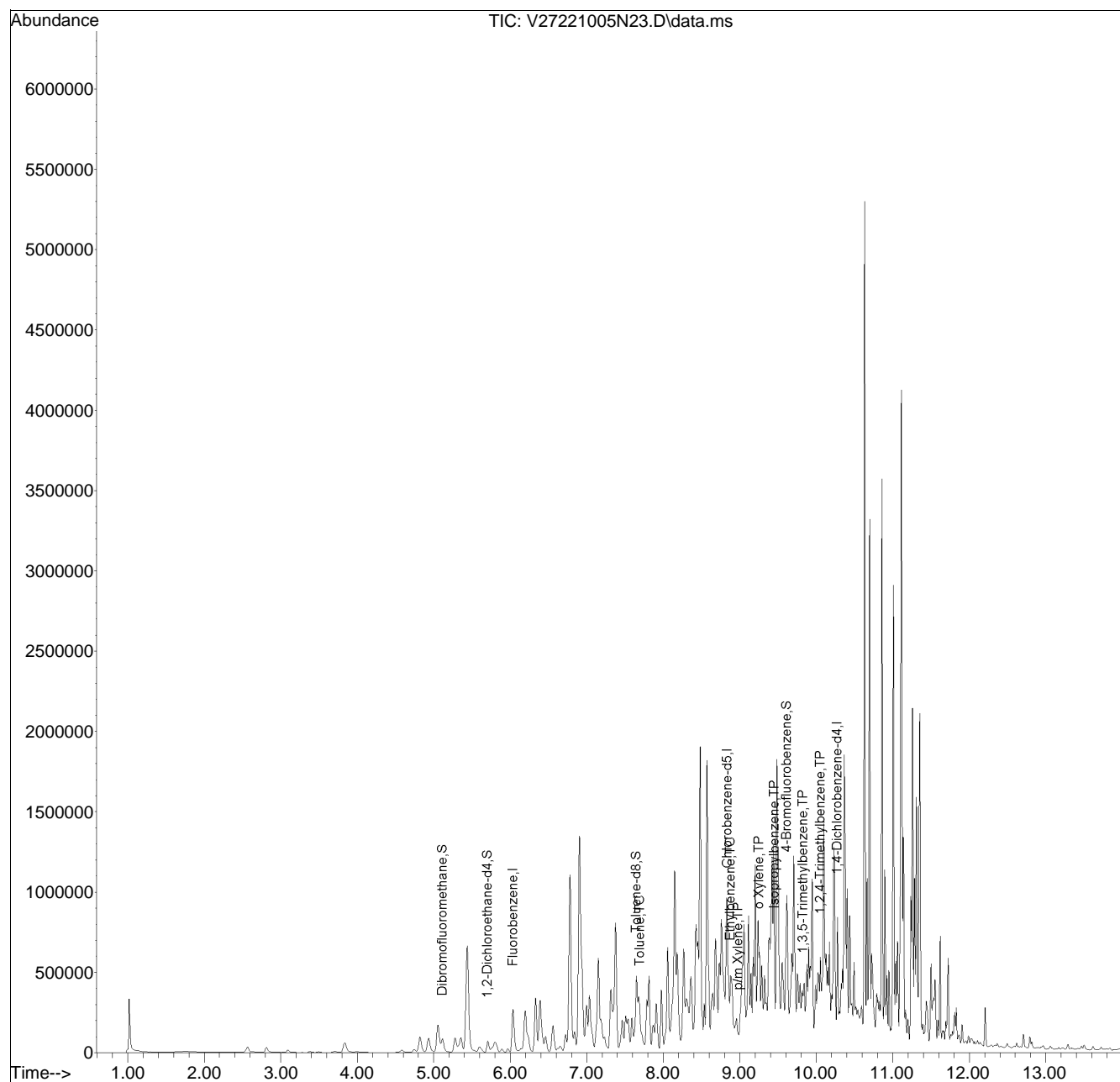


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005N\  
Data File : V27221005N23.D  
Acq On : 06 Oct 2022 02:04 am  
Operator : VOA127:JC  
Sample : L2254192-03,31H,5.90,5,0.100,,A,R2F  
Misc : WG1696340,ICAL19153  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 06 11:59:18 2022  
Quant Method : I:\VOLATILES\VOA127\2022\221005N\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05N\V27221005N01.D•

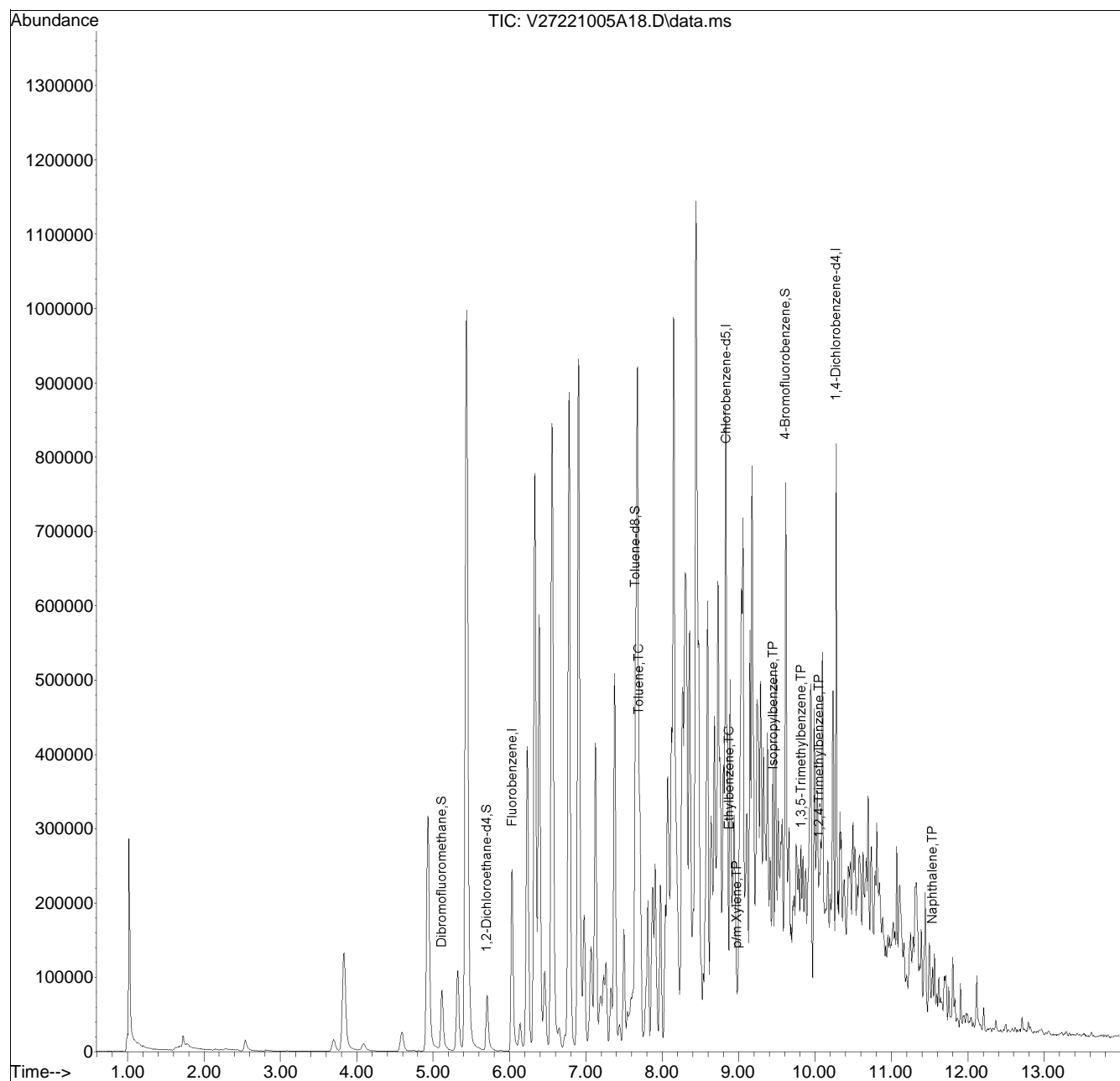


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005A\  
Data File : V27221005A18.D  
Acq On : 05 Oct 2022 01:21 pm  
Operator : VOA127:MKS  
Sample : L2254192-05,31H,5.62,5,0.100,,A,R2F  
Misc : WG1696127,ICAL19153  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Oct 06 13:47:40 2022  
Quant Method : I:\VOLATILES\VOA127\2022\221005A\V127\_220706A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Jul 07 06:48:30 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05A\V27221005A03.D•





## ANALYTICAL REPORT

Lab Number:	L2254452
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/10/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2254452-01	302-AZ03-C1-VOC	SOIL	PHILADELPHIA, PA	10/03/22 11:00	10/03/22
L2254452-02	302-AZ03-C1-COMP	SOIL	PHILADELPHIA, PA	10/03/22 11:00	10/03/22
L2254452-03	302-AZ03-C2-VOC	SOIL	PHILADELPHIA, PA	10/03/22 11:10	10/03/22
L2254452-04	302-AZ03-C2-COMP	SOIL	PHILADELPHIA, PA	10/03/22 11:10	10/03/22
L2254452-05	302-AZ03-C3-VOC	SOIL	PHILADELPHIA, PA	10/03/22 11:20	10/03/22
L2254452-06	302-AZ03-C3-COMP	SOIL	PHILADELPHIA, PA	10/03/22 11:20	10/03/22
L2254452-07	302-AZ03-C4-VOC	SOIL	PHILADELPHIA, PA	10/03/22 11:30	10/03/22
L2254452-08	302-AZ03-C4-COMP	SOIL	PHILADELPHIA, PA	10/03/22 11:30	10/03/22
L2254452-09	302-AZ03-C5-VOC	SOIL	PHILADELPHIA, PA	10/03/22 11:40	10/03/22
L2254452-10	302-AZ03-C5-COMP	SOIL	PHILADELPHIA, PA	10/03/22 11:40	10/03/22
L2254452-11	302-BA04-C1-VOC	SOIL	PHILADELPHIA, PA	10/03/22 13:00	10/03/22
L2254452-12	302-BA04-C1-COMP	SOIL	PHILADELPHIA, PA	10/03/22 13:00	10/03/22
L2254452-13	302-BA04-C2-VOC	SOIL	PHILADELPHIA, PA	10/03/22 13:10	10/03/22
L2254452-14	302-BA04-C2-COMP	SOIL	PHILADELPHIA, PA	10/03/22 13:10	10/03/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L2254452-12: The sample identified as "302-BA04-C1-COMP" on the chain of custody was identified as "302-BB04-C1-COMP" on the container label. At the client's request, the sample is reported as "302-BA04-C1-COMP".

L2254452-14: The sample identified as "302-BA04-C2-COMP" on the chain of custody was identified as "302-BB04-C2-COMP" on the container label. At the client's request, the sample is reported as "302-BA04-C2-COMP".

#### Volatile Organics

L2254452-01D2: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (143%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2254452-03 and -09: Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2254452-03: The surrogate recovery was outside the acceptance criteria for 4-bromofluorobenzene (145%) due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2254452-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (178%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2254452-09: The surrogate recovery was outside the acceptance criteria for 4-bromofluorobenzene (156%)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Case Narrative (continued)**

due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2254452-13D2: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 10/10/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-01 D2  
 Client ID: 302-AZ03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:00  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 02:24  
 Analyst: JC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.30	0.030	2
Benzene	0.90		mg/kg	0.074	0.025	2
1,2-Dichloroethane	ND		mg/kg	0.15	0.038	2
Toluene	1.6		mg/kg	0.15	0.080	2
1,2-Dibromoethane	ND		mg/kg	0.074	0.043	2
Ethylbenzene	16.		mg/kg	0.15	0.021	2
p/m-Xylene	61.		mg/kg	0.30	0.083	2
o-Xylene	18.		mg/kg	0.15	0.043	2
Xylenes, Total	79.		mg/kg	0.15	0.043	2
Isopropylbenzene	3.6		mg/kg	0.15	0.016	2
1,3,5-Trimethylbenzene	23.		mg/kg	0.30	0.029	2
1,2,4-Trimethylbenzene	69.	E	mg/kg	0.30	0.050	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	143	Q	70-130
Dibromofluoromethane	91		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-01 D  
 Client ID: 302-AZ03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:00  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 13:41  
 Analyst: MKS  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	84.		mg/kg	1.5	0.25	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-03  
 Client ID: 302-AZ03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 14:01  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	0.035	J	mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.074		mg/kg	0.064	0.0091	1
p/m-Xylene	0.42		mg/kg	0.13	0.036	1
o-Xylene	0.15		mg/kg	0.064	0.019	1
Xylenes, Total	0.57		mg/kg	0.064	0.019	1
Isopropylbenzene	0.066		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	0.49		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	1.6		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	95		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-03  
 Client ID: 302-AZ03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 02:43  
 Analyst: JC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00027	1
Benzene	0.00024	J	mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	0.0096		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	0.028		mg/kg	0.0013	0.00019	1
p/m-Xylene	0.17		mg/kg	0.0026	0.00074	1
o-Xylene	0.11		mg/kg	0.0013	0.00039	1
Xylenes, Total	0.28		mg/kg	0.0013	0.00039	1
Isopropylbenzene	0.027		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.23		mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	0.70	E	mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	145	Q	70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-05  
 Client ID: 302-AZ03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:20  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 14:21  
 Analyst: JC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.66		mg/kg	0.026	0.0087	1
1,2-Dichloroethane	ND		mg/kg	0.053	0.014	1
Toluene	0.23		mg/kg	0.053	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	3.2		mg/kg	0.053	0.0074	1
p/m-Xylene	12.		mg/kg	0.10	0.030	1
o-Xylene	1.7		mg/kg	0.053	0.015	1
Xylenes, Total	14.		mg/kg	0.053	0.015	1
Isopropylbenzene	0.56		mg/kg	0.053	0.0057	1
1,3,5-Trimethylbenzene	3.4		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	10.		mg/kg	0.10	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-07  
 Client ID: 302-AZ03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:30  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 14:40  
 Analyst: JC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.0024		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00030	J	mg/kg	0.00093	0.00013	1
p/m-Xylene	0.00085	J	mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	0.00085	J	mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.00092	J	mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	0.00034	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	126		70-130
4-Bromofluorobenzene	178	Q	70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-09  
 Client ID: 302-AZ03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:40  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 15:00  
 Analyst: JC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.15		mg/kg	0.035	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.070	0.018	1
Toluene	ND		mg/kg	0.070	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.035	0.020	1
Ethylbenzene	0.54		mg/kg	0.070	0.0098	1
p/m-Xylene	1.6		mg/kg	0.14	0.039	1
o-Xylene	0.20		mg/kg	0.070	0.020	1
Xylenes, Total	1.8		mg/kg	0.070	0.020	1
Isopropylbenzene	0.10		mg/kg	0.070	0.0076	1
1,3,5-Trimethylbenzene	0.62		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	1.9		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-09  
 Client ID: 302-AZ03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:40  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/07/22 15:14  
 Analyst: JIC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.082		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	0.011		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.26		mg/kg	0.00094	0.00013	1
p/m-Xylene	0.87	E	mg/kg	0.0019	0.00053	1
o-Xylene	0.095		mg/kg	0.00094	0.00028	1
Isopropylbenzene	0.039		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	0.22		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.74	E	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	156	Q	70-130
Dibromofluoromethane	82		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-11  
 Client ID: 302-BA04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 13:00  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 15:20  
 Analyst: JC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00023	J	mg/kg	0.0020	0.00020	1
Benzene	0.00056		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	0.00075	J	mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.0018		mg/kg	0.00099	0.00014	1
p/m-Xylene	0.014		mg/kg	0.0020	0.00055	1
o-Xylene	0.0067		mg/kg	0.00099	0.00029	1
Xylenes, Total	0.021		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.0017		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	0.013		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.040		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-13 D2  
 Client ID: 302-BA04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 13:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/07/22 15:59  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.28	0.028	2.5
Benzene	1.7		mg/kg	0.070	0.023	2.5
1,2-Dichloroethane	ND		mg/kg	0.14	0.036	2.5
Toluene	0.86		mg/kg	0.14	0.076	2.5
1,2-Dibromoethane	ND		mg/kg	0.070	0.041	2.5
Ethylbenzene	18.		mg/kg	0.14	0.020	2.5
p/m-Xylene	72.		mg/kg	0.28	0.078	2.5
o-Xylene	8.1		mg/kg	0.14	0.041	2.5
Xylenes, Total	80.		mg/kg	0.14	0.041	2.5
Isopropylbenzene	3.4		mg/kg	0.14	0.015	2.5
1,3,5-Trimethylbenzene	21.		mg/kg	0.28	0.027	2.5
1,2,4-Trimethylbenzene	74.	E	mg/kg	0.28	0.047	2.5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-13 D  
 Client ID: 302-BA04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 13:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/05/22 15:59  
 Analyst: JC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	69.		mg/kg	1.1	0.19	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	94		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 09:24  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,11 Batch: WG1695804-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 09:24  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,09,13 Batch: WG1696127-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 20:08  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1696339-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/05/22 20:08  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1696340-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/07/22 08:54  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1697486-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	111		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/07/22 08:54  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09 Batch: WG1697489-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	111		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,11 Batch: WG1695804-3 WG1695804-4								
Methyl tert butyl ether	80		80		66-130	0		30
Benzene	85		86		70-130	1		30
1,2-Dichloroethane	83		83		70-130	0		30
Toluene	78		81		70-130	4		30
1,2-Dibromoethane	84		86		70-130	2		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	84		87		70-130	4		30
o-Xylene	85		88		70-130	3		30
Isopropylbenzene	83		87		70-130	5		30
1,3,5-Trimethylbenzene	85		88		70-130	3		30
1,2,4-Trimethylbenzene	85		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	97		95		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2254452

Project Number: 200.00135.006

Report Date: 10/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,09,13 Batch: WG1696127-3 WG1696127-4								
Methyl tert butyl ether	80		80		66-130	0		30
Benzene	85		86		70-130	1		30
1,2-Dichloroethane	83		83		70-130	0		30
Toluene	78		81		70-130	4		30
1,2-Dibromoethane	84		86		70-130	2		30
Ethylbenzene	84		87		70-130	4		30
p/m-Xylene	84		87		70-130	4		30
o-Xylene	85		88		70-130	3		30
Isopropylbenzene	83		87		70-130	5		30
1,3,5-Trimethylbenzene	85		88		70-130	3		30
1,2,4-Trimethylbenzene	85		87		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		95		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	97		95		70-130



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1696339-3 WG1696339-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	90		87		70-130	3		30
Toluene	86		84		70-130	2		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	92		90		70-130	2		30
p/m-Xylene	91		89		70-130	2		30
o-Xylene	92		91		70-130	1		30
Isopropylbenzene	95		92		70-130	3		30
1,3,5-Trimethylbenzene	95		93		70-130	2		30
1,2,4-Trimethylbenzene	94		92		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	100		102		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	96		98		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1696340-3 WG1696340-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	94		91		70-130	3		30
1,2-Dichloroethane	90		87		70-130	3		30
Toluene	86		84		70-130	2		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	92		90		70-130	2		30
p/m-Xylene	91		89		70-130	2		30
o-Xylene	92		91		70-130	1		30
Isopropylbenzene	95		92		70-130	3		30
1,3,5-Trimethylbenzene	95		93		70-130	2		30
1,2,4-Trimethylbenzene	94		92		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		98		70-130
Toluene-d8	100		102		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	96		98		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1697486-3 WG1697486-4								
Methyl tert butyl ether	103		106		66-130	3		30
Benzene	94		96		70-130	2		30
1,2-Dichloroethane	97		99		70-130	2		30
Toluene	91		92		70-130	1		30
1,2-Dibromoethane	89		89		70-130	0		30
Ethylbenzene	92		93		70-130	1		30
p/m-Xylene	96		98		70-130	2		30
o-Xylene	97		98		70-130	1		30
Isopropylbenzene	90		93		70-130	3		30
1,3,5-Trimethylbenzene	92		95		70-130	3		30
1,2,4-Trimethylbenzene	92		93		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		100		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	103		103		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09 Batch: WG1697489-3 WG1697489-4								
Methyl tert butyl ether	103		106		66-130	3		30
Benzene	94		96		70-130	2		30
1,2-Dichloroethane	97		99		70-130	2		30
Toluene	91		92		70-130	1		30
1,2-Dibromoethane	89		89		70-130	0		30
Ethylbenzene	92		93		70-130	1		30
p/m-Xylene	96		98		70-130	2		30
o-Xylene	97		98		70-130	1		30
Isopropylbenzene	90		93		70-130	3		30
1,3,5-Trimethylbenzene	92		95		70-130	3		30
1,2,4-Trimethylbenzene	92		93		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		100		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	103		103		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-02  
 Client ID: 302-AZ03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:00  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 01:36  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	11.	E	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	9.4	E	mg/kg	0.12	0.024	1
Anthracene	1.1		mg/kg	0.12	0.038	1
Pyrene	0.96		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.42		mg/kg	0.12	0.022	1
Chrysene	0.78		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.20		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.35		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.15	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	221	Q	23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-02 D  
 Client ID: 302-AZ03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:00  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 12:56  
 Analyst: IM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	9.1		mg/kg	0.98	0.12	5
Phenanthrene	8.2		mg/kg	0.59	0.12	5

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-04  
 Client ID: 302-AZ03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 00:14  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.088	J	mg/kg	0.20	0.025	1
Fluorene	0.050	J	mg/kg	0.20	0.020	1
Phenanthrene	0.38		mg/kg	0.12	0.025	1
Anthracene	0.092	J	mg/kg	0.12	0.040	1
Pyrene	0.32		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.18		mg/kg	0.12	0.023	1
Chrysene	0.18		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.21		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.17		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	101		30-120
4-Terphenyl-d14	93		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-06  
 Client ID: 302-AZ03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:20  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 00:31  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.049	J	mg/kg	0.19	0.023	1
Fluorene	0.030	J	mg/kg	0.19	0.019	1
Phenanthrene	0.32		mg/kg	0.12	0.023	1
Anthracene	0.067	J	mg/kg	0.12	0.037	1
Pyrene	0.38		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.22		mg/kg	0.12	0.022	1
Chrysene	0.23		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.27		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.22		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-08  
 Client ID: 302-AZ03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:30  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 04:37  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.19	J	mg/kg	0.20	0.024	1
Fluorene	0.84		mg/kg	0.20	0.020	1
Phenanthrene	1.5		mg/kg	0.12	0.024	1
Anthracene	0.23		mg/kg	0.12	0.039	1
Pyrene	0.51		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.42		mg/kg	0.12	0.023	1
Chrysene	0.46		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.14		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.35		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-10  
 Client ID: 302-AZ03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:40  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 12:32  
 Analyst: IM  
 Percent Solids: 67%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.16	J	mg/kg	0.25	0.030	1
Fluorene	0.46		mg/kg	0.25	0.024	1
Phenanthrene	0.24		mg/kg	0.15	0.030	1
Anthracene	0.23		mg/kg	0.15	0.048	1
Pyrene	0.43		mg/kg	0.15	0.025	1
Benzo(a)anthracene	0.22		mg/kg	0.15	0.028	1
Chrysene	0.32		mg/kg	0.15	0.026	1
Benzo(b)fluoranthene	0.15		mg/kg	0.15	0.042	1
Benzo(a)pyrene	0.18	J	mg/kg	0.20	0.060	1
Benzo(ghi)perylene	0.26		mg/kg	0.20	0.029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-12  
 Client ID: 302-BA04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 13:00  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 22:53  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.056	J	mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.048	J	mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-14  
 Client ID: 302-BA04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 13:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 22:36  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	76		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/06/22 20:42  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1696019-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	82		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2254452

Report Date: 10/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1696019-2 WG1696019-3								
Naphthalene	70		88		40-140	23		50
Fluorene	71		92		40-140	26		50
Phenanthrene	69		89		40-140	25		50
Anthracene	72		94		40-140	27		50
Pyrene	70		92		35-142	27		50
Benzo(a)anthracene	71		93		40-140	27		50
Chrysene	69		86		40-140	22		50
Benzo(b)fluoranthene	69		84		40-140	20		50
Benzo(a)pyrene	75		96		40-140	25		50
Benzo(ghi)perylene	60		76		40-140	24		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	86		105		23-120
2-Fluorobiphenyl	75		92		30-120
4-Terphenyl-d14	72		89		18-120

## METALS



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254452

**Project Number:** 200.00135.006

**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-02

Date Collected: 10/03/22 11:00

Client ID: 302-AZ03-C1-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	63.2		mg/kg	2.34	0.126	1	10/04/22 08:00	10/08/22 16:22	EPA 3050B	1,6010D	DHL



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-04  
 Client ID: 302-AZ03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:10  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	176		mg/kg	2.48	0.133	1	10/04/22 08:00	10/08/22 16:27	EPA 3050B	1,6010D	DHL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254452

**Project Number:** 200.00135.006

**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-06

Date Collected: 10/03/22 11:20

Client ID: 302-AZ03-C3-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.52		mg/kg	2.25	0.121	1	10/04/22 08:00	10/07/22 23:39	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-08  
 Client ID: 302-AZ03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:30  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	50.1		mg/kg	2.31	0.124	1	10/04/22 08:00	10/07/22 23:44	EPA 3050B	1,6010D	BV



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254452

**Project Number:** 200.00135.006

**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-10

Date Collected: 10/03/22 11:40

Client ID: 302-AZ03-C5-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 67%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	18.9		mg/kg	2.84	0.152	1	10/04/22 08:00	10/08/22 16:32	EPA 3050B	1,6010D	DHL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254452

**Project Number:** 200.00135.006

**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-12

Date Collected: 10/03/22 13:00

Client ID: 302-BA04-C1-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.38		mg/kg	2.45	0.131	1	10/04/22 08:00	10/08/22 16:36	EPA 3050B	1,6010D	DHL



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254452

**Project Number:** 200.00135.006

**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-14

Date Collected: 10/03/22 13:10

Client ID: 302-BA04-C2-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.4		mg/kg	2.38	0.128	1	10/04/22 08:00	10/08/22 16:41	EPA 3050B	1,6010D	DHL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2254452

Project Number: 200.00135.006

Report Date: 10/10/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14 Batch: WG1695136-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/04/22 08:00	10/04/22 12:28	1,6010D	EW

### Prep Information

Digestion Method: EPA 3050B





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 Batch: WG1695136-2 SRM Lot Number: D113-540								
Lead, Total	80		-		72-128	-		



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14    QC Batch ID: WG1695136-3    QC Sample: L2254474-01    Client ID: MS Sample												
Lead, Total	6.41J	56	53.4	95		-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2254452

**Report Date:** 10/10/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14 QC Batch ID: WG1695136-4 QC Sample: L2254474-01 Client ID: DUP Sample						
Lead, Total	6.41J	5.96J	mg/kg	NC		20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-01

Date Collected: 10/03/22 11:00

Client ID: 302-AZ03-C1-VOC

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.9		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-02

Date Collected: 10/03/22 11:00

Client ID: 302-AZ03-C1-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.0		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-03

Date Collected: 10/03/22 11:10

Client ID: 302-AZ03-C2-VOC

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.2		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

**Lab ID:** L2254452-04  
**Client ID:** 302-AZ03-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/03/22 11:10  
**Date Received:** 10/03/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.0		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-05

Date Collected: 10/03/22 11:20

Client ID: 302-AZ03-C3-VOC

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-06

Date Collected: 10/03/22 11:20

Client ID: 302-AZ03-C3-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-07

Date Collected: 10/03/22 11:30

Client ID: 302-AZ03-C4-VOC

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.2		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-08

Date Collected: 10/03/22 11:30

Client ID: 302-AZ03-C4-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.4		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

Lab ID: L2254452-09  
 Client ID: 302-AZ03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/03/22 11:40  
 Date Received: 10/03/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-10

Date Collected: 10/03/22 11:40

Client ID: 302-AZ03-C5-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	66.6		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-11

Date Collected: 10/03/22 13:00

Client ID: 302-BA04-C1-VOC

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-12

Date Collected: 10/03/22 13:00

Client ID: 302-BA04-C1-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.0		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

**SAMPLE RESULTS**

**Lab ID:** L2254452-13  
**Client ID:** 302-BA04-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/03/22 13:10  
**Date Received:** 10/03/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**SAMPLE RESULTS**

Lab ID: L2254452-14

Date Collected: 10/03/22 13:10

Client ID: 302-BA04-C2-COMP

Date Received: 10/03/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.2		%	0.100	NA	1	-	10/04/22 08:01	121,2540G	RI



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2254452

**Report Date:** 10/10/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1695127-1 QC Sample: L2254452-01 Client ID: 302-AZ03-C1-VOC						
Solids, Total	82.9	82.1	%	1		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254452-01A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2254452-01B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-01C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-01D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2254452-02B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2254452-03A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2254452-03B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260H(14),PA-8260HLW(14)
L2254452-03C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260H(14),PA-8260HLW(14)
L2254452-03D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2254452-04B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2254452-05A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2254452-05B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-05C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-05D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2254452-06B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2254452-07A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2254452-07B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-07C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-07D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254452**Project Number:** 200.00135.006**Report Date:** 10/10/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254452-08B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2254452-09A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2254452-09B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260H(14),PA-8260HLW(14)
L2254452-09C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260H(14),PA-8260HLW(14)
L2254452-09D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2254452-10B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2254452-11A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2254452-11B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-11C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-11D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2254452-12B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2254452-13A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2254452-13B	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-13C	Vial water preserved	A	NA		3.3	Y	Absent	04-OCT-22 04:22	PA-8260HLW(14)
L2254452-13D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2254452-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2254452-14B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254452  
**Report Date:** 10/10/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254452

**Project Number:** 200.00135.006

**Report Date:** 10/10/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1761~~ ~~1763~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/04/22

ALPHA Job #: 2254452

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES					
		Date	Time																						
5445-01	302-AZ03-C1-VOC	10/3	1100	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-02	302-AZ03-C1-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AZ03-C2-VOC		1110			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AZ03-C2-COMP		1110			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AZ03-C3-VOC		1120			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AZ03-C3-COMP		1120			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AZ03-C4-VOC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AZ03-C4-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-09	302-AZ03-C5-VOC		1140			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AZ03-C5-COMP		1140			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

Container Type: G G G - - - - -  
Preservative: F A A - - - - -

Requisitioned By: *[Signature]*  
Date/Time: 10/4/22 0630  
10/4/22 0630

Received By: *[Signature]*  
Date/Time: 10/3/22 1525  
10/3/22 1500  
10/3/22 2100

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# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/04/22

ALPHA Job #: 12254452

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (\$260)	SVOCs (\$270)	Lead											Sample Specific Comments	TOTAL # BOTTLES				
		Date	Time																					
5452-11	302-BA04-C1-VOL	10/3	1300	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
12	302-BA04-C1-COMP	↓	1300	↓	↓	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
13	302-BA04-C2-VOL	↓	1310	↓	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
14	302-BA04-C2-COMP	↓	1310	↓	↓	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:

Date/Time

Received By:

Date/Time

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Serial  
10/4/22  
0030  
10/4/22 0030

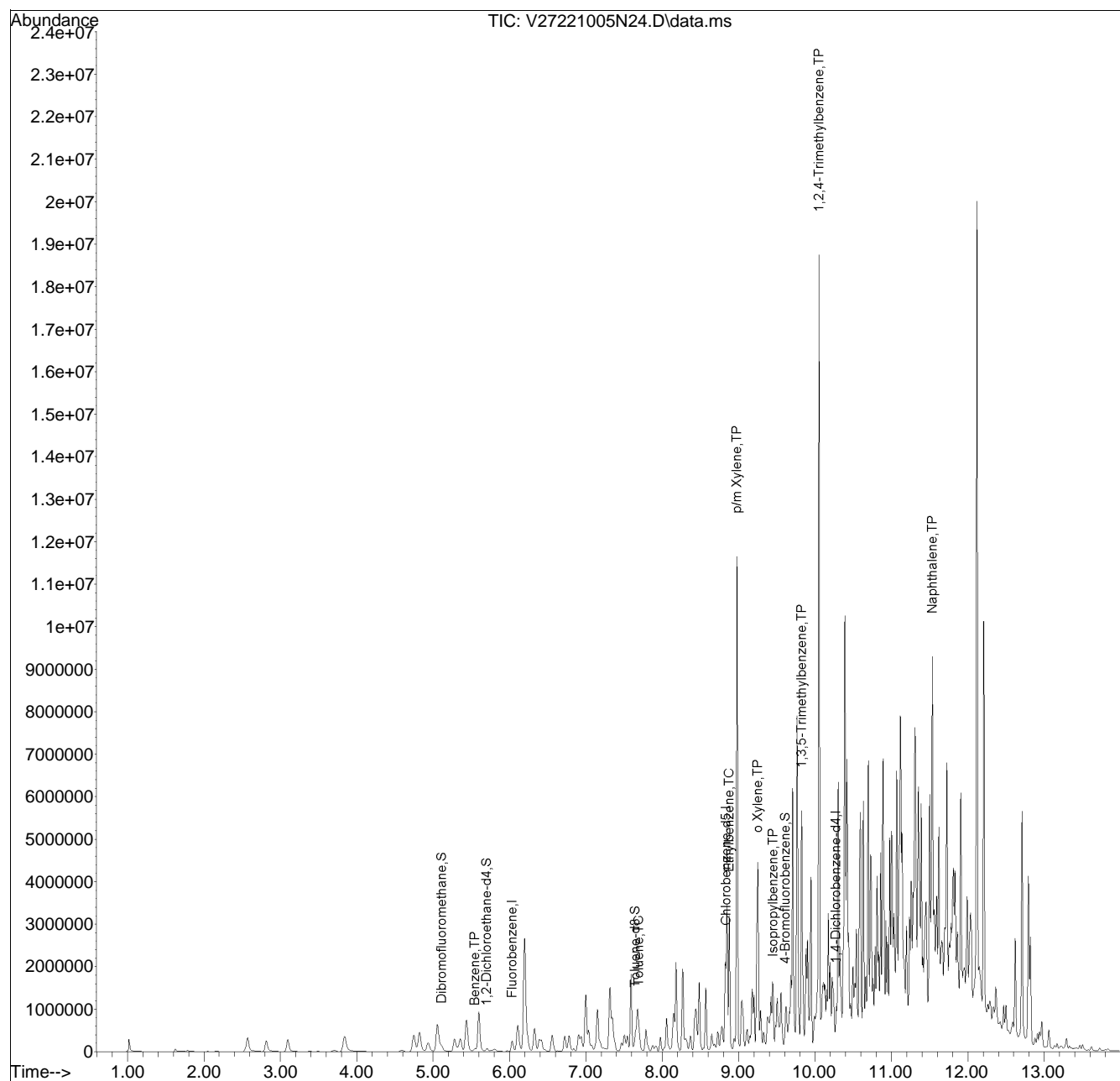
Relinquished By: [Signature] Date/Time: 10/3/22  
Received By: [Signature] Date/Time: 10/3/22 1525  
[Signature] Date/Time: 10/3/22 1600  
[Signature] Date/Time: 10/3/22 2100  
[Signature] Date/Time: 10/3/22 2100

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005N\  
 Data File : V27221005N24.D  
 Acq On : 06 Oct 2022 02:24 am  
 Operator : VOA127:JC  
 Sample : L2254452-01D,31H,4.72,5,0.05,,A,R2F  
 Misc : WG1696340,ICAL19153  
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 06 11:59:42 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\221005N\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05N\V27221005N01.D•

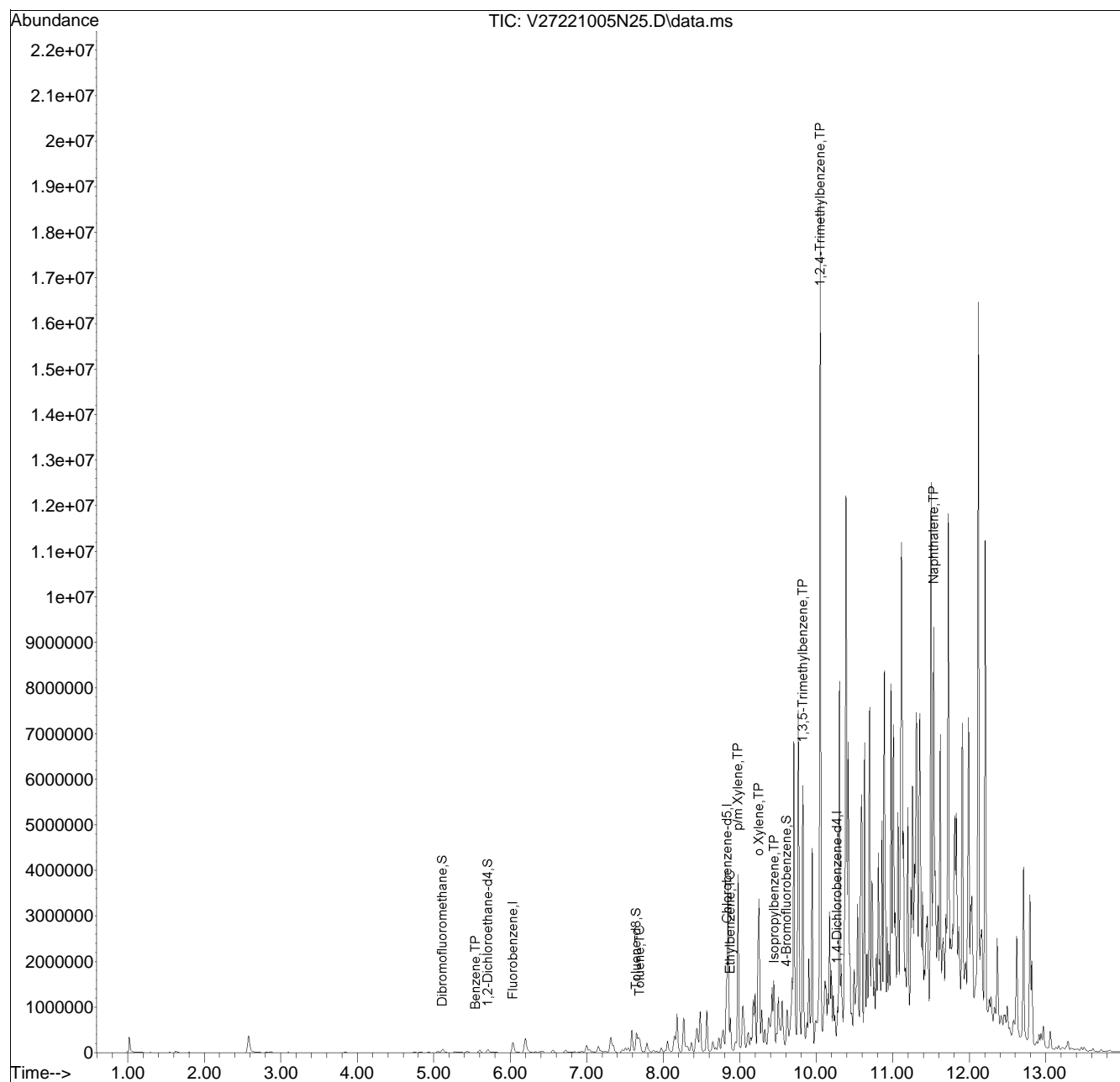


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005N\  
 Data File : V27221005N25.D  
 Acq On : 06 Oct 2022 02:43 am  
 Operator : VOA127:JC  
 Sample : L2254452-03,31,4.64,5,,B,R2F  
 Misc : WG1696339,ICAL19153  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Oct 06 10:28:13 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\221005N\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05N\V27221005N01.D•

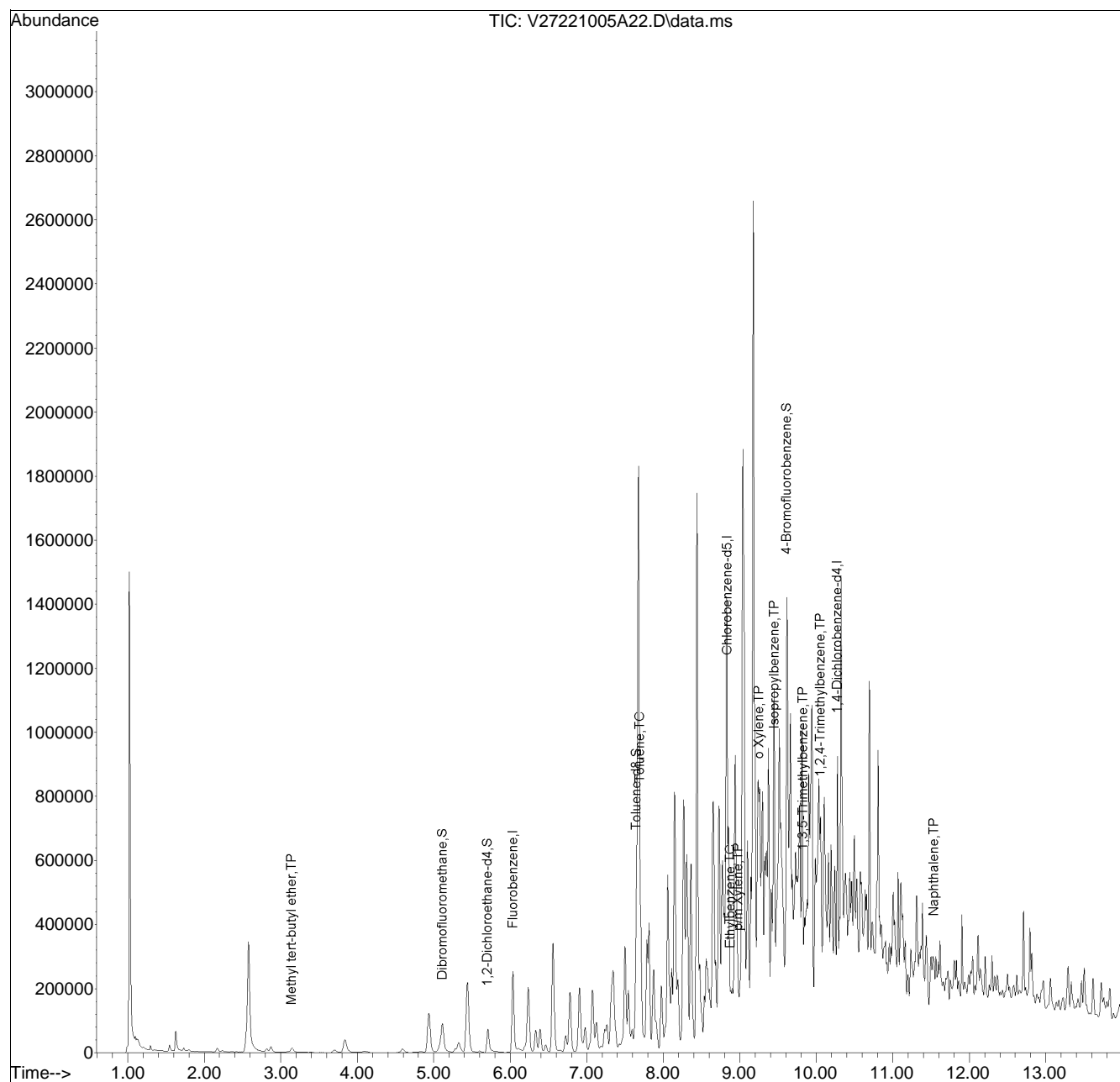


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221005A\  
 Data File : V27221005A22.D  
 Acq On : 05 Oct 2022 02:40 pm  
 Operator : VOA127:JC  
 Sample : L2254452-07,31,6.63,5,,C,R2F  
 Misc : WG1695804,ICAL19153  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 06 06:56:34 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\221005A\V127\_220706A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Jul 07 06:48:30 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list05A\V27221005A03.D•

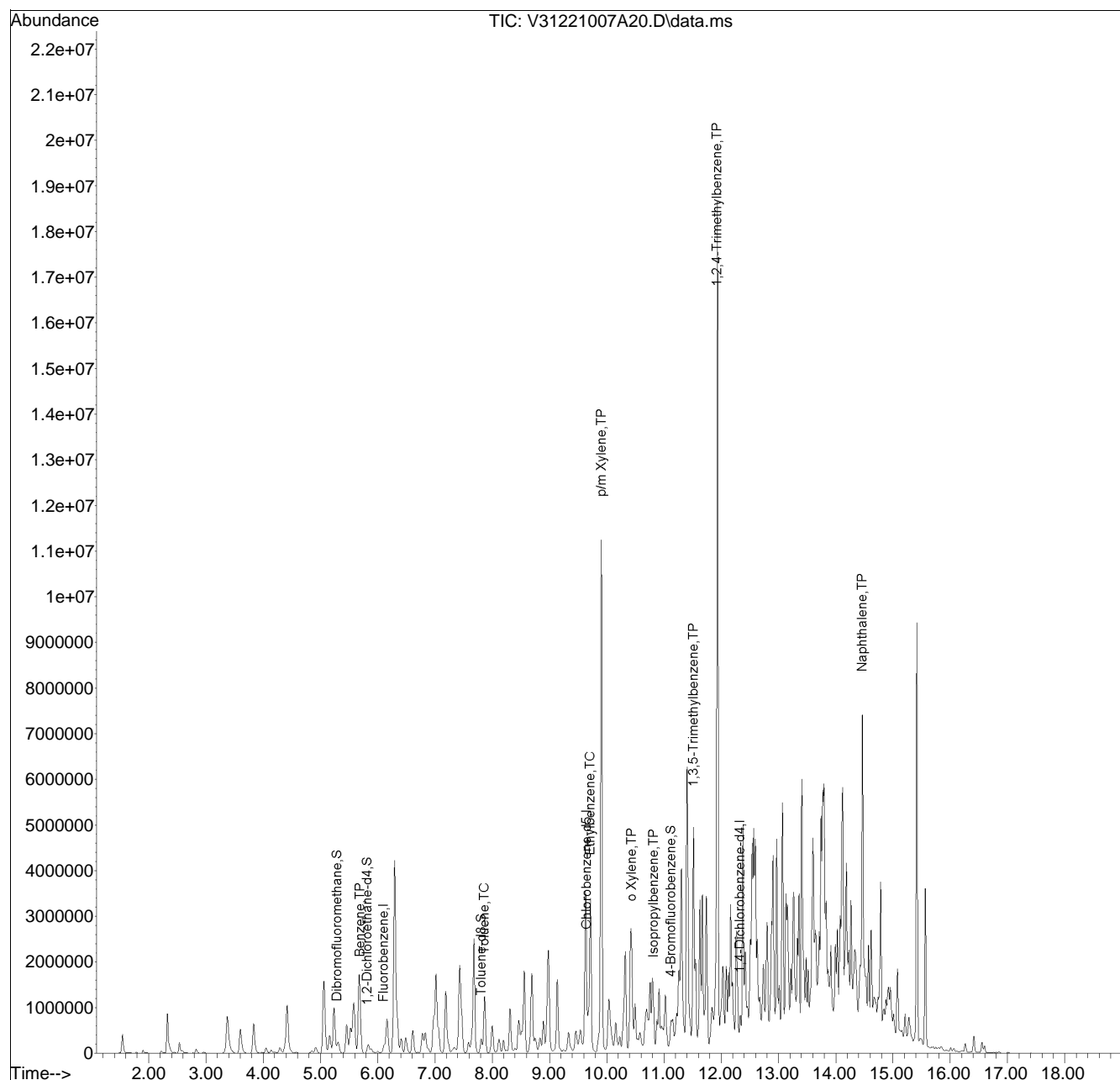


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221007A\  
 Data File : V31221007A20.D  
 Acq On : 07 Oct 2022 03:14 pm  
 Operator : VOA131:JIC  
 Sample : 12254452-09,31,6.42,5,,b,r2f  
 Misc : WG1697489,ICAL19336  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 10 06:29:53 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221007A\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list07A\V31221007A01.D•



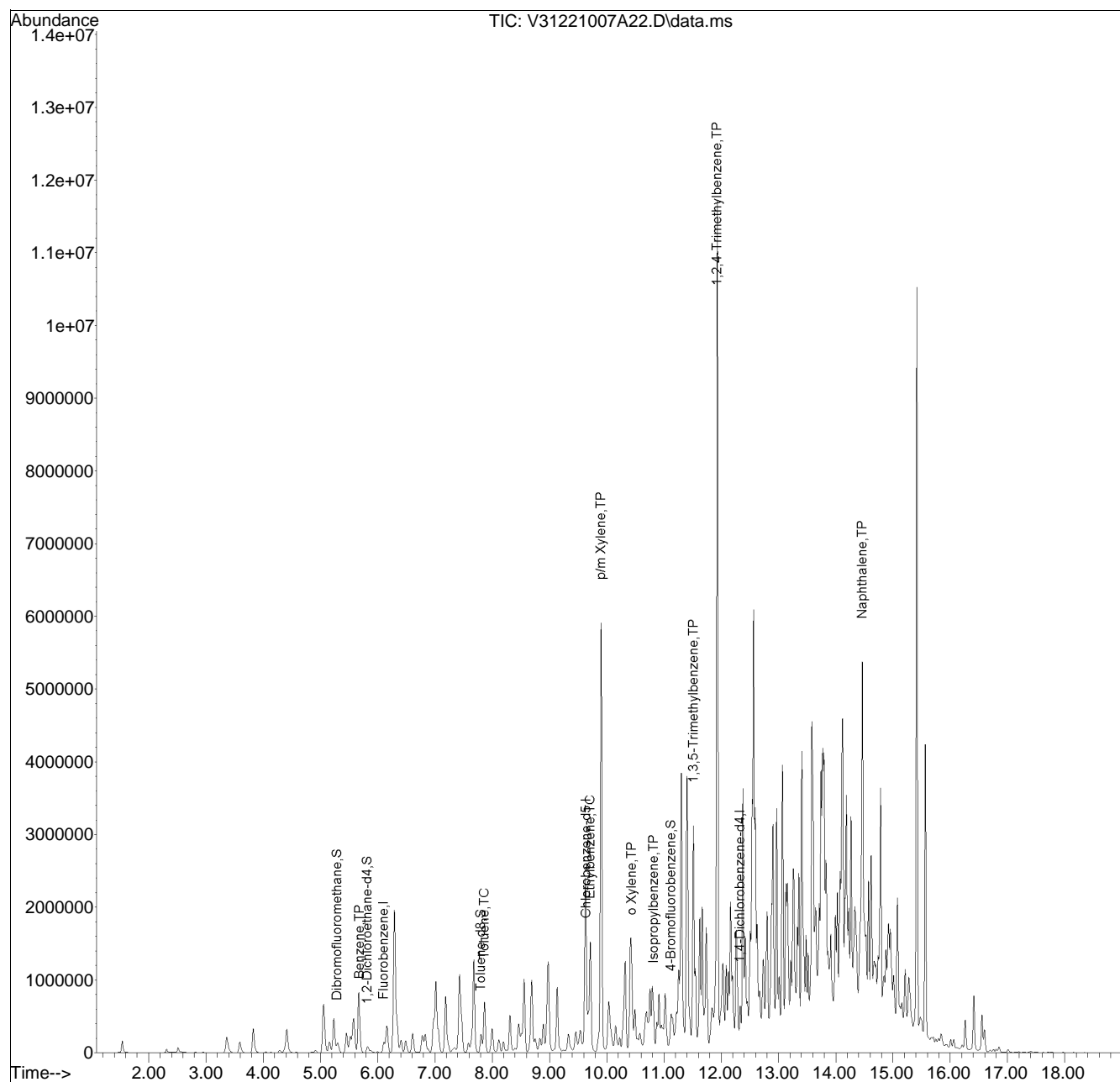


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221007A\  
 Data File : V31221007A22.D  
 Acq On : 07 Oct 2022 03:59 pm  
 Operator : VOA131:JIC  
 Sample : 12254452-13d2,31h,6.25,5,0.04,,a,r2f  
 Misc : WG1697486,ICAL19336  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 10 06:30:42 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221007A\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list07A\V31221007A01.D•





## ANALYTICAL REPORT

Lab Number:	L2254721
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/11/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2254721-01	302-AL03-C1-VOC	SOIL	PHILADELPHIA, PA	10/04/22 10:30	10/04/22
L2254721-02	302-AL03-C1-COMP	SOIL	PHILADELPHIA, PA	10/04/22 10:30	10/04/22
L2254721-03	302-AL03-C2-VOC	SOIL	PHILADELPHIA, PA	10/04/22 10:45	10/04/22
L2254721-04	302-AL03-C2-COMP	SOIL	PHILADELPHIA, PA	10/04/22 10:45	10/04/22
L2254721-05	302-AL03-C3-VOC	SOIL	PHILADELPHIA, PA	10/04/22 11:00	10/04/22
L2254721-06	302-AL03-C3-COMP	SOIL	PHILADELPHIA, PA	10/04/22 11:00	10/04/22
L2254721-07	302-AK03-C1-VOC	SOIL	PHILADELPHIA, PA	10/04/22 12:00	10/04/22
L2254721-08	302-AK03-C1-COMP	SOIL	PHILADELPHIA, PA	10/04/22 12:00	10/04/22
L2254721-09	302-AK03-C2-VOC	SOIL	PHILADELPHIA, PA	10/04/22 12:10	10/04/22
L2254721-10	302-AK03-C2-COMP	SOIL	PHILADELPHIA, PA	10/04/22 12:10	10/04/22
L2254721-11	302-AK03-C3-VOC	SOIL	PHILADELPHIA, PA	10/04/22 12:20	10/04/22
L2254721-12	302-AK03-C3-COMP	SOIL	PHILADELPHIA, PA	10/04/22 12:20	10/04/22
L2254721-13	302-AK03-C4-VOC	SOIL	PHILADELPHIA, PA	10/04/22 12:30	10/04/22
L2254721-14	302-AK03-C4-COMP	SOIL	PHILADELPHIA, PA	10/04/22 12:30	10/04/22
L2254721-15	302-AK03-C5-VOC	SOIL	PHILADELPHIA, PA	10/04/22 12:40	10/04/22
L2254721-16	302-AK03-C5-COMP	SOIL	PHILADELPHIA, PA	10/04/22 12:40	10/04/22
L2254721-17	302-AK04-C1-VOC	SOIL	PHILADELPHIA, PA	10/04/22 13:00	10/04/22
L2254721-18	302-AK04-C1-COMP	SOIL	PHILADELPHIA, PA	10/04/22 13:00	10/04/22
L2254721-19	302-AK04-C2-VOC	SOIL	PHILADELPHIA, PA	10/04/22 13:10	10/04/22
L2254721-20	302-AK04-C2-COMP	SOIL	PHILADELPHIA, PA	10/04/22 13:10	10/04/22
L2254721-21	302-AK04-C3-VOC	SOIL	PHILADELPHIA, PA	10/04/22 13:30	10/04/22
L2254721-22	302-AK04-C3-COMP	SOIL	PHILADELPHIA, PA	10/04/22 13:30	10/04/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Total Metals

L2254721-14: The sample has an elevated detection limit for lead, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 10/11/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-01  
 Client ID: 302-AL03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 10:30  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 16:26  
 Analyst: AJK  
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	95		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-03  
 Client ID: 302-AL03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 10:45  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 16:52  
 Analyst: AJK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	0.0019		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00076	1
o-Xylene	ND		mg/kg	0.0014	0.00039	1
Xylenes, Total	ND		mg/kg	0.0014	0.00039	1
Isopropylbenzene	0.00027	J	mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	80		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-05  
 Client ID: 302-AL03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 11:00  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 17:18  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-07  
 Client ID: 302-AK03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:00  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 17:44  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-09  
 Client ID: 302-AK03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:10  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 18:11  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00080	0.00020	1
Toluene	ND		mg/kg	0.00080	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00023	1
Ethylbenzene	ND		mg/kg	0.00080	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00045	1
o-Xylene	ND		mg/kg	0.00080	0.00023	1
Xylenes, Total	ND		mg/kg	0.00080	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-11  
 Client ID: 302-AK03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:20  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 19:55  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	0.00019	J	mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-13  
 Client ID: 302-AK03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:30  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 20:21  
 Analyst: AJK  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-15  
 Client ID: 302-AK03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:40  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 18:37  
 Analyst: AJK  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00035	J	mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-17  
 Client ID: 302-AK04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 13:00  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 20:47  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-19  
 Client ID: 302-AK04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 13:10  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 19:03  
 Analyst: AJK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00017	J	mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-21  
 Client ID: 302-AK04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 13:30  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/06/22 19:29  
 Analyst: AJK  
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	0.00076	J	mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/06/22 12:31  
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15,17,19,21 Batch: WG1696505-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	96		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,17,19,21 Batch: WG1696505-3 WG1696505-4								
Methyl tert butyl ether	101		101		66-130	0		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	88		85		70-130	3		30
Toluene	85		84		70-130	1		30
1,2-Dibromoethane	89		88		70-130	1		30
Ethylbenzene	82		81		70-130	1		30
p/m-Xylene	87		86		70-130	1		30
o-Xylene	87		86		70-130	1		30
Isopropylbenzene	85		85		70-130	0		30
1,3,5-Trimethylbenzene	84		85		70-130	1		30
1,2,4-Trimethylbenzene	86		86		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	86		86		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	105		106		70-130
Dibromofluoromethane	85		83		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-02  
 Client ID: 302-AL03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 10:30  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 03:15  
 Analyst: WR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.029	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.054	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.089	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.070	J	mg/kg	0.11	0.021	1
Chrysene	0.075	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.10	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.081	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.065	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-04  
 Client ID: 302-AL03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 10:45  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 01:03  
 Analyst: WR  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.031	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.036	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	0.080	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.055	J	mg/kg	0.11	0.020	1
Chrysene	0.062	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.083	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.070	J	mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.051	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	85		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-06  
 Client ID: 302-AL03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 11:00  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 21:31  
 Analyst: JG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	0.069	J	mg/kg	0.19	0.019	1
Phenanthrene	0.18		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.026	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.067	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	32		23-120
2-Fluorobiphenyl	34		30-120
4-Terphenyl-d14	34		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-08  
 Client ID: 302-AK03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:00  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 21:31  
 Analyst: WR  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-10  
 Client ID: 302-AK03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:10  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 21:47  
 Analyst: WR  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	84		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-12  
 Client ID: 302-AK03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:20  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 22:20  
 Analyst: WR  
 Percent Solids: 96%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	109		30-120
4-Terphenyl-d14	104		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-14  
 Client ID: 302-AK03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:30  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 22:04  
 Analyst: WR  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-16  
 Client ID: 302-AK03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 12:40  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 23:25  
 Analyst: WR  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	83		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-18  
 Client ID: 302-AK04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 13:00  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 23:09  
 Analyst: WR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-20  
 Client ID: 302-AK04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 13:10  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 21:08  
 Analyst: JG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.032	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.036	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.053	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.038	J	mg/kg	0.11	0.022	1
Chrysene	0.042	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.057	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.048	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.033	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	77		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-22  
 Client ID: 302-AK04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 13:30  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/06/22 23:58  
 Analyst: WR  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	67		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/06/22 20:42  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 10/06/22 00:57

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1696019-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	82		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2254721

Project Number: 200.00135.006

Report Date: 10/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1696019-2 WG1696019-3								
Naphthalene	70		88		40-140	23		50
Fluorene	71		92		40-140	26		50
Phenanthrene	69		89		40-140	25		50
Anthracene	72		94		40-140	27		50
Pyrene	70		92		35-142	27		50
Benzo(a)anthracene	71		93		40-140	27		50
Chrysene	69		86		40-140	22		50
Benzo(b)fluoranthene	69		84		40-140	20		50
Benzo(a)pyrene	75		96		40-140	25		50
Benzo(ghi)perylene	60		76		40-140	24		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	86		105		23-120
2-Fluorobiphenyl	75		92		30-120
4-Terphenyl-d14	72		89		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-02

Date Collected: 10/04/22 10:30

Client ID: 302-AL03-C1-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	150		mg/kg	2.27	0.122	1	10/06/22 09:00	10/09/22 20:47	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-04  
 Client ID: 302-AL03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/04/22 10:45  
 Date Received: 10/04/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	418		mg/kg	2.05	0.110	1	10/06/22 09:00	10/09/22 20:53	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-06

Date Collected: 10/04/22 11:00

Client ID: 302-AL03-C3-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.08		mg/kg	2.29	0.123	1	10/06/22 09:00	10/09/22 20:58	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-08

Date Collected: 10/04/22 12:00

Client ID: 302-AK03-C1-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.32		mg/kg	2.11	0.113	1	10/06/22 09:00	10/09/22 21:03	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-10

Date Collected: 10/04/22 12:10

Client ID: 302-AK03-C2-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.59		mg/kg	2.00	0.107	1	10/06/22 09:00	10/09/22 21:08	EPA 3050B	1,6010D	EW





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-12

Date Collected: 10/04/22 12:20

Client ID: 302-AK03-C3-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.19		mg/kg	2.00	0.107	1	10/06/22 09:00	10/09/22 21:13	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-14

Date Collected: 10/04/22 12:30

Client ID: 302-AK03-C4-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.02		mg/kg	4.31	0.231	2	10/06/22 09:00	10/11/22 09:25	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-16

Date Collected: 10/04/22 12:40

Client ID: 302-AK03-C5-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.63		mg/kg	2.14	0.115	1	10/06/22 09:00	10/09/22 21:33	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-18

Date Collected: 10/04/22 13:00

Client ID: 302-AK04-C1-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.3		mg/kg	2.42	0.130	1	10/06/22 09:00	10/09/22 21:38	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-20

Date Collected: 10/04/22 13:10

Client ID: 302-AK04-C2-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	823		mg/kg	2.25	0.121	1	10/06/22 09:00	10/09/22 21:43	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

**SAMPLE RESULTS**

Lab ID: L2254721-22

Date Collected: 10/04/22 13:30

Client ID: 302-AK04-C3-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	137		mg/kg	2.49	0.133	1	10/06/22 09:00	10/09/22 21:49	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2254721

Project Number: 200.00135.006

Report Date: 10/11/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1696126-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/06/22 09:00	10/06/22 13:42	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1696126-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128			-



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>MSD Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>MSD Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>RPD Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22    QC Batch ID: WG1696126-3    QC Sample: L2255245-01    Client ID: MS Sample												
Lead, Total	16.6	45.2	56.0	87	-	-	-	-	75-125	-	-	20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2254721

Report Date: 10/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1696126-4 QC Sample: L2255245-01 Client ID: DUP Sample						
Lead, Total	16.6	20.3	mg/kg	20		20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-01

Date Collected: 10/04/22 10:30

Client ID: 302-AL03-C1-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	98.3		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

**Lab ID:** L2254721-02  
**Client ID:** 302-AL03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/04/22 10:30  
**Date Received:** 10/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

**Lab ID:** L2254721-03  
**Client ID:** 302-AL03-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/04/22 10:45  
**Date Received:** 10/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.7		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2254721

Project Number: 200.00135.006

Report Date: 10/11/22

## SAMPLE RESULTS

Lab ID: L2254721-04

Date Collected: 10/04/22 10:45

Client ID: 302-AL03-C2-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.3		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-05

Date Collected: 10/04/22 11:00

Client ID: 302-AL03-C3-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.0		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-06

Date Collected: 10/04/22 11:00

Client ID: 302-AL03-C3-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.8		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-07

Date Collected: 10/04/22 12:00

Client ID: 302-AK03-C1-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.2		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

**Lab ID:** L2254721-08  
**Client ID:** 302-AK03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/04/22 12:00  
**Date Received:** 10/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.3		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-09

Date Collected: 10/04/22 12:10

Client ID: 302-AK03-C2-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.7		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

**SAMPLE RESULTS**

**Lab ID:** L2254721-10  
**Client ID:** 302-AK03-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/04/22 12:10  
**Date Received:** 10/04/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.9		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-11

Date Collected: 10/04/22 12:20

Client ID: 302-AK03-C3-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.4		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2254721

Project Number: 200.00135.006

Report Date: 10/11/22

## SAMPLE RESULTS

Lab ID: L2254721-12

Date Collected: 10/04/22 12:20

Client ID: 302-AK03-C3-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.6		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-13

Date Collected: 10/04/22 12:30

Client ID: 302-AK03-C4-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.7		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-14

Date Collected: 10/04/22 12:30

Client ID: 302-AK03-C4-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.3		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-15

Date Collected: 10/04/22 12:40

Client ID: 302-AK03-C5-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.2		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-16

Date Collected: 10/04/22 12:40

Client ID: 302-AK03-C5-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.2		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-17

Date Collected: 10/04/22 13:00

Client ID: 302-AK04-C1-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.4		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-18

Date Collected: 10/04/22 13:00

Client ID: 302-AK04-C1-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.2		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-19

Date Collected: 10/04/22 13:10

Client ID: 302-AK04-C2-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.0		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-20

Date Collected: 10/04/22 13:10

Client ID: 302-AK04-C2-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.1		%	0.100	NA	1	-	10/05/22 13:15	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**SAMPLE RESULTS**

Lab ID: L2254721-21

Date Collected: 10/04/22 13:30

Client ID: 302-AK04-C3-VOC

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	97.0		%	0.100	NA	1	-	10/05/22 13:00	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2254721

Project Number: 200.00135.006

Report Date: 10/11/22

## SAMPLE RESULTS

Lab ID: L2254721-22

Date Collected: 10/04/22 13:30

Client ID: 302-AK04-C3-COMP

Date Received: 10/04/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.7		%	0.100	NA	1	-	10/05/22 13:00	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2254721

Report Date: 10/11/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1695781-1 QC Sample: L2254833-21 Client ID: DUP Sample						
Solids, Total	84.2	83.3	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1695787-1 QC Sample: L2254721-02 Client ID: 302-AL03-C1-COMP						
Solids, Total	84.7	84.8	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254721-01A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2254721-01B	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-01C	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-01D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2254721-02A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2254721-02B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2254721-03A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2254721-03B	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-03C	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-03D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2254721-04A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2254721-04B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2254721-05A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2254721-05B	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-05C	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-05D	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L2254721-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2254721-06B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2254721-07A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2254721-07B	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-07C	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-07D	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2254721**Project Number:** 200.00135.006**Report Date:** 10/11/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254721-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2254721-08B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2254721-09A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2254721-09B	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-09C	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-09D	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L2254721-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2254721-10B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2254721-11A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2254721-11B	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-11C	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-11D	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L2254721-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2254721-12B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2254721-13A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2254721-13B	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-13C	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-13D	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L2254721-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2254721-14B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2254721-15A	Vial MeOH preserved	A	NA		3.8	Y	Absent		PA-8260HLW(14)
L2254721-15B	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-15C	Vial water preserved	A	NA		3.8	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-15D	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		TS(7)
L2254721-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		PB-TI(180)
L2254721-16B	Glass 120ml/4oz unpreserved	A	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2254721-17A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2254721-17B	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10112216:55  
**Lab Number:** L2254721  
**Report Date:** 10/11/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2254721-17C	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-17D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2254721-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2254721-18B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2254721-19A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2254721-19B	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-19C	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-19D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2254721-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2254721-20B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)
L2254721-21A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2254721-21B	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-21C	Vial water preserved	B	NA		3.5	Y	Absent	05-OCT-22 10:46	PA-8260HLW(14)
L2254721-21D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2254721-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2254721-22B	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2254721  
**Report Date:** 10/11/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2254721

**Project Number:** 200.00135.006

**Report Date:** 10/11/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~17851~~ ~~17853~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 10/15/22

ALPHA Job #: L2254721

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Manfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-801-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

## ANALYSIS

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES			
		Date	Time																				
54721-01	302-AL03-C1-VOC	10/4	1030	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-02	302-AL03-C1-COMP		1030			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AL03-C2-VOC		1045			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AL03-C2-COMP		1045			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AL03-C3-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AL03-C3-COMP		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
	<del>302-AL03-C</del>					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-07	302-AL03-C1-VOC		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-08	302-AL03-C1-COMP		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

qf anal  
 10/15/22  
 0200  
 10/15/22 0200

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/4 1350	<i>[Signature]</i>	10/4/22 1350
<i>[Signature]</i>	10/4/22 1430	<i>[Signature]</i>	10-4-22 1805
<i>[Signature]</i>	10/4-1800/100	<i>[Signature]</i>	10-4-22 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 3

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  Standard     Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12161~~ ~~17853~~ 18559

### Turn-Around Time

Due Date:                      Time:

Date Rec'd in Lab: 10/5/22

ALPHA Job #: 12254721

### Report Information Data Deliverables

FAX                       EMAIL  
 ADEx                       Add'l Deliverables

### Billing Information

Same as Client Info    PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program                      Criteria

### ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	ANALYSIS										Sample Specifics Comments	TOTAL # BOTTLES			
		Date	Time						1	2	3	4	5	6	7	8	9	10			11	12	
54721-09	302-AK03-C2-VOC	10/4	1210	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AK03-C2-COMP		1210			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-11	302-AK03-C3-VOC		1220			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-12	302-AK03-C3-COMP		1220			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-AK03-C9-VOC		1230			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-AK03-C9-COMP		1230			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-AK03-C5-VOC		1240			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-AK03-C5-COMP		1240			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-AK04-C1-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-AK04-C1-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
54721-09	302-AK03-C2-VOC	10/4	1210	S	TS
-10	302-AK03-C2-COMP		1210		
-11	302-AK03-C3-VOC		1220		
-12	302-AK03-C3-COMP		1220		
-13	302-AK03-C9-VOC		1230		
-14	302-AK03-C9-COMP		1230		
-15	302-AK03-C5-VOC		1240		
-16	302-AK03-C5-COMP		1240		
-17	302-AK04-C1-VOC		1300		
-18	302-AK04-C1-COMP		1300		

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

6/20/22  
 10/5/22  
 0200  
 10/5/22 0200

Relinquished By: [Signature] Date/Time: 10/4/22 12:00  
 Received By: [Signature] Date/Time: 10/5/22 13:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1241~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to add@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/5/22

ALPHA Job #: L225472

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES				
		Date	Time																					
54721-19	302-AK04-CR-VOC	10/1A	1310	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-20	302-AK04-C2-CAMP	↓	1310	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-21	302-AK04-C3-VOC	↓	1330	↓	↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-22	302-AK04-C3-CAMP	↓	1330	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

10/5/22  
 0200  
 10/5/22 0200

Relinquished By: [Signature] Date/Time: 10/1A 1330  
 Received By: [Signature] Date/Time: 10/4/22 1330

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2255175
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/12/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2255175

Report Date: 10/12/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2255175-01	302-AI05-C1-VOC	SOIL	PHILADELPHIA, PA	10/05/22 09:30	10/05/22
L2255175-02	302-AI05-C1-COMP	SOIL	PHILADELPHIA, PA	10/05/22 09:30	10/05/22
L2255175-03	302-AI05-C2-VOC	SOIL	PHILADELPHIA, PA	10/05/22 09:45	10/05/22
L2255175-04	302-AI05-C2-COMP	SOIL	PHILADELPHIA, PA	10/05/22 09:45	10/05/22
L2255175-05	302-AI05-C3-VOC	SOIL	PHILADELPHIA, PA	10/05/22 10:00	10/05/22
L2255175-06	302-AI05-C3-COMP	SOIL	PHILADELPHIA, PA	10/05/22 10:00	10/05/22
L2255175-07	302-AI05-C4-VOC	SOIL	PHILADELPHIA, PA	10/05/22 10:15	10/05/22
L2255175-08	302-AI05-C4-COMP	SOIL	PHILADELPHIA, PA	10/05/22 10:15	10/05/22
L2255175-09	302-AI05-C5-VOC	SOIL	PHILADELPHIA, PA	10/05/22 10:30	10/05/22
L2255175-10	302-AI05-C5-COMP	SOIL	PHILADELPHIA, PA	10/05/22 10:30	10/05/22
L2255175-11	302-AJ05-C1-VOC	SOIL	PHILADELPHIA, PA	10/05/22 12:00	10/05/22
L2255175-12	302-AJ05-C1-COMP	SOIL	PHILADELPHIA, PA	10/05/22 12:00	10/05/22
L2255175-13	302-AJ05-C2-VOC	SOIL	PHILADELPHIA, PA	10/05/22 12:15	10/05/22
L2255175-14	302-AJ05-C2-COMP	SOIL	PHILADELPHIA, PA	10/05/22 12:15	10/05/22
L2255175-15	302-AJ05-C3-VOC	SOIL	PHILADELPHIA, PA	10/05/22 12:30	10/05/22
L2255175-16	302-AJ05-C3-COMP	SOIL	PHILADELPHIA, PA	10/05/22 12:30	10/05/22
L2255175-17	302-AJ05-C4-VOC	SOIL	PHILADELPHIA, PA	10/05/22 12:45	10/05/22
L2255175-18	302-AJ05-C4-COMP	SOIL	PHILADELPHIA, PA	10/05/22 12:45	10/05/22
L2255175-19	302-AJ05-C5-VOC	SOIL	PHILADELPHIA, PA	10/05/22 13:00	10/05/22
L2255175-20	302-AJ05-C5-COMP	SOIL	PHILADELPHIA, PA	10/05/22 13:00	10/05/22
L2255175-21	302-AJ06-C1-VOC	SOIL	PHILADELPHIA, PA	10/05/22 14:00	10/05/22
L2255175-22	302-AJ06-C1-COMP	SOIL	PHILADELPHIA, PA	10/05/22 14:00	10/05/22
L2255175-23	302-AJ06-C2-VOC	SOIL	PHILADELPHIA, PA	10/05/22 14:15	10/05/22
L2255175-24	302-AJ06-C2-COMP	SOIL	PHILADELPHIA, PA	10/05/22 14:15	10/05/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2255175-25	302-AJ06-C3-VOC	SOIL	PHILADELPHIA, PA	10/05/22 14:30	10/05/22
L2255175-26	302-AJ06-C3-COMP	SOIL	PHILADELPHIA, PA	10/05/22 14:30	10/05/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2255175-01: The surrogate recovery is below the acceptance criteria for dibromofluoromethane (69%), possibly due to the matrix effect caused by the high pH of the sample (>10).

L2255175-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (166%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2255175-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2255175-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (179%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2255175-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (277%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2255175-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (189%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 10/12/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-01  
 Client ID: 302-AI05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 09:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 16:02  
 Analyst: AJK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	69	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-03  
 Client ID: 302-AI05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 09:45  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 16:23  
 Analyst: AJK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-05  
 Client ID: 302-AI05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 02:14  
 Analyst: JIC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	0.0017		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	0.00038	J	mg/kg	0.0011	0.00032	1
Xylenes, Total	0.00038	J	mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.0072		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	166	Q	70-130
Dibromofluoromethane	88		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-07  
 Client ID: 302-AI05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:15  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 02:34  
 Analyst: JIC  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0038	0.00038	1
Benzene	ND		mg/kg	0.00096	0.00032	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00049	1
Toluene	ND		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00096	0.00056	1
Ethylbenzene	0.00058	J	mg/kg	0.0019	0.00027	1
p/m-Xylene	ND		mg/kg	0.0038	0.0011	1
o-Xylene	ND		mg/kg	0.0019	0.00056	1
Xylenes, Total	ND		mg/kg	0.0019	0.00056	1
Isopropylbenzene	0.0045		mg/kg	0.0019	0.00021	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0038	0.00037	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0038	0.00064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	87		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-09  
 Client ID: 302-AI05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 16:44  
 Analyst: AJK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00029	1
Benzene	ND		mg/kg	0.00071	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00071	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00080	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	0.00048	J	mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-11  
 Client ID: 302-AJ05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 17:05  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-13  
 Client ID: 302-AJ05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:15  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 18:49  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	0.00063	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.00063	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.0077		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	129		70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-15  
 Client ID: 302-AJ05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 02:55  
 Analyst: JIC  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	ND		mg/kg	0.00079	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00040	1
Toluene	ND		mg/kg	0.0016	0.00086	1
1,2-Dibromoethane	ND		mg/kg	0.00079	0.00046	1
Ethylbenzene	ND		mg/kg	0.0016	0.00022	1
p/m-Xylene	ND		mg/kg	0.0032	0.00088	1
o-Xylene	ND		mg/kg	0.0016	0.00046	1
Xylenes, Total	ND		mg/kg	0.0016	0.00046	1
Isopropylbenzene	0.0056		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00030	1
1,2,4-Trimethylbenzene	0.0010	J	mg/kg	0.0032	0.00053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	179	Q	70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-17  
 Client ID: 302-AJ05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:45  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 03:16  
 Analyst: JIC  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	0.00049	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	0.00041	J	mg/kg	0.0012	0.00035	1
Xylenes, Total	0.00041	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.0071		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00031	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.0022	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	<b>277</b>	Q	70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-19  
 Client ID: 302-AJ05-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 13:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 17:26  
 Analyst: AJK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	0.00012	J	mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	0.0028		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	0.00065	J	mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	189	Q	70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-21  
 Client ID: 302-AJ06-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 14:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 17:46  
 Analyst: AJK  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00054	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00050	J	mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-23  
 Client ID: 302-AJ06-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 14:15  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 18:07  
 Analyst: AJK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00055	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.00065	J	mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	93		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-25  
 Client ID: 302-AJ06-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 14:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/10/22 18:28  
 Analyst: AJK  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00020	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/10/22 12:55  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,09,11,13,19,21,23,25 Batch: WG1698161-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/11/22 19:38  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,07,15,17 Batch: WG1698391-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,09,11,13,19,21,23,25 Batch: WG1698161-3 WG1698161-4								
Methyl tert butyl ether	100		101		66-130	1		30
Benzene	97		99		70-130	2		30
1,2-Dichloroethane	105		110		70-130	5		30
Toluene	97		96		70-130	1		30
1,2-Dibromoethane	102		100		70-130	2		30
Ethylbenzene	101		100		70-130	1		30
p/m-Xylene	104		104		70-130	0		30
o-Xylene	104		102		70-130	2		30
Isopropylbenzene	92		97		70-130	5		30
1,3,5-Trimethylbenzene	95		98		70-130	3		30
1,2,4-Trimethylbenzene	94		98		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	111		111		70-130
Toluene-d8	101		99		70-130
4-Bromofluorobenzene	95		97		70-130
Dibromofluoromethane	95		97		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,07,15,17 Batch: WG1698391-3 WG1698391-4								
Methyl tert butyl ether	105		102		66-130	3		30
Benzene	102		95		70-130	7		30
1,2-Dichloroethane	112		108		70-130	4		30
Toluene	101		94		70-130	7		30
1,2-Dibromoethane	108		104		70-130	4		30
Ethylbenzene	107		98		70-130	9		30
p/m-Xylene	110		102		70-130	8		30
o-Xylene	110		102		70-130	8		30
Isopropylbenzene	102		93		70-130	9		30
1,3,5-Trimethylbenzene	106		96		70-130	10		30
1,2,4-Trimethylbenzene	106		96		70-130	10		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		109		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	98		95		70-130
Dibromofluoromethane	96		97		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-02  
 Client ID: 302-AI05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 09:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 23:18  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.039	J	mg/kg	0.20	0.019	1
Phenanthrene	0.056	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	47		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-04  
 Client ID: 302-AI05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 09:45  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 23:43  
 Analyst: EK  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	53		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-06  
 Client ID: 302-AI05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 14:49  
 Analyst: MG  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 12:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.027	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-08  
 Client ID: 302-AI05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:15  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 22:54  
 Analyst: EK  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-10  
 Client ID: 302-AI05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 00:30  
 Analyst: EK  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.082	J	mg/kg	0.19	0.018	1
Phenanthrene	0.11		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-12  
 Client ID: 302-AJ05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 03:20  
 Analyst: EK  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.035	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.033	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.027	J	mg/kg	0.11	0.021	1
Chrysene	0.029	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.044	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-14  
 Client ID: 302-AJ05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:15  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 01:19  
 Analyst: EK  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-16  
 Client ID: 302-AJ05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 00:55  
 Analyst: EK  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.038	J	mg/kg	0.17	0.021	1
Fluorene	0.29		mg/kg	0.17	0.017	1
Phenanthrene	0.18		mg/kg	0.10	0.021	1
Anthracene	0.058	J	mg/kg	0.10	0.034	1
Pyrene	0.021	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-18  
 Client ID: 302-AJ05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 12:45  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 22:30  
 Analyst: EK  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.055	J	mg/kg	0.20	0.020	1
Phenanthrene	0.082	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-20  
 Client ID: 302-AJ05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 13:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 22:06  
 Analyst: EK  
 Percent Solids: 97%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	0.026	J	mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.017	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	73		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-22  
 Client ID: 302-AJ06-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 14:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 02:08  
 Analyst: EK  
 Percent Solids: 97%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.10	J	mg/kg	0.17	0.020	1
Fluorene	0.65		mg/kg	0.17	0.016	1
Phenanthrene	0.95		mg/kg	0.10	0.020	1
Anthracene	0.12		mg/kg	0.10	0.032	1
Pyrene	0.066	J	mg/kg	0.10	0.016	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.017	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.040	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-24  
 Client ID: 302-AJ06-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 14:15  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/07/22 21:42  
 Analyst: EK  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-26  
 Client ID: 302-AJ06-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 14:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/08/22 00:07  
 Analyst: EK  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.027	J	mg/kg	0.20	0.020	1
Phenanthrene	0.092	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/07/22 20:06  
Analyst: EK

Extraction Method: EPA 3546  
Extraction Date: 10/07/22 00:41

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1696527-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	76		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1696527-2 WG1696527-3								
Naphthalene	77		74		40-140	4		50
Fluorene	78		76		40-140	3		50
Phenanthrene	73		71		40-140	3		50
Anthracene	75		72		40-140	4		50
Pyrene	79		76		35-142	4		50
Benzo(a)anthracene	75		74		40-140	1		50
Chrysene	74		74		40-140	0		50
Benzo(b)fluoranthene	81		79		40-140	3		50
Benzo(a)pyrene	93		90		40-140	3		50
Benzo(ghi)perylene	81		79		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	102		101		23-120
2-Fluorobiphenyl	85		83		30-120
4-Terphenyl-d14	84		81		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-02  
 Client ID: 302-AI05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 09:30  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.33		mg/kg	2.35	0.126	1	10/06/22 22:18	10/11/22 08:52	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-04

Date Collected: 10/05/22 09:45

Client ID: 302-AI05-C2-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.23		mg/kg	2.38	0.128	1	10/06/22 22:18	10/11/22 08:38	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-06

Date Collected: 10/05/22 10:00

Client ID: 302-AI05-C3-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.9		mg/kg	2.22	0.119	1	10/06/22 22:18	10/11/22 08:43	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-08

Date Collected: 10/05/22 10:15

Client ID: 302-AI05-C4-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.51		mg/kg	2.36	0.127	1	10/06/22 22:18	10/11/22 08:47	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-10

Date Collected: 10/05/22 10:30

Client ID: 302-AI05-C5-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.10		mg/kg	2.23	0.120	1	10/06/22 22:18	10/11/22 09:23	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-12

Date Collected: 10/05/22 12:00

Client ID: 302-AJ05-C1-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	77.7		mg/kg	2.31	0.124	1	10/06/22 22:18	10/11/22 09:27	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-14

Date Collected: 10/05/22 12:15

Client ID: 302-AJ05-C2-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	14.2		mg/kg	2.42	0.130	1	10/06/22 22:18	10/11/22 09:32	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-16

Date Collected: 10/05/22 12:30

Client ID: 302-AJ05-C3-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.93		mg/kg	2.07	0.111	1	10/06/22 22:18	10/11/22 09:36	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-18

Date Collected: 10/05/22 12:45

Client ID: 302-AJ05-C4-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.72		mg/kg	2.37	0.127	1	10/06/22 22:18	10/11/22 09:41	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-20  
 Client ID: 302-AJ05-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 13:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.41		mg/kg	2.04	0.109	1	10/06/22 22:18	10/11/22 09:45	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-22

Date Collected: 10/05/22 14:00

Client ID: 302-AJ06-C1-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.65		mg/kg	1.96	0.105	1	10/06/22 22:18	10/11/22 09:54	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-24

Date Collected: 10/05/22 14:15

Client ID: 302-AJ06-C2-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.38		mg/kg	2.30	0.123	1	10/06/22 22:18	10/11/22 09:59	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-26

Date Collected: 10/05/22 14:30

Client ID: 302-AJ06-C3-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.08		mg/kg	2.36	0.126	1	10/06/22 22:18	10/11/22 10:20	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1696422-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/06/22 22:18	10/11/22 08:29	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 Batch: WG1696422-2 SRM Lot Number: D113-540								
Lead, Total	97		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26    QC Batch ID: WG1696422-3    QC Sample: L2255175-02    Client ID: 302-AI05-C1-COMP												
Lead, Total	5.33	49.6	49.5	89	-	-	-	-	75-125	-	-	20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2255175

Report Date: 10/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26 QC Batch ID: WG1696422-4 QC Sample: L2255175-02 Client ID: 302-AI05-C1-COMP						
Lead, Total	5.33	4.40	mg/kg	19		20

# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-01

Date Collected: 10/05/22 09:30

Client ID: 302-AI05-C1-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-02

Date Collected: 10/05/22 09:30

Client ID: 302-AI05-C1-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-03

Date Collected: 10/05/22 09:45

Client ID: 302-AI05-C2-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.7		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-04

Date Collected: 10/05/22 09:45

Client ID: 302-AI05-C2-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-05  
 Client ID: 302-AI05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/05/22 10:00  
 Date Received: 10/05/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.7		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-06

Date Collected: 10/05/22 10:00

Client ID: 302-AI05-C3-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-07

Date Collected: 10/05/22 10:15

Client ID: 302-AI05-C4-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.0		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-08

Date Collected: 10/05/22 10:15

Client ID: 302-AI05-C4-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-09

Date Collected: 10/05/22 10:30

Client ID: 302-AI05-C5-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.2		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-10

Date Collected: 10/05/22 10:30

Client ID: 302-AI05-C5-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.7		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-11

Date Collected: 10/05/22 12:00

Client ID: 302-AJ05-C1-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.1		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-12

Date Collected: 10/05/22 12:00

Client ID: 302-AJ05-C1-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-13

Date Collected: 10/05/22 12:15

Client ID: 302-AJ05-C2-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

**SAMPLE RESULTS**

Lab ID: L2255175-14

Date Collected: 10/05/22 12:15

Client ID: 302-AJ05-C2-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-15

Date Collected: 10/05/22 12:30

Client ID: 302-AJ05-C3-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.7		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-16

Date Collected: 10/05/22 12:30

Client ID: 302-AJ05-C3-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-17

Date Collected: 10/05/22 12:45

Client ID: 302-AJ05-C4-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.8		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-18

Date Collected: 10/05/22 12:45

Client ID: 302-AJ05-C4-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-19

Date Collected: 10/05/22 13:00

Client ID: 302-AJ05-C5-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.1		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-20

Date Collected: 10/05/22 13:00

Client ID: 302-AJ05-C5-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.6		%	0.100	NA	1	-	10/06/22 12:29	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-21

Date Collected: 10/05/22 14:00

Client ID: 302-AJ06-C1-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.9		%	0.100	NA	1	-	10/06/22 12:41	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-22

Date Collected: 10/05/22 14:00

Client ID: 302-AJ06-C1-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	97.4		%	0.100	NA	1	-	10/06/22 12:41	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-23

Date Collected: 10/05/22 14:15

Client ID: 302-AJ06-C2-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.4		%	0.100	NA	1	-	10/06/22 12:41	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

**SAMPLE RESULTS**

**Lab ID:** L2255175-24  
**Client ID:** 302-AJ06-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/05/22 14:15  
**Date Received:** 10/05/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.3		%	0.100	NA	1	-	10/06/22 12:41	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2255175

Project Number: 200.00135.006

Report Date: 10/12/22

## SAMPLE RESULTS

Lab ID: L2255175-25

Date Collected: 10/05/22 14:30

Client ID: 302-AJ06-C3-VOC

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.2		%	0.100	NA	1	-	10/06/22 12:41	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**SAMPLE RESULTS**

Lab ID: L2255175-26

Date Collected: 10/05/22 14:30

Client ID: 302-AJ06-C3-COMP

Date Received: 10/05/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	10/06/22 12:41	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2255175

Report Date: 10/12/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1696243-1 QC Sample: L2255175-01 Client ID: 302-AI05-C1-VOC						
Solids, Total	87.6	86.4	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 21-26 QC Batch ID: WG1696244-1 QC Sample: L2254965-01 Client ID: DUP Sample						
Solids, Total	74.5	78.9	%	6		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255175-01A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-01B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-01C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-01D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)
L2255175-02A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-02B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-03A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-03B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-03C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-03D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)
L2255175-04A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-04B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-05A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2255175-05B	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-05C	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-05D	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L2255175-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		PB-TI(180)
L2255175-06B	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2255175-07A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-07B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-07C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-07D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255175-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-08B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-09A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-09B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-09C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-09D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)
L2255175-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-10B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-11A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-11B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-11C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-11D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)
L2255175-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-12B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-13A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-13B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-13C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-13D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)
L2255175-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-14B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-15A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2255175-15B	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-15C	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-15D	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L2255175-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		PB-TI(180)
L2255175-16B	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2255175-17A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2255175-17B	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255175**Project Number:** 200.00135.006**Report Date:** 10/12/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255175-17C	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-17D	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L2255175-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		PB-TI(180)
L2255175-18B	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2255175-19A	Vial MeOH preserved	B	NA		4.6	Y	Absent		PA-8260HLW(14)
L2255175-19B	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-19C	Vial water preserved	B	NA		4.6	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-19D	Plastic 2oz unpreserved for TS	B	NA		4.6	Y	Absent		TS(7)
L2255175-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.6	Y	Absent		PB-TI(180)
L2255175-20B	Glass 120ml/4oz unpreserved	B	NA		4.6	Y	Absent		TS(7),PA-PAH(14)
L2255175-21A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2255175-21B	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-21C	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-21D	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L2255175-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		PB-TI(180)
L2255175-22B	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2255175-23A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2255175-23B	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-23C	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-23D	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L2255175-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		PB-TI(180)
L2255175-24B	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		TS(7),PA-PAH(14)
L2255175-25A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2255175-25B	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-25C	Vial water preserved	A	NA		4.8	Y	Absent	06-OCT-22 10:02	PA-8260HLW(14)
L2255175-25D	Plastic 2oz unpreserved for TS	A	NA		4.8	Y	Absent		TS(7)
L2255175-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		PB-TI(180)
L2255175-26B	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10122211:30  
**Lab Number:** L2255175  
**Report Date:** 10/12/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255175  
**Report Date:** 10/12/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255175

**Project Number:** 200.00135.006

**Report Date:** 10/12/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 2 OF 3

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12451~~ ~~12453~~ 18559

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Turn-Around Time

Due Date: Time:

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist, Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/6/22

ALPHA Job #: 12265175

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments				
		Date	Time																				
56175-11	B02-A505-C1-VOC	10/6	1200	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-12	302-A505-C1-Camp		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
-13	302-A505-C2-VOC		<del>1230</del>			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1215	4
-14	302-A505-C2-Camp		<del>1230</del>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1215	2
-15	302-A505-C3-VOC		<del>1230</del>			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1230	4
-16	302-A505-C3-Camp		1230			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1230	2
-17	302-A505-C4-VOC		1245			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-18	302-A505-C4-Camp		1245			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2
-19	302-A505-C5-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-20	302-A505-C5-Camp		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

cf 401  
 10/6/22  
 0200

Relinquished By: [Signature] Date/Time: 10/5/22  
 Received By: [Signature] Date/Time: 10/5/22 1300  
 10/5/22 2:00  
 10.5.22 3:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 3 OF 3

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974  
 Fax: \_\_\_\_\_  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Project Information

Project Name: Philadelphia Refinery  
 Project Location: Philadelphia, PA  
 Project #: 200.00135.006  
 Project Manager: William Schmidt  
 ALPHA Quote #: ~~12001~~ ~~1783~~ 18559

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)  
 Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/6/22 ALPHA Job #: 62255175

### Report Information Data Deliverables Billing Information

FAX  EMAIL  Same as Client Info PO #: 3562  
 ADEx  Add'l Deliverables

### Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
55175-21	302-AJ06-C1-VOC	10/5	1400	S	TS
-22	302-AJ06-C1-COMP		1400		
-23	302-AJ06-C2-VOC		1415		
-24	302-AJ06-C2-COMP		1415		
-25	302-AJ06-C3-VOC		1430		
-26	302-AJ06-C3-COMP		1430		

### ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead																		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**TOTAL # BOTTLES**

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Relinquished By: \_\_\_\_\_ Date/Time: 10/5/22 1320  
 Received By: \_\_\_\_\_ Date/Time: 10/5/22 1500

10/6/22 0200  
 10/5/22 1005  
 10/5/22 2100

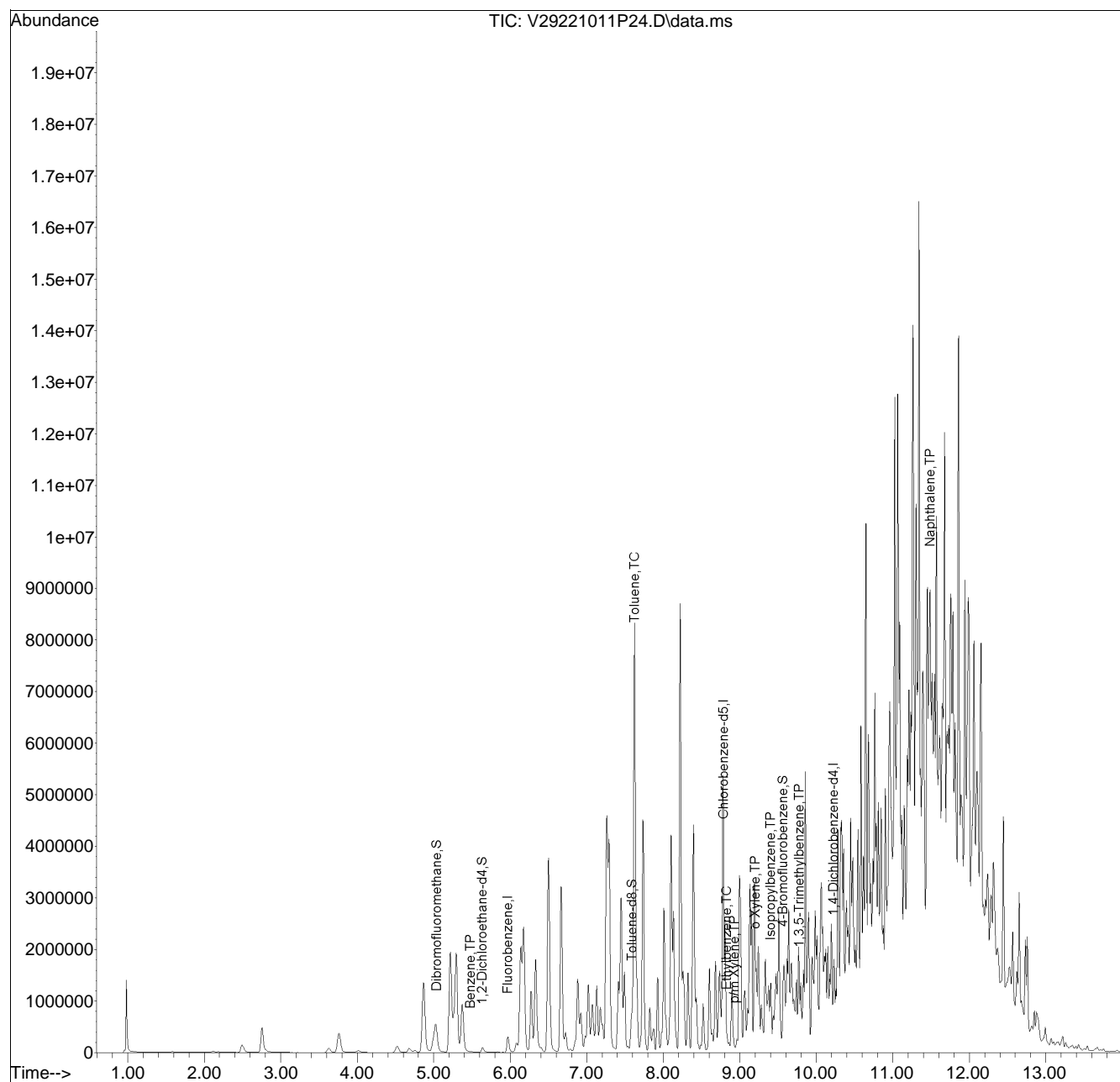
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221011P\  
 Data File : V29221011P24.D  
 Acq On : 12 Oct 2022 02:14 am  
 Operator : VOA129:JIC  
 Sample : L2255175-05,31,5.50,5,,B,R2F  
 Misc : WG1698391,ICAL19353  
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 12 07:51:51 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221011P\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list11P\V29221011P01.D•



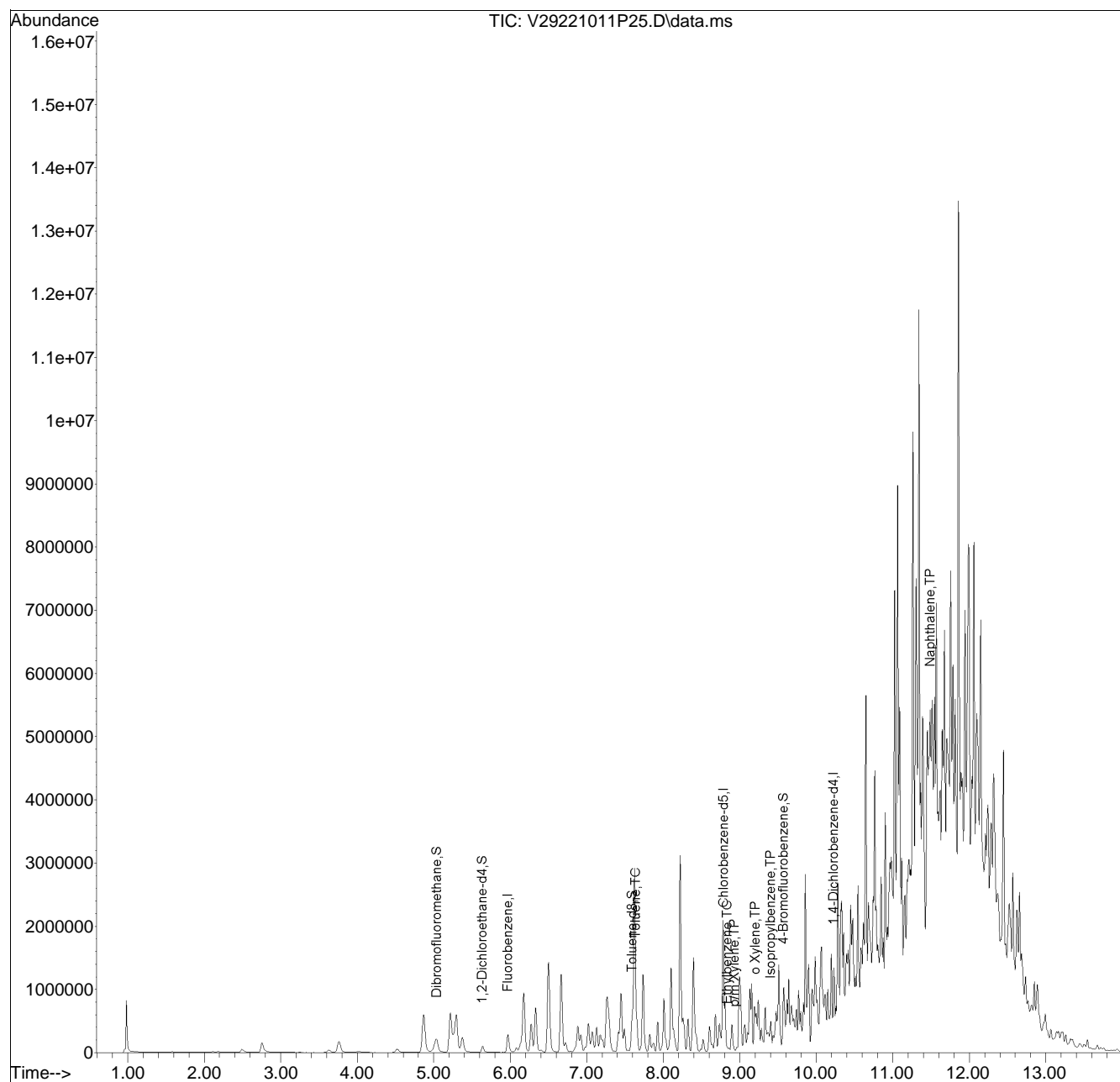


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221011P\  
Data File : V29221011P25.D  
Acq On : 12 Oct 2022 02:34 am  
Operator : VOA129:JIC  
Sample : L2255175-07,31,2.81,5,,B,R2F  
Misc : WG1698391,ICAL19353  
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Oct 12 07:54:48 2022  
Quant Method : I:\VOLATILES\VOA129\2022\221011P\V129\_220921N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Sep 22 07:23:42 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list11P\V29221011P01.D•

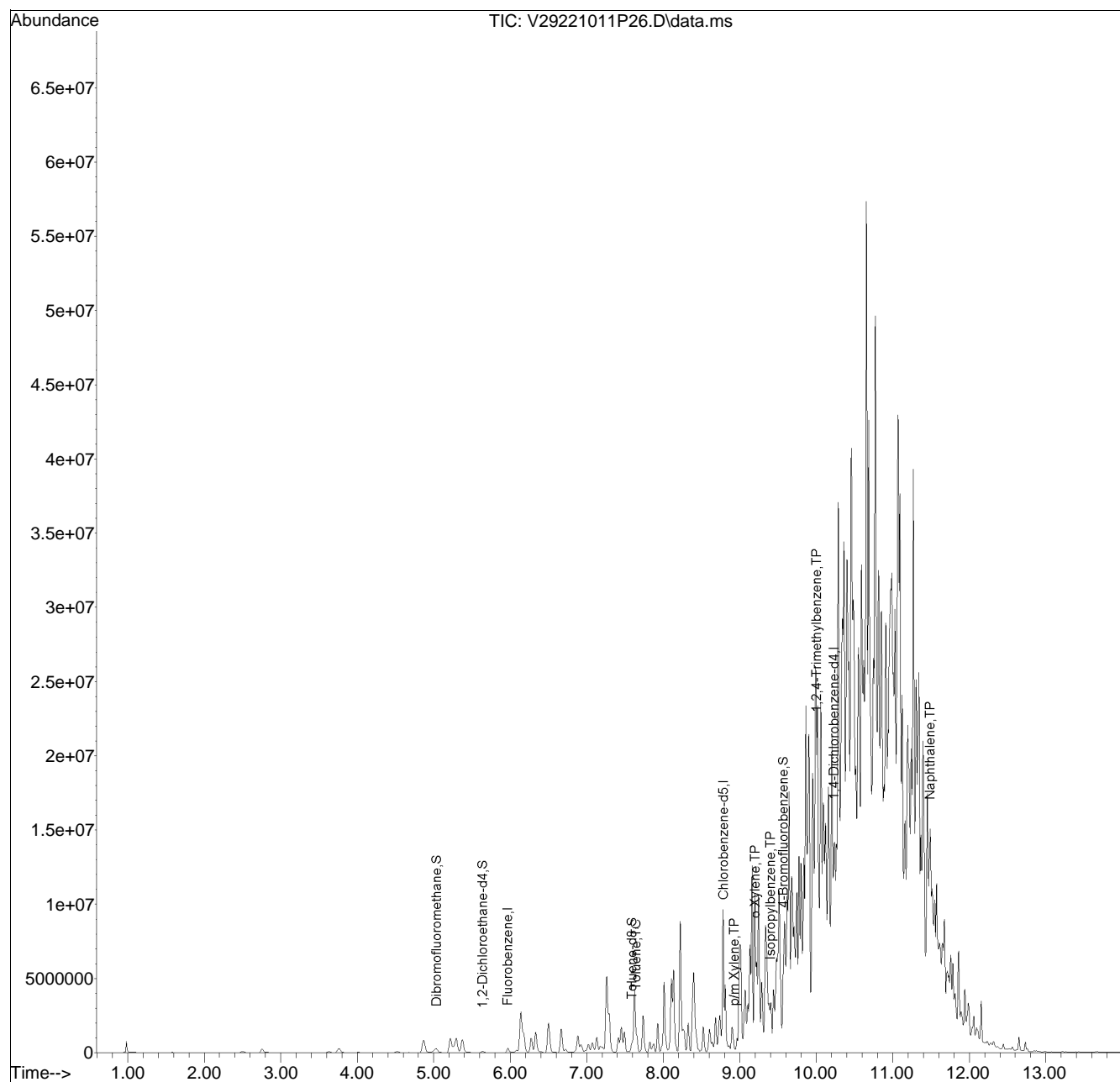


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221011P\  
 Data File : V29221011P26.D  
 Acq On : 12 Oct 2022 02:55 am  
 Operator : VOA129:JIC  
 Sample : L2255175-15,31,3.31,5,,B,R2F  
 Misc : WG1698391,ICAL19353  
 ALS Vial : 26 Sample Multiplier: 1

Quant Time: Oct 12 10:01:43 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221011P\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list11P\V29221011P01.D•

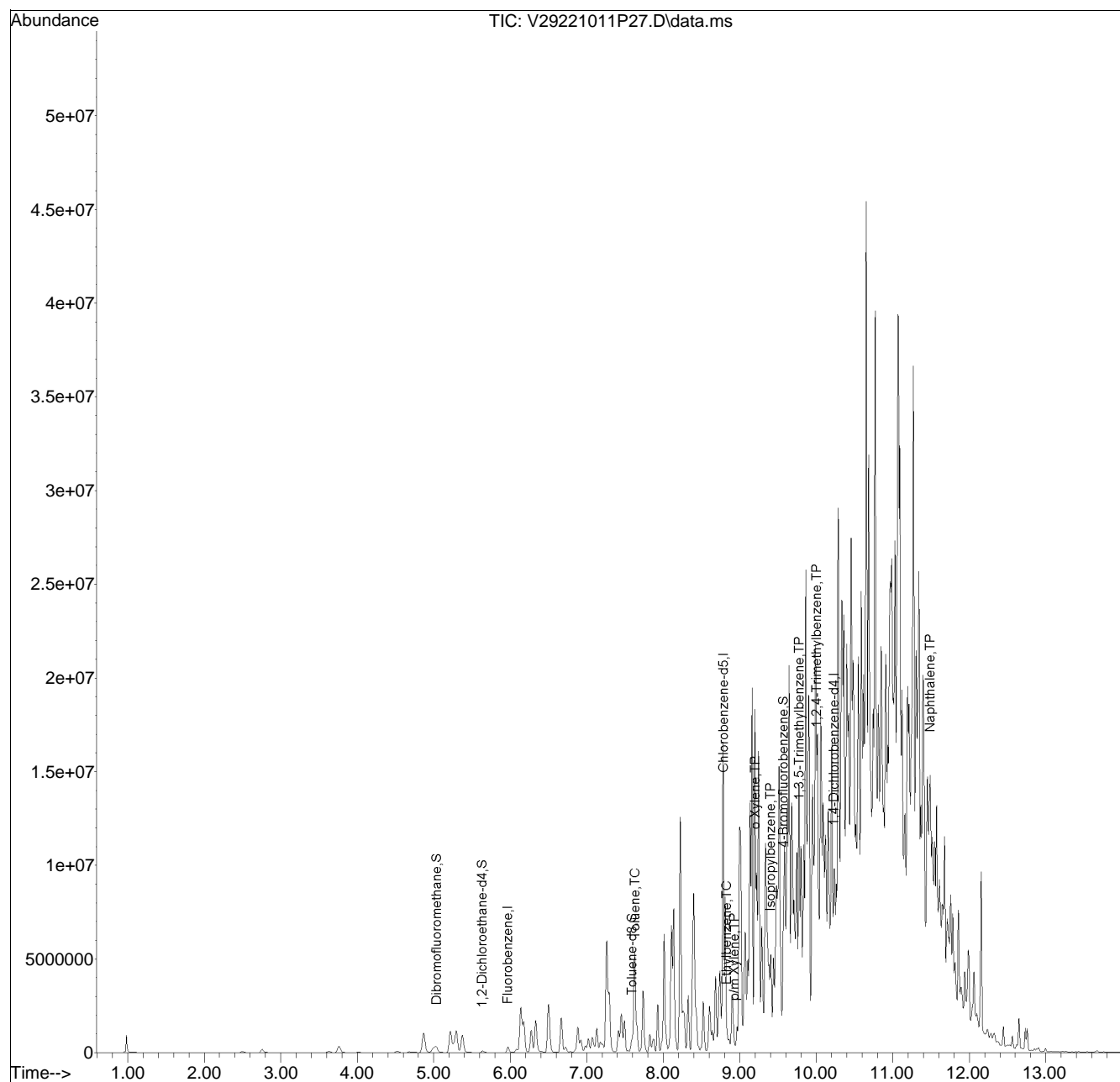


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221011P\  
 Data File : V29221011P27.D  
 Acq On : 12 Oct 2022 03:16 am  
 Operator : VOA129:JIC  
 Sample : L2255175-17,31,4.54,5,,B,R2F  
 Misc : WG1698391,ICAL19353  
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Oct 12 07:54:30 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221011P\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list11P\V29221011P01.D•

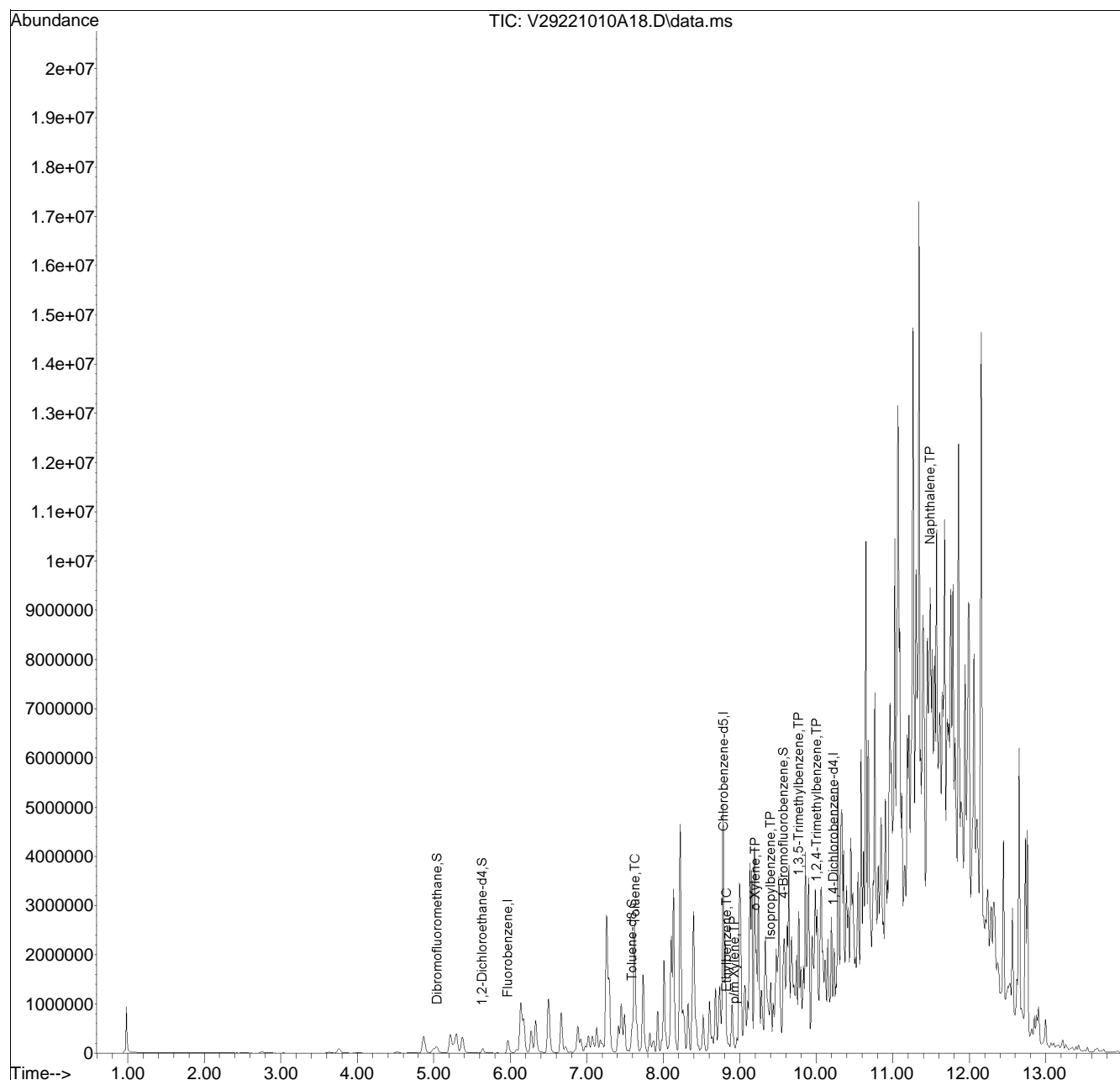


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221010A\  
 Data File : V29221010A18.D  
 Acq On : 10 Oct 2022 05:26 pm  
 Operator : VOA129:AJK  
 Sample : L2255175-19,31,6.10,5,,B,R2F  
 Misc : WG1698161,ICAL19353  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Oct 11 16:57:09 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221010A\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list10A\V29221010A01.D•





## ANALYTICAL REPORT

Lab Number:	L2255518
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/13/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2255518

Report Date: 10/13/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2255518-01	302-AM02-C1-VOC	SOIL	PHILADELPHIA, PA	10/06/22 11:00	10/06/22
L2255518-02	302-AM02-C1-COMP	SOIL	PHILADELPHIA, PA	10/06/22 11:00	10/06/22
L2255518-03	302-AM02-C2-VOC	SOIL	PHILADELPHIA, PA	10/06/22 11:15	10/06/22
L2255518-04	302-AM02-C2-COMP	SOIL	PHILADELPHIA, PA	10/06/22 11:15	10/06/22
L2255518-05	302-AM02-C3-VOC	SOIL	PHILADELPHIA, PA	10/06/22 11:30	10/06/22
L2255518-06	302-AM02-C3-COMP	SOIL	PHILADELPHIA, PA	10/06/22 11:30	10/06/22
L2255518-07	302-AM02-C4-VOC	SOIL	PHILADELPHIA, PA	10/06/22 11:45	10/06/22
L2255518-08	302-AM02-C4-COMP	SOIL	PHILADELPHIA, PA	10/06/22 11:45	10/06/22
L2255518-09	302-AM02-C5-VOC	SOIL	PHILADELPHIA, PA	10/06/22 12:00	10/06/22
L2255518-10	302-AM02-C5-COMP	SOIL	PHILADELPHIA, PA	10/06/22 12:00	10/06/22
L2255518-11	302-AN01-C1-VOC	SOIL	PHILADELPHIA, PA	10/06/22 12:30	10/06/22
L2255518-12	302-AN01-C1-COMP	SOIL	PHILADELPHIA, PA	10/06/22 12:30	10/06/22
L2255518-13	302-AN01-C2-VOC	SOIL	PHILADELPHIA, PA	10/06/22 12:45	10/06/22
L2255518-14	302-AN01-C2-COMP	SOIL	PHILADELPHIA, PA	10/06/22 12:45	10/06/22
L2255518-15	302-AN01-C3-VOC	SOIL	PHILADELPHIA, PA	10/06/22 13:00	10/06/22
L2255518-16	302-AN01-C3-COMP	SOIL	PHILADELPHIA, PA	10/06/22 13:00	10/06/22
L2255518-17	302-AN01-C4-VOC	SOIL	PHILADELPHIA, PA	10/06/22 13:15	10/06/22
L2255518-18	302-AN01-C4-COMP	SOIL	PHILADELPHIA, PA	10/06/22 13:15	10/06/22
L2255518-19	302-AN01-C5-VOC	SOIL	PHILADELPHIA, PA	10/06/22 13:30	10/06/22
L2255518-20	302-AN01-C5-COMP	SOIL	PHILADELPHIA, PA	10/06/22 13:30	10/06/22
L2255518-21	302-AO02-C1-VOC	SOIL	PHILADELPHIA, PA	10/06/22 14:00	10/06/22
L2255518-22	302-AO02-C1-COMP	SOIL	PHILADELPHIA, PA	10/06/22 14:00	10/06/22
L2255518-23	302-AO02-C2-VOC	SOIL	PHILADELPHIA, PA	10/06/22 14:15	10/06/22
L2255518-24	302-AO02-C2-COMP	SOIL	PHILADELPHIA, PA	10/06/22 14:15	10/06/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2255518-15: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Melissa Sturgis* Melissa Sturgis

Title: Technical Director/Representative

Date: 10/13/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-01  
 Client ID: 302-AM02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 09:13  
 Analyst: AJK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00081	0.00021	1
Toluene	ND		mg/kg	0.00081	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00024	1
Ethylbenzene	ND		mg/kg	0.00081	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00045	1
o-Xylene	ND		mg/kg	0.00081	0.00023	1
Xylenes, Total	ND		mg/kg	0.00081	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00081	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-03  
 Client ID: 302-AM02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 09:33  
 Analyst: AJK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00031	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	ND		mg/kg	0.00098	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	0.00027	J	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.00035	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-05  
 Client ID: 302-AM02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 09:53  
 Analyst: AJK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00046	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-07  
 Client ID: 302-AM02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 10:12  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.00069		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-09  
 Client ID: 302-AM02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 10:32  
 Analyst: AJK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00040	J	mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-11  
 Client ID: 302-AN01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 10:52  
 Analyst: AJK  
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	0.0012		mg/kg	0.00075	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00039	1
Toluene	ND		mg/kg	0.0015	0.00082	1
1,2-Dibromoethane	ND		mg/kg	0.00075	0.00044	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00084	1
o-Xylene	ND		mg/kg	0.0015	0.00044	1
Xylenes, Total	ND		mg/kg	0.0015	0.00044	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	103		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-13  
 Client ID: 302-AN01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 11:12  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.037		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.00056	J	mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-15  
 Client ID: 302-AN01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 11:31  
 Analyst: AJK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.57	E	mg/kg	0.00047	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	0.0012		mg/kg	0.00093	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00027	1
Ethylbenzene	0.00026	J	mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.00029	J	mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-15  
 Client ID: 302-AN01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 06:23  
 Analyst: JIC  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.089	0.0090	1
Benzene	1.0		mg/kg	0.022	0.0074	1
1,2-Dichloroethane	ND		mg/kg	0.044	0.011	1
Toluene	ND		mg/kg	0.044	0.024	1
1,2-Dibromoethane	ND		mg/kg	0.022	0.013	1
Ethylbenzene	ND		mg/kg	0.044	0.0063	1
p/m-Xylene	ND		mg/kg	0.089	0.025	1
o-Xylene	ND		mg/kg	0.044	0.013	1
Xylenes, Total	ND		mg/kg	0.044	0.013	1
Isopropylbenzene	ND		mg/kg	0.044	0.0048	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.089	0.0086	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.089	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-17  
 Client ID: 302-AN01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 11:51  
 Analyst: AJK  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	3.0		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	ND		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	ND		mg/kg	0.052	0.0073	1
p/m-Xylene	ND		mg/kg	0.10	0.029	1
o-Xylene	ND		mg/kg	0.052	0.015	1
Xylenes, Total	ND		mg/kg	0.052	0.015	1
Isopropylbenzene	ND		mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-19  
 Client ID: 302-AN01-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 12:11  
 Analyst: AJK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	7.8		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	0.61		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	0.036	J	mg/kg	0.055	0.0078	1
p/m-Xylene	0.031	J	mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.055	0.016	1
Xylenes, Total	0.031	J	mg/kg	0.055	0.016	1
Isopropylbenzene	0.034	J	mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-21  
 Client ID: 302-AO02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 14:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 12:31  
 Analyst: AJK  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.0025		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-23  
 Client ID: 302-AO02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 14:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/11/22 12:50  
 Analyst: AJK  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.050		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	0.00062	J	mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.00010	J	mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/11/22 08:43  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 17,19 Batch: WG1698233-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/11/22 08:43  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15,21,23 Batch: WG1698234-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/12/22 21:13  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 15 Batch: WG1698898-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	98		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 17,19 Batch: WG1698233-3 WG1698233-4								
Methyl tert butyl ether	78		78		66-130	0		30
Benzene	90		88		70-130	2		30
1,2-Dichloroethane	81		80		70-130	1		30
Toluene	81		79		70-130	3		30
1,2-Dibromoethane	82		82		70-130	0		30
Ethylbenzene	87		85		70-130	2		30
p/m-Xylene	87		84		70-130	4		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	88		86		70-130	2		30
1,3,5-Trimethylbenzene	89		87		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	93		95		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	96		97		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15,21,23 Batch: WG1698234-3 WG1698234-4								
Methyl tert butyl ether	78		78		66-130	0		30
Benzene	90		88		70-130	2		30
1,2-Dichloroethane	81		80		70-130	1		30
Toluene	81		79		70-130	3		30
1,2-Dibromoethane	82		82		70-130	0		30
Ethylbenzene	87		85		70-130	2		30
p/m-Xylene	87		84		70-130	4		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	88		86		70-130	2		30
1,3,5-Trimethylbenzene	89		87		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	93		95		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	96		97		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 15 Batch: WG1698898-3 WG1698898-4								
Methyl tert butyl ether	115		115		66-130	0		30
Benzene	110		110		70-130	0		30
1,2-Dichloroethane	105		105		70-130	0		30
Toluene	104		104		70-130	0		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	106		105		70-130	1		30
p/m-Xylene	102		102		70-130	0		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	108		106		70-130	2		30
1,3,5-Trimethylbenzene	106		105		70-130	1		30
1,2,4-Trimethylbenzene	105		104		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	108		108		70-130
Toluene-d8	104		104		70-130
4-Bromofluorobenzene	107		106		70-130
Dibromofluoromethane	98		99		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-02  
 Client ID: 302-AM02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/12/22 07:28  
 Analyst: MG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.029	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.097	J	mg/kg	0.11	0.023	1
Anthracene	0.039	J	mg/kg	0.11	0.037	1
Pyrene	0.12		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.092	J	mg/kg	0.11	0.021	1
Chrysene	0.095	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.11		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.090	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.068	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-04  
 Client ID: 302-AM02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 05:32  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.13	J	mg/kg	0.19	0.024	1
Fluorene	0.098	J	mg/kg	0.19	0.019	1
Phenanthrene	0.98		mg/kg	0.12	0.024	1
Anthracene	0.13		mg/kg	0.12	0.038	1
Pyrene	0.78		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.35		mg/kg	0.12	0.022	1
Chrysene	0.40		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.42		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.36		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.22		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	81		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-06  
 Client ID: 302-AM02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 05:49  
 Analyst: SLR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.087	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.092	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.057	J	mg/kg	0.11	0.021	1
Chrysene	0.053	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.065	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.060	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.049	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-08  
 Client ID: 302-AM02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 11:50  
 Analyst: MG  
 Percent Solids: 91%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.14	J	mg/kg	0.18	0.022	1
Fluorene	0.43		mg/kg	0.18	0.018	1
Phenanthrene	3.2		mg/kg	0.11	0.022	1
Anthracene	0.71		mg/kg	0.11	0.036	1
Pyrene	2.7		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.4		mg/kg	0.11	0.020	1
Chrysene	1.3		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.6		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.2		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.75		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-10  
 Client ID: 302-AM02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 06:05  
 Analyst: SLR  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.026	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.044	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.031	J	mg/kg	0.11	0.020	1
Chrysene	0.035	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.036	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.032	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	79		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-12  
 Client ID: 302-AN01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 06:22  
 Analyst: SLR  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.030	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.061	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.042	J	mg/kg	0.11	0.021	1
Chrysene	0.042	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.056	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.049	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.031	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	88		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-14  
 Client ID: 302-AN01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 09:54  
 Analyst: SLR  
 Percent Solids: 96%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.019	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.020	J	mg/kg	0.10	0.019	1
Chrysene	0.026	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-16  
 Client ID: 302-AN01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 10:10  
 Analyst: SLR  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.056	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.072	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.058	J	mg/kg	0.11	0.021	1
Chrysene	0.098	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.076	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.062	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.028	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-18  
 Client ID: 302-AN01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 01:59  
 Analyst: SLR  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.024	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-20  
 Client ID: 302-AN01-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 13:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 01:26  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	74		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-22  
 Client ID: 302-AO02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 14:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/12/22 08:49  
 Analyst: MG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.16	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.20		mg/kg	0.11	0.022	1
Anthracene	0.081	J	mg/kg	0.11	0.036	1
Pyrene	0.22		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.15		mg/kg	0.11	0.021	1
Chrysene	0.18		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.19		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.20		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.28		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	113		30-120
4-Terphenyl-d14	99		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-24  
 Client ID: 302-AO02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 14:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/11/22 04:27  
 Analyst: SLR  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.046	J	mg/kg	0.19	0.023	1
Fluorene	0.055	J	mg/kg	0.19	0.018	1
Phenanthrene	0.53		mg/kg	0.11	0.023	1
Anthracene	0.15		mg/kg	0.11	0.037	1
Pyrene	0.49		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.27		mg/kg	0.11	0.021	1
Chrysene	0.29		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.30		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.23		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/11/22 00:36  
Analyst: SLR

Extraction Method: EPA 3546  
Extraction Date: 10/10/22 00:09

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1697327-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.039
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	75		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1697327-2 WG1697327-3								
Naphthalene	75		71		40-140	5		50
Fluorene	75		72		40-140	4		50
Phenanthrene	74		74		40-140	0		50
Anthracene	80		77		40-140	4		50
Pyrene	76		75		35-142	1		50
Benzo(a)anthracene	79		76		40-140	4		50
Chrysene	75		74		40-140	1		50
Benzo(b)fluoranthene	73		72		40-140	1		50
Benzo(a)pyrene	83		82		40-140	1		50
Benzo(ghi)perylene	69		69		40-140	0		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		82		23-120
2-Fluorobiphenyl	79		72		30-120
4-Terphenyl-d14	75		72		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-02

Date Collected: 10/06/22 11:00

Client ID: 302-AM02-C1-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	65.2		mg/kg	2.25	0.120	1	10/08/22 07:20	10/11/22 18:29	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-04  
 Client ID: 302-AM02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	116		mg/kg	2.31	0.124	1	10/08/22 07:20	10/11/22 18:34	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-06

Date Collected: 10/06/22 11:30

Client ID: 302-AM02-C3-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	33.0		mg/kg	2.25	0.120	1	10/08/22 07:20	10/11/22 18:38	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-08  
 Client ID: 302-AM02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	64.0		mg/kg	2.14	0.115	1	10/08/22 07:20	10/11/22 18:54	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-10  
 Client ID: 302-AM02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	229		mg/kg	2.13	0.114	1	10/08/22 07:20	10/11/22 18:58	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-12

Date Collected: 10/06/22 12:30

Client ID: 302-AN01-C1-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.8		mg/kg	2.15	0.115	1	10/08/22 07:20	10/11/22 19:08	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-14

Date Collected: 10/06/22 12:45

Client ID: 302-AN01-C2-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	38.8		mg/kg	2.00	0.107	1	10/08/22 07:20	10/11/22 19:12	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-16

Date Collected: 10/06/22 13:00

Client ID: 302-AN01-C3-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	26.1		mg/kg	2.24	0.120	1	10/08/22 07:20	10/11/22 19:17	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-18

Date Collected: 10/06/22 13:15

Client ID: 302-AN01-C4-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	60.9		mg/kg	2.44	0.131	1	10/08/22 07:20	10/11/22 19:21	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-20

Date Collected: 10/06/22 13:30

Client ID: 302-AN01-C5-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	25.2		mg/kg	2.27	0.122	1	10/08/22 07:20	10/11/22 19:26	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-22

Date Collected: 10/06/22 14:00

Client ID: 302-AO02-C1-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	181		mg/kg	2.21	0.118	1	10/08/22 07:20	10/11/22 19:30	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-24  
 Client ID: 302-AO02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 14:15  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.9		mg/kg	2.22	0.119	1	10/08/22 08:40	10/12/22 13:29	EPA 3050B	1,6010D	EW



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1697021-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/08/22 07:20	10/11/22 16:59	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 24 Batch: WG1697025-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/08/22 08:40	10/11/22 10:57	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1697021-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 24 Batch: WG1697025-2 SRM Lot Number: D113-540								
Lead, Total	104		-		72-128	-		



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1697021-3 WG1697021-4 QC Sample: L2255478-14 Client ID: MS Sample												
Lead, Total	694	49	812	241	Q	641	0	Q	75-125	24	Q	20
Total Metals - Mansfield Lab Associated sample(s): 24 QC Batch ID: WG1697025-3 WG1697025-4 QC Sample: L2255551-03 Client ID: MS Sample												
Lead, Total	5.90	47.3	52.0	97		49.1	91		75-125	6		20

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1697021-6 QC Sample: L2255478-14 Client ID: DUP Sample						
Lead, Total	694	769	mg/kg	11		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-01

Date Collected: 10/06/22 11:00

Client ID: 302-AM02-C1-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-02

Date Collected: 10/06/22 11:00

Client ID: 302-AM02-C1-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-03

Date Collected: 10/06/22 11:15

Client ID: 302-AM02-C2-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.9		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

**Lab ID:** L2255518-04  
**Client ID:** 302-AM02-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/06/22 11:15  
**Date Received:** 10/06/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-05

Date Collected: 10/06/22 11:30

Client ID: 302-AM02-C3-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.7		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-06  
 Client ID: 302-AM02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:30  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-07  
 Client ID: 302-AM02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-08  
 Client ID: 302-AM02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 11:45  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.6		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-09  
 Client ID: 302-AM02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/06/22 12:00  
 Date Received: 10/06/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.0		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-10

Date Collected: 10/06/22 12:00

Client ID: 302-AM02-C5-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.1		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-11

Date Collected: 10/06/22 12:30

Client ID: 302-AN01-C1-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	97.7		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-12

Date Collected: 10/06/22 12:30

Client ID: 302-AN01-C1-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.1		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-13

Date Collected: 10/06/22 12:45

Client ID: 302-AN01-C2-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.4		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255518

Project Number: 200.00135.006

Report Date: 10/13/22

## SAMPLE RESULTS

Lab ID: L2255518-14

Date Collected: 10/06/22 12:45

Client ID: 302-AN01-C2-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.9		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-15

Date Collected: 10/06/22 13:00

Client ID: 302-AN01-C3-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	96.2		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-16

Date Collected: 10/06/22 13:00

Client ID: 302-AN01-C3-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-17

Date Collected: 10/06/22 13:15

Client ID: 302-AN01-C4-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.5		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255518

Project Number: 200.00135.006

Report Date: 10/13/22

## SAMPLE RESULTS

Lab ID: L2255518-18

Date Collected: 10/06/22 13:15

Client ID: 302-AN01-C4-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.5		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF





Project Name: PHILADELPHIA REFINERY

Lab Number: L2255518

Project Number: 200.00135.006

Report Date: 10/13/22

**SAMPLE RESULTS**

Lab ID: L2255518-19

Date Collected: 10/06/22 13:30

Client ID: 302-AN01-C5-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.2		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

**SAMPLE RESULTS**

**Lab ID:** L2255518-20  
**Client ID:** 302-AN01-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/06/22 13:30  
**Date Received:** 10/06/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.2		%	0.100	NA	1	-	10/07/22 19:22	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-21

Date Collected: 10/06/22 14:00

Client ID: 302-AO02-C1-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.9		%	0.100	NA	1	-	10/07/22 19:58	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-22

Date Collected: 10/06/22 14:00

Client ID: 302-AO02-C1-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	10/07/22 19:58	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-23

Date Collected: 10/06/22 14:15

Client ID: 302-AO02-C2-VOC

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.8		%	0.100	NA	1	-	10/07/22 19:58	121,2540G	MF



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**SAMPLE RESULTS**

Lab ID: L2255518-24

Date Collected: 10/06/22 14:15

Client ID: 302-AO02-C2-COMP

Date Received: 10/06/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	10/07/22 19:58	121,2540G	MF



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2255518

Report Date: 10/13/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1696962-1 QC Sample: L2255518-01 Client ID: 302-AM02-C1-VOC						
Solids, Total	87.6	86.6	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 21-24 QC Batch ID: WG1696964-1 QC Sample: L2255399-01 Client ID: DUP Sample						
Solids, Total	95.6	95.4	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255518-01A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2255518-01B	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-01C	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-01D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2255518-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2255518-02B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2255518-03A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2255518-03B	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-03C	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-03D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2255518-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2255518-04B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2255518-05A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2255518-05B	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-05C	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-05D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2255518-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2255518-06B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2255518-07A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2255518-07B	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-07C	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-07D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255518**Project Number:** 200.00135.006**Report Date:** 10/13/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255518-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2255518-08B	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2255518-09A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2255518-09B	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-09C	Vial water preserved	A	NA		4.0	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-09D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2255518-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-10B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-11A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2255518-11B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-11C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-11D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-12B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-13A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2255518-13B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-13C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-13D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-14B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-15A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2255518-15B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260H(14),PA-8260HLW(14)
L2255518-15C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260H(14),PA-8260HLW(14)
L2255518-15D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-16B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-17A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2255518-17B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10132210:53  
**Lab Number:** L2255518  
**Report Date:** 10/13/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255518-17C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-17D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-18B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-19A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2255518-19B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-19C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-19D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-20B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-21A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2255518-21B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-21C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-21D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-22B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)
L2255518-23A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2255518-23B	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-23C	Vial water preserved	B	NA		3.8	Y	Absent	07-OCT-22 17:39	PA-8260HLW(14)
L2255518-23D	Plastic 2oz unpreserved for TS	B	NA		3.8	Y	Absent		TS(7)
L2255518-24A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2255518-24B	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255518  
**Report Date:** 10/13/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255518

**Project Number:** 200.00135.006

**Report Date:** 10/13/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/02/22

ALPHA Job #: 2225518

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

## ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead													
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
55518-01	302-AM02-C1-VOC	10/6	1100	S	JS
-02	302-AM02-C1-Camp		1100		
-03	302-AM02-C2-VOC		1115		
-04	302-AM02-C2-Camp		1115		
-05	302-AM02-C3-VOC		1130		
-06	302-AM02-C3-Camp		1130		
-07	302-AM02-C4-VOC		1145		
-08	302-AM02-C4-Camp		1145		
-09	302-AM02-C5-VOC		1200		
-10	302-AM02-C5-Camp		1200		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]*  
 Date/Time: 10/17/22 0310  
 Date/Time: 10/17/22 0310

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/6 15:09	ST AAG	10/6/22 15:09
<i>[Signature]</i>	10/6/22 1200	<i>[Signature]</i>	10-6-22 1200
<i>[Signature]</i>	10-6-22 1200	<i>[Signature]</i>	10-6-22 1200

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 2 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/02/22

ALPHA Job #: L2255518

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											
55518-11	302-AN01-C1-VOC	10/6	1230	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	302-AN01-C1-Comp		1230			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	302-AN01-C2-VOC		1245			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	302-AN01-C2-Comp		1245			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	302-AN01-C3-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	302-AN01-C3-Comp		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	302-AN01-C4-VOC		1315			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	302-AN01-C4-Comp		1315			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	302-AN01-C5-VOC		1330			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	302-AN01-C5-Comp		1330			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

**TOTAL # BOTTLES**

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
55518-11	302-AN01-C1-VOC	10/6	1230	S	TS
12	302-AN01-C1-Comp		1230		
13	302-AN01-C2-VOC		1245		
14	302-AN01-C2-Comp		1245		
15	302-AN01-C3-VOC		1300		
16	302-AN01-C3-Comp		1300		
17	302-AN01-C4-VOC		1315		
18	302-AN01-C4-Comp		1315		
19	302-AN01-C5-VOC		1330		
20	302-AN01-C5-Comp		1330		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

2022  
10/7/22  
0310  
10/7/22 0310

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/6 15:00	ST- AAG	10/6/22 15:09
<i>[Signature]</i>	10/6/22	<i>[Signature]</i>	10/6/22 10:00
<i>[Signature]</i>	10/6 21:00	<i>[Signature]</i>	10/6/22 21:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/02/22

ALPHA Job #: L2255518

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

### SAMPLE HANDLING

- Filtration
- Done
- Not Needed
- Lab to do
- Preservation
- Lab to do
- (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead															
		Date	Time																				
55518-21	302-A002-C1-voc	10/6	1400	S	JS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
22	302-A002-C1-comp	↓	1400	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	
23	302-A002-C2-voc	↓	1415	↓	↓	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
24	302-A002-C2-comp	↓	1415	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	
																							4
																							2
																							4
																							2
																							4
																							2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ELADL  
11/7/22  
0610

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/6 15:09	<i>[Signature]</i>	10/6/22 15:09
<i>[Signature]</i>	10/6/22 18:21	<i>[Signature]</i>	10-6-22 18:21
<i>[Signature]</i>	10-6 2:00	<i>[Signature]</i>	10-6-22 2:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2255846
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/14/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2255846-01	302-AQ01-C1-VOC	SOIL	PHILADELPHIA, PA	10/07/22 10:00	10/07/22
L2255846-02	302-AQ01-C1-COMP	SOIL	PHILADELPHIA, PA	10/07/22 10:00	10/07/22
L2255846-03	302-AQ01-C2-VOC	SOIL	PHILADELPHIA, PA	10/07/22 10:10	10/07/22
L2255846-04	302-AQ01-C2-COMP	SOIL	PHILADELPHIA, PA	10/07/22 10:10	10/07/22
L2255846-05	302-AQ01-C3-VOC	SOIL	PHILADELPHIA, PA	10/07/22 10:20	10/07/22
L2255846-06	302-AQ01-C3-COMP	SOIL	PHILADELPHIA, PA	10/07/22 10:20	10/07/22
L2255846-07	302-AR01-C1-VOC	SOIL	PHILADELPHIA, PA	10/07/22 12:00	10/07/22
L2255846-08	302-AR01-C1-COMP	SOIL	PHILADELPHIA, PA	10/07/22 12:00	10/07/22
L2255846-09	302-AR01-C2-VOC	SOIL	PHILADELPHIA, PA	10/07/22 12:10	10/07/22
L2255846-10	302-AR01-C2-COMP	SOIL	PHILADELPHIA, PA	10/07/22 12:10	10/07/22
L2255846-11	302-AR01-C3-VOC	SOIL	PHILADELPHIA, PA	10/07/22 12:20	10/07/22
L2255846-12	302-AR01-C3-COMP	SOIL	PHILADELPHIA, PA	10/07/22 12:20	10/07/22
L2255846-13	302-AS01-C1-VOC	SOIL	PHILADELPHIA, PA	10/07/22 13:00	10/07/22
L2255846-14	302-AS01-C1-COMP	SOIL	PHILADELPHIA, PA	10/07/22 13:00	10/07/22
L2255846-15	302-AS01-C2-VOC	SOIL	PHILADELPHIA, PA	10/07/22 13:10	10/07/22
L2255846-16	302-AS01-C2-COMP	SOIL	PHILADELPHIA, PA	10/07/22 13:10	10/07/22
L2255846-17	302-AS01-C3-VOC	SOIL	PHILADELPHIA, PA	10/07/22 13:20	10/07/22
L2255846-18	302-AS01-C3-COMP	SOIL	PHILADELPHIA, PA	10/07/22 13:20	10/07/22
L2255846-19	302-AS01-C4-VOC	SOIL	PHILADELPHIA, PA	10/07/22 13:30	10/07/22
L2255846-20	302-AS01-C4-COMP	SOIL	PHILADELPHIA, PA	10/07/22 13:30	10/07/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Semivolatile Organics

L2255846-14: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

#### Total Metals

L2255846-06 and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 10/14/22

# ORGANICS

# VOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-01  
 Client ID: 302-AQ01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 09:55  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-03  
 Client ID: 302-AQ01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 10:21  
 Analyst: AJK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00037	J	mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00075	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00039	1
Toluene	ND		mg/kg	0.0015	0.00082	1
1,2-Dibromoethane	ND		mg/kg	0.00075	0.00044	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00084	1
o-Xylene	ND		mg/kg	0.0015	0.00044	1
Xylenes, Total	ND		mg/kg	0.0015	0.00044	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-05  
 Client ID: 302-AQ01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:20  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 01:20  
 Analyst: JIC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.0011		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00025	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00045	J	mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	0.00053	J	mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	110		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-07  
 Client ID: 302-AR01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 12:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 01:43  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	113		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-09  
 Client ID: 302-AR01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 12:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 02:05  
 Analyst: JIC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	112		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-11  
 Client ID: 302-AR01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 12:20  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 12:06  
 Analyst: AJK  
 Percent Solids: 49%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0042	0.00042	1
Benzene	0.0018		mg/kg	0.0010	0.00035	1
1,2-Dichloroethane	ND		mg/kg	0.0021	0.00054	1
Toluene	ND		mg/kg	0.0021	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.0010	0.00062	1
Ethylbenzene	ND		mg/kg	0.0021	0.00030	1
p/m-Xylene	ND		mg/kg	0.0042	0.0012	1
o-Xylene	ND		mg/kg	0.0021	0.00061	1
Xylenes, Total	ND		mg/kg	0.0021	0.00061	1
Isopropylbenzene	ND		mg/kg	0.0021	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0042	0.00041	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0042	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	84		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-13  
 Client ID: 302-AS01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 00:35  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-15  
 Client ID: 302-AS01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 12:58  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	102		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-17  
 Client ID: 302-AS01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:20  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/12/22 13:25  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-19  
 Client ID: 302-AS01-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:30  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 00:57  
 Analyst: JIC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00086	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/12/22 09:07  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,11,15,17 Batch: WG1699182-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	0.00056	J	mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/13/22 20:03  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,07,09,13,19 Batch: WG1699452-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	114		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,11,15,17 Batch: WG1699182-3 WG1699182-4								
Methyl tert butyl ether	118		117		66-130	1		30
Benzene	118		114		70-130	3		30
1,2-Dichloroethane	103		101		70-130	2		30
Toluene	119		115		70-130	3		30
1,2-Dibromoethane	103		101		70-130	2		30
Ethylbenzene	117		112		70-130	4		30
p/m-Xylene	122		118		70-130	3		30
o-Xylene	116		113		70-130	3		30
Isopropylbenzene	130		126		70-130	3		30
1,3,5-Trimethylbenzene	120		116		70-130	3		30
1,2,4-Trimethylbenzene	117		114		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	85		86		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	83		83		70-130



## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,07,09,13,19 Batch: WG1699452-3 WG1699452-4								
Methyl tert butyl ether	114		114		66-130	0		30
Benzene	104		103		70-130	1		30
1,2-Dichloroethane	100		102		70-130	2		30
Toluene	101		99		70-130	2		30
1,2-Dibromoethane	98		98		70-130	0		30
Ethylbenzene	98		99		70-130	1		30
p/m-Xylene	104		106		70-130	2		30
o-Xylene	105		107		70-130	2		30
Isopropylbenzene	99		98		70-130	1		30
1,3,5-Trimethylbenzene	102		101		70-130	1		30
1,2,4-Trimethylbenzene	100		99		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	94		99		70-130
Toluene-d8	98		98		70-130
4-Bromofluorobenzene	99		98		70-130
Dibromofluoromethane	96		104		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-02  
 Client ID: 302-AQ01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/13/22 21:11  
 Analyst: CMM  
 Percent Solids: 95%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.024	J	mg/kg	0.17	0.021	1
Fluorene	0.083	J	mg/kg	0.17	0.017	1
Phenanthrene	1.6		mg/kg	0.10	0.021	1
Anthracene	0.34		mg/kg	0.10	0.034	1
Pyrene	2.6		mg/kg	0.10	0.017	1
Benzo(a)anthracene	1.5		mg/kg	0.10	0.019	1
Chrysene	1.5		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	1.6		mg/kg	0.10	0.029	1
Benzo(a)pyrene	1.4		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	0.70		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	50		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-04  
 Client ID: 302-AQ01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/13/22 21:35  
 Analyst: CMM  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	56		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-06  
 Client ID: 302-AQ01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:20  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/13/22 21:58  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.024	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.12		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.17		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.11	J	mg/kg	0.12	0.022	1
Chrysene	0.12		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.16		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.13	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.089	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-08  
 Client ID: 302-AR01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 12:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/13/22 22:22  
 Analyst: CMM  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.028	J	mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.034	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.14		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.12		mg/kg	0.12	0.022	1
Chrysene	0.14		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.22		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.13	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.089	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	35		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-10  
 Client ID: 302-AR01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 12:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/13/22 22:45  
 Analyst: CMM  
 Percent Solids: 47%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.12	J	mg/kg	0.35	0.042	1
Fluorene	0.075	J	mg/kg	0.35	0.034	1
Phenanthrene	0.54		mg/kg	0.21	0.042	1
Anthracene	0.13	J	mg/kg	0.21	0.068	1
Pyrene	0.91		mg/kg	0.21	0.035	1
Benzo(a)anthracene	0.40		mg/kg	0.21	0.039	1
Chrysene	0.68		mg/kg	0.21	0.036	1
Benzo(b)fluoranthene	0.88		mg/kg	0.21	0.059	1
Benzo(a)pyrene	0.58		mg/kg	0.28	0.085	1
Benzo(ghi)perylene	0.42		mg/kg	0.28	0.041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	56		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-12  
 Client ID: 302-AR01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 12:20  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/13/22 23:09  
 Analyst: CMM  
 Percent Solids: 71%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.24	0.029	1
Fluorene	ND		mg/kg	0.24	0.023	1
Phenanthrene	ND		mg/kg	0.14	0.029	1
Anthracene	ND		mg/kg	0.14	0.046	1
Pyrene	ND		mg/kg	0.14	0.023	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.026	1
Chrysene	ND		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.040	1
Benzo(a)pyrene	ND		mg/kg	0.19	0.058	1
Benzo(ghi)perylene	ND		mg/kg	0.19	0.028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	32		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-14  
 Client ID: 302-AS01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/14/22 09:10  
 Analyst: SZ  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.59	0.072	1
Fluorene	ND		mg/kg	0.59	0.057	1
Phenanthrene	ND		mg/kg	0.35	0.072	1
Anthracene	ND		mg/kg	0.35	0.11	1
Pyrene	ND		mg/kg	0.35	0.058	1
Benzo(a)anthracene	ND		mg/kg	0.35	0.066	1
Chrysene	ND		mg/kg	0.35	0.061	1
Benzo(b)fluoranthene	ND		mg/kg	0.35	0.099	1
Benzo(a)pyrene	ND		mg/kg	0.47	0.14	1
Benzo(ghi)perylene	ND		mg/kg	0.47	0.069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-16  
 Client ID: 302-AS01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/14/22 04:59  
 Analyst: LJJ  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.028	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.028	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.022	J	mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-18  
 Client ID: 302-AS01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:20  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/14/22 05:23  
 Analyst: LJJ  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	67		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-20  
 Client ID: 302-AS01-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:30  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/14/22 02:34  
 Analyst: LJJ  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/13/22 01:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/13/22 13:47  
Analyst: MG

Extraction Method: EPA 3546  
Extraction Date: 10/13/22 01:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1698745-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	82		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1698745-2 WG1698745-3								
Naphthalene	71		74		40-140	4		50
Fluorene	74		79		40-140	7		50
Phenanthrene	73		79		40-140	8		50
Anthracene	74		80		40-140	8		50
Pyrene	74		80		35-142	8		50
Benzo(a)anthracene	74		79		40-140	7		50
Chrysene	75		78		40-140	4		50
Benzo(b)fluoranthene	75		80		40-140	6		50
Benzo(a)pyrene	82		87		40-140	6		50
Benzo(ghi)perylene	74		78		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	70		72		23-120
2-Fluorobiphenyl	71		74		30-120
4-Terphenyl-d14	68		73		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-02

Date Collected: 10/07/22 10:00

Client ID: 302-AQ01-C1-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	56.1		mg/kg	1.98	0.106	1	10/11/22 10:45	10/12/22 21:30	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-04

Date Collected: 10/07/22 10:10

Client ID: 302-AQ01-C2-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.89		mg/kg	2.08	0.112	1	10/11/22 10:45	10/12/22 21:35	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-06

Date Collected: 10/07/22 10:20

Client ID: 302-AQ01-C3-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	136		mg/kg	22.6	1.21	10	10/11/22 10:45	10/12/22 22:20	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-08

Date Collected: 10/07/22 12:00

Client ID: 302-AR01-C1-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	4.78		mg/kg	2.29	0.123	1	10/11/22 10:45	10/12/22 21:45	EPA 3050B	1,6010D	MC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-10

Date Collected: 10/07/22 12:10

Client ID: 302-AR01-C2-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 47%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2270		mg/kg	4.18	0.224	1	10/11/22 10:45	10/12/22 21:50	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-12

Date Collected: 10/07/22 12:20

Client ID: 302-AR01-C3-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.0		mg/kg	2.69	0.144	1	10/11/22 10:45	10/12/22 21:55	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-14

Date Collected: 10/07/22 13:00

Client ID: 302-AS01-C1-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.22		mg/kg	2.39	0.128	1	10/11/22 10:45	10/12/22 22:00	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-16

Date Collected: 10/07/22 13:10

Client ID: 302-AS01-C2-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.80		mg/kg	2.27	0.122	1	10/11/22 10:45	10/12/22 22:05	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-18

Date Collected: 10/07/22 13:20

Client ID: 302-AS01-C3-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.83		mg/kg	4.34	0.233	2	10/11/22 10:45	10/13/22 02:04	EPA 3050B	1,6010D	MC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-20

Date Collected: 10/07/22 13:30

Client ID: 302-AS01-C4-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.98		mg/kg	2.26	0.121	1	10/11/22 10:45	10/12/22 22:56	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1697776-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/11/22 10:45	10/12/22 15:41	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1697776-2 SRM Lot Number: D113-540								
Lead, Total	92		-		72-128			-





**Matrix Spike Analysis**  
**Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>MSD Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>MSD Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>RPD Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20    QC Batch ID: WG1697776-3    QC Sample: L2255415-01    Client ID: MS Sample												
Lead, Total	2.61J	56.6	49.8	88	-	-	-	-	75-125	-	-	20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2255846

Report Date: 10/14/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1697776-4 QC Sample: L2255415-01 Client ID: DUP Sample						
Lead, Total	2.61J	3.88J	mg/kg	NC		20

# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-01

Date Collected: 10/07/22 10:00

Client ID: 302-AQ01-C1-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.6		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-02

Date Collected: 10/07/22 10:00

Client ID: 302-AQ01-C1-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-03  
 Client ID: 302-AQ01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 10:10  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.3		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-04

Date Collected: 10/07/22 10:10

Client ID: 302-AQ01-C2-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.4		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-05

Date Collected: 10/07/22 10:20

Client ID: 302-AQ01-C3-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-06

Date Collected: 10/07/22 10:20

Client ID: 302-AQ01-C3-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-07

Date Collected: 10/07/22 12:00

Client ID: 302-AR01-C1-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

**Lab ID:** L2255846-08  
**Client ID:** 302-AR01-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/07/22 12:00  
**Date Received:** 10/07/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-09

Date Collected: 10/07/22 12:10

Client ID: 302-AR01-C2-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-10

Date Collected: 10/07/22 12:10

Client ID: 302-AR01-C2-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	46.7		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-11

Date Collected: 10/07/22 12:20

Client ID: 302-AR01-C3-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	49.0		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-12

Date Collected: 10/07/22 12:20

Client ID: 302-AR01-C3-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	70.7		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-13

Date Collected: 10/07/22 13:00

Client ID: 302-AS01-C1-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-14  
 Client ID: 302-AS01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/22 13:00  
 Date Received: 10/07/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.9		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-15

Date Collected: 10/07/22 13:10

Client ID: 302-AS01-C2-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-16

Date Collected: 10/07/22 13:10

Client ID: 302-AS01-C2-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

**SAMPLE RESULTS**

Lab ID: L2255846-17

Date Collected: 10/07/22 13:20

Client ID: 302-AS01-C3-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**SAMPLE RESULTS**

Lab ID: L2255846-18

Date Collected: 10/07/22 13:20

Client ID: 302-AS01-C3-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-19

Date Collected: 10/07/22 13:30

Client ID: 302-AS01-C4-VOC

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2255846

Project Number: 200.00135.006

Report Date: 10/14/22

## SAMPLE RESULTS

Lab ID: L2255846-20

Date Collected: 10/07/22 13:30

Client ID: 302-AS01-C4-COMP

Date Received: 10/07/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	10/08/22 14:00	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2255846

**Report Date:** 10/14/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1697112-1 QC Sample: L2255846-01 Client ID: 302-AQ01-C1-VOC						
Solids, Total	94.6	95.0	%	0		20



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255846-01A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-01B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-01C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-01D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-02B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-03A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-03B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-03C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-03D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-04B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-05A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-05B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-05C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-05D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-06B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-07A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-07B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-07C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-07D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2255846**Project Number:** 200.00135.006**Report Date:** 10/14/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255846-08B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-09A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-09B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-09C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-09D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-10B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-11A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-11B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-11C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-11D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-12B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-13A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-13B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-13C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-13D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-14B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-15A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-15B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-15C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-15D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-16B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-17A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-17B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-17C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10142211:30  
**Lab Number:** L2255846  
**Report Date:** 10/14/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2255846-17D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-18B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)
L2255846-19A	Vial MeOH preserved	A	NA		3.1	Y	Absent		PA-8260HLW(14)
L2255846-19B	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-19C	Vial water preserved	A	NA		3.1	Y	Absent	08-OCT-22 08:44	PA-8260HLW(14)
L2255846-19D	Plastic 120ml unpreserved	A	NA		3.1	Y	Absent		TS(7)
L2255846-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.1	Y	Absent		PB-TI(180)
L2255846-20B	Glass 120ml/4oz unpreserved	A	NA		3.1	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2255846  
**Report Date:** 10/14/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2255846

**Project Number:** 200.00135.006

**Report Date:** 10/14/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.







# CHAIN OF CUSTODY

PAGE 2 OF 2

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9183    FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to add@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~17161~~ ~~17163~~ 18559

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Date Rec'd in Lab: 10/8/22

ALPHA Job #: L2255846

## Report Information Data Deliverables

FAX     EMAIL  
 ADEX     Add'l Deliverables

## Billing Information

Same as Client info    PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead												
		Date	Time																	
55846-11	302-AR01-C3-VOC	10/7	1220	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-12	302-AR01-C3-COMP		1220			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-13	302-AS01-C1-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-14	302-AS01-C1-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-15	302-AS01-C2-VOC		1310			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-16	302-AS01-C2-COMP		1310			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-17	302-AS01-C3-VOC		1320			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-18	302-AS01-C3-COMP		1320			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-19	302-AS01-C4-VOC		1330			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-20	302-AS01-C4-COMP		1330			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

4  
2  
4  
2  
4  
2  
4  
2  
4  
2

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/7/22 14:00	<i>[Signature]</i>	10/7/22 14:00
<i>[Signature]</i>	10/7/22 16:00	<i>[Signature]</i>	10/7/22 16:00
<i>[Signature]</i>	10-7-22 21:00	<i>[Signature]</i>	10-7-22 21:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

Lab Number:	L2256226
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/17/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256226

Report Date: 10/17/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2256226-01	302-AY02-C1-VOC	SOIL	PHILADELPHIA, PA	10/10/22 09:30	10/10/22
L2256226-02	302-AY02-C1-COMP	SOIL	PHILADELPHIA, PA	10/10/22 09:30	10/10/22
L2256226-03	302-AY02-C2-VOC	SOIL	PHILADELPHIA, PA	10/10/22 09:45	10/10/22
L2256226-04	302-AY02-C2-COMP	SOIL	PHILADELPHIA, PA	10/10/22 09:45	10/10/22
L2256226-05	302-AY02-C3-VOC	SOIL	PHILADELPHIA, PA	10/10/22 10:00	10/10/22
L2256226-06	302-AY02-C3-COMP	SOIL	PHILADELPHIA, PA	10/10/22 10:00	10/10/22
L2256226-07	302-AZ02-C1-VOC	SOIL	PHILADELPHIA, PA	10/10/22 11:30	10/10/22
L2256226-08	302-AZ02-C1-COMP	SOIL	PHILADELPHIA, PA	10/10/22 11:30	10/10/22
L2256226-09	302-AZ02-C2-VOC	SOIL	PHILADELPHIA, PA	10/10/22 11:45	10/10/22
L2256226-10	302-AZ02-C2-COMP	SOIL	PHILADELPHIA, PA	10/10/22 11:45	10/10/22
L2256226-11	302-AZ02-C3-VOC	SOIL	PHILADELPHIA, PA	10/10/22 12:00	10/10/22
L2256226-12	302-AZ02-C3-COMP	SOIL	PHILADELPHIA, PA	10/10/22 12:00	10/10/22
L2256226-13	302-BA03-C1-VOC	SOIL	PHILADELPHIA, PA	10/10/22 13:00	10/10/22
L2256226-14	302-BA03-C1-COMP	SOIL	PHILADELPHIA, PA	10/10/22 13:00	10/10/22
L2256226-15	302-BA03-C2-VOC	SOIL	PHILADELPHIA, PA	10/10/22 13:15	10/10/22
L2256226-16	302-BA03-C2-COMP	SOIL	PHILADELPHIA, PA	10/10/22 13:15	10/10/22
L2256226-17	302-BA03-C3-VOC	SOIL	PHILADELPHIA, PA	10/10/22 13:30	10/10/22
L2256226-18	302-BA03-C3-COMP	SOIL	PHILADELPHIA, PA	10/10/22 13:30	10/10/22
L2256226-19	302-BB04-C1-VOC	SOIL	PHILADELPHIA, PA	10/10/22 14:00	10/10/22
L2256226-20	302-BB04-C1-COMP	SOIL	PHILADELPHIA, PA	10/10/22 14:00	10/10/22
L2256226-21	302-BB04-C2-VOC	SOIL	PHILADELPHIA, PA	10/10/22 14:30	10/10/22
L2256226-22	302-BB04-C2-COMP	SOIL	PHILADELPHIA, PA	10/10/22 14:30	10/10/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L2256226-21 and -22: The collection date and time on the chain of custody was 10-OCT-22 14:30; however, the collection date/time on the container label was 10-OCT-22 14:15. At the client's request, the collection date/time is reported as 10-OCT-22 14:30.

#### Volatile Organics

L2256226-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (140%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2256226-02D and -04D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 10/17/22

# ORGANICS

# VOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-01  
 Client ID: 302-AY02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 09:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 14:04  
 Analyst: JIC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00034	1
Benzene	0.016		mg/kg	0.00086	0.00028	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	0.013		mg/kg	0.0017	0.00093	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00050	1
Ethylbenzene	0.027		mg/kg	0.0017	0.00024	1
p/m-Xylene	0.044		mg/kg	0.0034	0.00096	1
o-Xylene	0.015		mg/kg	0.0017	0.00050	1
Xylenes, Total	0.059		mg/kg	0.0017	0.00050	1
Isopropylbenzene	0.050		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	0.067		mg/kg	0.0034	0.00033	1
1,2,4-Trimethylbenzene	0.11		mg/kg	0.0034	0.00057	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	140	Q	70-130
Dibromofluoromethane	116		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-03  
 Client ID: 302-AY02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 09:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 14:27  
 Analyst: JIC  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.078		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	0.014		mg/kg	0.00098	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.011		mg/kg	0.00098	0.00014	1
p/m-Xylene	0.016		mg/kg	0.0020	0.00055	1
o-Xylene	0.0043		mg/kg	0.00098	0.00029	1
Xylenes, Total	0.020		mg/kg	0.00098	0.00029	1
Isopropylbenzene	0.0091		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	0.011		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.020		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-05 D2  
 Client ID: 302-AY02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 10:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 13:24  
 Analyst: AJK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.70	0.071	4
Benzene	0.79		mg/kg	0.18	0.058	4
1,2-Dichloroethane	ND		mg/kg	0.35	0.090	4
Toluene	0.26	J	mg/kg	0.35	0.19	4
1,2-Dibromoethane	ND		mg/kg	0.18	0.10	4
Ethylbenzene	0.81		mg/kg	0.35	0.050	4
p/m-Xylene	0.30	J	mg/kg	0.70	0.20	4
o-Xylene	0.48		mg/kg	0.35	0.10	4
Xylenes, Total	0.78	J	mg/kg	0.35	0.10	4
Isopropylbenzene	160	E	mg/kg	0.35	0.038	4
1,3,5-Trimethylbenzene	0.31	J	mg/kg	0.70	0.068	4
1,2,4-Trimethylbenzene	0.66	J	mg/kg	0.70	0.12	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	73		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-05 D  
 Client ID: 302-AY02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 10:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 14:50  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	140		mg/kg	0.88	0.096	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-07  
 Client ID: 302-AZ02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 15:13  
 Analyst: JIC  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00034	1
Benzene	ND		mg/kg	0.00085	0.00028	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00093	1
1,2-Dibromoethane	ND		mg/kg	0.00085	0.00050	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0034	0.00096	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00018	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0034	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0034	0.00057	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	111		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-09  
 Client ID: 302-AZ02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 15:35  
 Analyst: JIC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.0012		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	0.0048		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	0.00092	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	0.0045		mg/kg	0.0024	0.00066	1
o-Xylene	0.0016		mg/kg	0.0012	0.00034	1
Xylenes, Total	0.0061		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00075	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.0020	J	mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	112		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-11  
 Client ID: 302-AZ02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 12:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 15:58  
 Analyst: JIC  
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	108		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-13  
 Client ID: 302-BA03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 16:21  
 Analyst: JIC  
 Percent Solids: 63%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0065	0.00065	1
Benzene	ND		mg/kg	0.0016	0.00054	1
1,2-Dichloroethane	ND		mg/kg	0.0032	0.00083	1
Toluene	ND		mg/kg	0.0032	0.0018	1
1,2-Dibromoethane	ND		mg/kg	0.0016	0.00095	1
Ethylbenzene	ND		mg/kg	0.0032	0.00046	1
p/m-Xylene	ND		mg/kg	0.0065	0.0018	1
o-Xylene	ND		mg/kg	0.0032	0.00094	1
Xylenes, Total	ND		mg/kg	0.0032	0.00094	1
Isopropylbenzene	ND		mg/kg	0.0032	0.00035	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0065	0.00062	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0065	0.0011	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	119		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-15  
 Client ID: 302-BA03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:15  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/14/22 12:58  
 Analyst: AJK  
 Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0040	0.00040	1
Benzene	ND		mg/kg	0.00099	0.00033	1
1,2-Dichloroethane	ND		mg/kg	0.0020	0.00051	1
Toluene	ND		mg/kg	0.0020	0.0011	1
1,2-Dibromoethane	ND		mg/kg	0.00099	0.00058	1
Ethylbenzene	ND		mg/kg	0.0020	0.00028	1
p/m-Xylene	ND		mg/kg	0.0040	0.0011	1
o-Xylene	ND		mg/kg	0.0020	0.00058	1
Xylenes, Total	ND		mg/kg	0.0020	0.00058	1
Isopropylbenzene	ND		mg/kg	0.0020	0.00022	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0040	0.00038	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0040	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-17  
 Client ID: 302-BA03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 17:07  
 Analyst: JIC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	112		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-19  
 Client ID: 302-BB04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 14:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 17:30  
 Analyst: JIC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00034	1
Benzene	ND		mg/kg	0.00085	0.00028	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00093	1
1,2-Dibromoethane	ND		mg/kg	0.00085	0.00050	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0034	0.00096	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0034	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0034	0.00057	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	115		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-21  
 Client ID: 302-BB04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 14:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 18:25  
 Analyst: JIC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	ND		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	ND		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.010	J	mg/kg	0.052	0.0073	1
p/m-Xylene	0.16		mg/kg	0.10	0.029	1
o-Xylene	0.068		mg/kg	0.052	0.015	1
Xylenes, Total	0.23		mg/kg	0.052	0.015	1
Isopropylbenzene	0.037	J	mg/kg	0.052	0.0056	1
1,3,5-Trimethylbenzene	0.60		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	2.2		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/13/22 08:55  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05 Batch: WG1699459-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/13/22 10:00  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 21 Batch: WG1699536-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/14/22 09:28  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 15 Batch: WG1699548-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/14/22 09:28  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05 Batch: WG1699556-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/13/22 08:55  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,07,09,11,13,17,19 Batch: WG1699572-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	107		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05 Batch: WG1699459-3 WG1699459-4								
Methyl tert butyl ether	95		100		66-130	5		30
Benzene	92		93		70-130	1		30
1,2-Dichloroethane	91		91		70-130	0		30
Toluene	90		90		70-130	0		30
1,2-Dibromoethane	83		90		70-130	8		30
Ethylbenzene	90		88		70-130	2		30
p/m-Xylene	96		93		70-130	3		30
o-Xylene	96		94		70-130	2		30
Isopropylbenzene	88		89		70-130	1		30
1,3,5-Trimethylbenzene	91		92		70-130	1		30
1,2,4-Trimethylbenzene	90		90		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		93		70-130
Toluene-d8	97		98		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	101		97		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 21 Batch: WG1699536-3 WG1699536-4								
Methyl tert butyl ether	88		85		66-130	3		30
Benzene	84		82		70-130	2		30
1,2-Dichloroethane	88		87		70-130	1		30
Toluene	83		80		70-130	4		30
1,2-Dibromoethane	95		91		70-130	4		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	84		81		70-130	4		30
o-Xylene	84		81		70-130	4		30
Isopropylbenzene	84		81		70-130	4		30
1,3,5-Trimethylbenzene	85		83		70-130	2		30
1,2,4-Trimethylbenzene	87		84		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		100		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	100		100		70-130
Dibromofluoromethane	97		96		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 15 Batch: WG1699548-3 WG1699548-4								
Methyl tert butyl ether	117		119		66-130	2		30
Benzene	116		115		70-130	1		30
1,2-Dichloroethane	100		100		70-130	0		30
Toluene	116		118		70-130	2		30
1,2-Dibromoethane	101		103		70-130	2		30
Ethylbenzene	114		115		70-130	1		30
p/m-Xylene	118		121		70-130	3		30
o-Xylene	115		118		70-130	3		30
Isopropylbenzene	128		128		70-130	0		30
1,3,5-Trimethylbenzene	118		118		70-130	0		30
1,2,4-Trimethylbenzene	116		116		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	83		82		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	108		105		70-130
Dibromofluoromethane	82		81		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05 Batch: WG1699556-3 WG1699556-4								
Methyl tert butyl ether	117		119		66-130	2		30
Benzene	116		115		70-130	1		30
1,2-Dichloroethane	100		100		70-130	0		30
Toluene	116		118		70-130	2		30
1,2-Dibromoethane	101		103		70-130	2		30
Ethylbenzene	114		115		70-130	1		30
p/m-Xylene	118		121		70-130	3		30
o-Xylene	115		118		70-130	3		30
Isopropylbenzene	128		128		70-130	0		30
1,3,5-Trimethylbenzene	118		118		70-130	0		30
1,2,4-Trimethylbenzene	116		116		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	83		82		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	108		105		70-130
Dibromofluoromethane	82		81		70-130



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,07,09,11,13,17,19 Batch: WG1699572-3 WG1699572-4								
Methyl tert butyl ether	95		100		66-130	5		30
Benzene	92		93		70-130	1		30
1,2-Dichloroethane	91		91		70-130	0		30
Toluene	90		90		70-130	0		30
1,2-Dibromoethane	83		90		70-130	8		30
Ethylbenzene	90		88		70-130	2		30
p/m-Xylene	96		93		70-130	3		30
o-Xylene	96		94		70-130	2		30
Isopropylbenzene	88		89		70-130	1		30
1,3,5-Trimethylbenzene	91		92		70-130	1		30
1,2,4-Trimethylbenzene	90		90		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		93		70-130
Toluene-d8	97		98		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	101		97		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-02 D  
 Client ID: 302-AY02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 09:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 18:35  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	2.0		mg/kg	0.94	0.11	5
Fluorene	0.81	J	mg/kg	0.94	0.091	5
Phenanthrene	2.5		mg/kg	0.56	0.11	5
Anthracene	0.85		mg/kg	0.56	0.18	5
Pyrene	11.		mg/kg	0.56	0.094	5
Benzo(a)anthracene	3.4		mg/kg	0.56	0.10	5
Chrysene	7.6		mg/kg	0.56	0.098	5
Benzo(b)fluoranthene	2.6		mg/kg	0.56	0.16	5
Benzo(a)pyrene	3.6		mg/kg	0.75	0.23	5
Benzo(ghi)perylene	2.1		mg/kg	0.75	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	73		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-04  
 Client ID: 302-AY02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 09:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 05:41  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	2.3		mg/kg	0.19	0.023	1
Fluorene	0.73		mg/kg	0.19	0.018	1
Phenanthrene	2.5		mg/kg	0.11	0.023	1
Anthracene	0.77		mg/kg	0.11	0.037	1
Pyrene	4.2		mg/kg	0.11	0.019	1
Benzo(a)anthracene	1.9		mg/kg	0.11	0.022	1
Chrysene	3.2		mg/kg	0.11	0.020	1
Benzo(a)pyrene	3.0		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	1.2		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-04 D  
 Client ID: 302-AY02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 09:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 18:59  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzo(b)fluoranthene	2.1		mg/kg	0.57	0.16	5

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-06  
 Client ID: 302-AY02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 10:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 18:11  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	2.4		mg/kg	0.20	0.024	1
Fluorene	6.8		mg/kg	0.20	0.019	1
Phenanthrene	4.5		mg/kg	0.12	0.024	1
Anthracene	0.43		mg/kg	0.12	0.039	1
Pyrene	2.2		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.69		mg/kg	0.12	0.022	1
Chrysene	1.5		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.53		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.55		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.29		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-08  
 Client ID: 302-AZ02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 05:24  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.30		mg/kg	0.11	0.023	1
Anthracene	0.081	J	mg/kg	0.11	0.037	1
Pyrene	0.50		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.36		mg/kg	0.11	0.021	1
Chrysene	0.33		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.42		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.41		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.27		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	73		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-10  
 Client ID: 302-AZ02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 02:06  
 Analyst: CMM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.040	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.042	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.045	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.039	J	mg/kg	0.11	0.021	1
Chrysene	0.038	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.042	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.027	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	75		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-12  
 Client ID: 302-AZ02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 12:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 02:23  
 Analyst: CMM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.034	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.044	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.032	J	mg/kg	0.11	0.021	1
Chrysene	0.029	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.033	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.022	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-14  
 Client ID: 302-BA03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 01:33  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	0.030	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.024	1
Chrysene	0.022	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-16  
 Client ID: 302-BA03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:15  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 01:49  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	81		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-18  
 Client ID: 302-BA03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 04:18  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-20  
 Client ID: 302-BB04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 14:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 01:16  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	56		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-22  
 Client ID: 302-BB04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 14:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 00:26  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.14	J	mg/kg	0.20	0.019	1
Phenanthrene	0.37		mg/kg	0.12	0.024	1
Anthracene	0.053	J	mg/kg	0.12	0.038	1
Pyrene	0.059	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.021	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/14/22 20:06  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 10/14/22 03:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1699272-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	82		18-120

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1699272-2 WG1699272-3								
Naphthalene	73		85		40-140	15		50
Fluorene	76		86		40-140	12		50
Phenanthrene	76		87		40-140	13		50
Anthracene	80		92		40-140	14		50
Pyrene	76		87		35-142	13		50
Benzo(a)anthracene	82		90		40-140	9		50
Chrysene	79		86		40-140	8		50
Benzo(b)fluoranthene	78		87		40-140	11		50
Benzo(a)pyrene	84		91		40-140	8		50
Benzo(ghi)perylene	69		80		40-140	15		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	91		102		23-120
2-Fluorobiphenyl	74		84		30-120
4-Terphenyl-d14	71		80		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-02  
 Client ID: 302-AY02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 09:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.0		mg/kg	2.19	0.117	1	10/11/22 22:58	10/14/22 14:36	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-04

Date Collected: 10/10/22 09:45

Client ID: 302-AY02-C2-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	236		mg/kg	2.26	0.121	1	10/11/22 22:58	10/14/22 16:46	EPA 3050B	1,6010D	MRC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-06

Date Collected: 10/10/22 10:00

Client ID: 302-AY02-C3-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	252		mg/kg	2.32	0.124	1	10/11/22 22:58	10/14/22 16:51	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-08  
 Client ID: 302-AZ02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	16.1		mg/kg	2.27	0.122	1	10/11/22 22:58	10/14/22 16:56	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-10  
 Client ID: 302-AZ02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.67		mg/kg	2.17	0.116	1	10/11/22 22:58	10/14/22 17:01	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-12

Date Collected: 10/10/22 12:00

Client ID: 302-AZ02-C3-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	144		mg/kg	2.14	0.115	1	10/11/22 22:58	10/14/22 17:06	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-14  
 Client ID: 302-BA03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	23.3		mg/kg	2.37	0.127	1	10/11/22 22:58	10/14/22 17:10	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-16  
 Client ID: 302-BA03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:15  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	25.3		mg/kg	2.29	0.123	1	10/11/22 22:58	10/14/22 17:15	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-18

Date Collected: 10/10/22 13:30

Client ID: 302-BA03-C3-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.7		mg/kg	2.27	0.122	1	10/11/22 22:58	10/14/22 17:19	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-20  
 Client ID: 302-BB04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 14:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.0		mg/kg	2.26	0.121	1	10/11/22 22:58	10/14/22 17:24	EPA 3050B	1,6010D	MRC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-22

Date Collected: 10/10/22 14:30

Client ID: 302-BB04-C2-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.4		mg/kg	2.35	0.126	1	10/11/22 22:58	10/14/22 17:40	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1697945-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/11/22 22:58	10/14/22 15:27	1,6010D	MRC

### Prep Information

Digestion Method: EPA 3050B



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1697945-2 SRM Lot Number: D113-540								
Lead, Total	103		-		72-128			-

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22    QC Batch ID: WG1697945-3    QC Sample: L2255918-01    Client ID: MS Sample												
Lead, Total	801	43.2	275	0	Q	-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256226

Report Date: 10/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1697945-4 QC Sample: L2255918-01 Client ID: DUP Sample						
Lead, Total	801	198	mg/kg	121	Q	20

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 QC Batch ID: WG1697945-6 QC Sample: L2255918-01 Client ID: DUP Sample						
Lead, Total	801	852	mg/kg	6		20



# **INORGANICS & MISCELLANEOUS**

Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

## SAMPLE RESULTS

Lab ID: L2256226-01

Date Collected: 10/10/22 09:30

Client ID: 302-AY02-C1-VOC

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.7		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

## SAMPLE RESULTS

Lab ID: L2256226-02

Date Collected: 10/10/22 09:30

Client ID: 302-AY02-C1-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.0		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

## SAMPLE RESULTS

Lab ID: L2256226-03

Date Collected: 10/10/22 09:45

Client ID: 302-AY02-C2-VOC

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

## SAMPLE RESULTS

Lab ID: L2256226-04

Date Collected: 10/10/22 09:45

Client ID: 302-AY02-C2-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-05  
 Client ID: 302-AY02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 10:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.9		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

## SAMPLE RESULTS

Lab ID: L2256226-06

Date Collected: 10/10/22 10:00

Client ID: 302-AY02-C3-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-07

Date Collected: 10/10/22 11:30

Client ID: 302-AZ02-C1-VOC

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.0		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

**Lab ID:** L2256226-08  
**Client ID:** 302-AZ02-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/10/22 11:30  
**Date Received:** 10/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.9		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-09  
 Client ID: 302-AZ02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-10  
 Client ID: 302-AZ02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 11:45  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-11

Date Collected: 10/10/22 12:00

Client ID: 302-AZ02-C3-VOC

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	98.4		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-12  
 Client ID: 302-AZ02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 12:00  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.7		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256226**Project Number:** 200.00135.006**Report Date:** 10/17/22**SAMPLE RESULTS**

Lab ID: L2256226-13

Date Collected: 10/10/22 13:00

Client ID: 302-BA03-C1-VOC

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	62.9		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

**Lab ID:** L2256226-14  
**Client ID:** 302-BA03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/10/22 13:00  
**Date Received:** 10/10/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.3		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-15  
 Client ID: 302-BA03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:15  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.7		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-16  
 Client ID: 302-BA03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:15  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.8		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-17  
 Client ID: 302-BA03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 13:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-18

Date Collected: 10/10/22 13:30

Client ID: 302-BA03-C3-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.4		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256226

Project Number: 200.00135.006

Report Date: 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-19

Date Collected: 10/10/22 14:00

Client ID: 302-BB04-C1-VOC

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.1		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256226**Project Number:** 200.00135.006**Report Date:** 10/17/22**SAMPLE RESULTS**

Lab ID: L2256226-20

Date Collected: 10/10/22 14:00

Client ID: 302-BB04-C1-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.1		%	0.100	NA	1	-	10/11/22 12:18	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

**SAMPLE RESULTS**

Lab ID: L2256226-21  
 Client ID: 302-BB04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/10/22 14:30  
 Date Received: 10/10/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.0		%	0.100	NA	1	-	10/11/22 12:33	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256226**Project Number:** 200.00135.006**Report Date:** 10/17/22**SAMPLE RESULTS**

Lab ID: L2256226-22

Date Collected: 10/10/22 14:30

Client ID: 302-BB04-C2-COMP

Date Received: 10/10/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	10/11/22 12:33	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256226

Report Date: 10/17/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1697929-1 QC Sample: L2256226-01 Client ID: 302-AY02-C1-VOC						
Solids, Total	88.7	88.2	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1697934-1 QC Sample: L2256196-66 Client ID: DUP Sample						
Solids, Total	92.2	92.5	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256226**Project Number:** 200.00135.006**Report Date:** 10/17/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256226-01A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2256226-01B	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-01C	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-01D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2256226-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2256226-02B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2256226-03A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2256226-03B	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-03C	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-03D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2256226-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2256226-04B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2256226-05A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2256226-05B	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-05C	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-05D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2256226-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2256226-06B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2256226-07A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2256226-07B	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-07C	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-07D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10172212:12  
**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256226-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2256226-08B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2256226-09A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2256226-09B	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-09C	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-09D	Plastic 120ml unpreserved	A	NA		2.8	Y	Absent		TS(7)
L2256226-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2256226-10B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2256226-11A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2256226-11B	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-11C	Vial water preserved	A	NA		2.8	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-11D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2256226-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2256226-12B	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		TS(7),PA-PAH(14)
L2256226-13A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2256226-13B	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-13C	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-13D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2256226-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2256226-14B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2256226-15A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2256226-15B	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-15C	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-15D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2256226-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2256226-16B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2256226-17A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2256226-17B	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10172212:12  
**Lab Number:** L2256226  
**Report Date:** 10/17/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256226-17C	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-17D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2256226-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2256226-18B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2256226-19A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2256226-19B	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-19C	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-19D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2256226-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2256226-20B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2256226-21A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2256226-21B	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-21C	Vial water preserved	B	NA		3.4	Y	Absent	11-OCT-22 09:00	PA-8260HLW(14)
L2256226-21D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2256226-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2256226-22B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256226  
**Report Date:** 10/17/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256226

**Project Number:** 200.00135.006

**Report Date:** 10/17/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1761~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hlcoglobal.com

Date Rec'd in Lab: 10/10/22

ALPHA Job #: L2256226

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

## ANALYSIS

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	S/VOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES			
		Date	Time																				
56226-01	302-AY02-C1-VOC	10/10	0930	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 02	302-AY02-C1-Camp		0930			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 03	302-AY02-C2-VOC		0945			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 04	302-AY02-C2-Camp		0945			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 05	302-AY02-C3-VOC		1000			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 06	302-AY02-C3-Camp		1000			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 07	302-A202-C1-VOC		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 08	302-A202-C1-Camp		1130			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 09	302-A202-C2-VOC		1145			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 10	302-A202-C2-Camp		1145			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/10/22 15:10	<i>[Signature]</i>	10/10/22 18:00
<i>[Signature]</i>	10/14/22 2:00	<i>[Signature]</i>	10-10-22-21:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18554

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-896-9220 TEL: 508-822-6300  
 FAX: 508-898-9193 FAX: 508-822-3266

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/10/22

ALPHA Job #: 2256226

## Report Information Data Deliverables Billing Information

FAX  EMAIL

Same as Client info PO #: 3562

ADEX  Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments									
		Date TIME	Time DATE																									
56226-11	302-A202-C3-VOC	1700	10/10	S	BS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4				
12	302-A202-C3-comp	1700	10/10			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2				
13	302-BA03-C1-VOC	X	↓			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1300	4				
14	302-BA03-C1-comp					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1300	2	
15	302-BA03-C2-VOC					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1315	4	
16	302-BA03-C2-comp					<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1315	2
17	302-BA03-C3-VOC					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1330	4
18	302-BA03-C3-comp					<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1330	2
19	302-BB04-C1-VOC					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1400	4
20	302-BB04-C1-comp					<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1400	2

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

GAAL  
 10/11/22  
 0040

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/10/22

ALPHA Job #: 22256226

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

### SAMPLE HANDLING

- Filtration
- Done
- Not Needed
- Lab to do
- Preservation
- Lab to do
- (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES			
		Date	Time																			
56226-21	302-BB04-C2-VO C	10/10	1430	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
22	302-BB04-C2-Comp	↓	1430	↓	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	
																						4
																						2
																						4
																						2
																						4
																						2
																						4
																						2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SMAN  
10/11/22  
0040

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/10	<i>[Signature]</i>	10.10 15:10
<i>[Signature]</i>	10/10/2000	<i>[Signature]</i>	10/10/22 RSM
<i>[Signature]</i>	10/10/22 2:00		

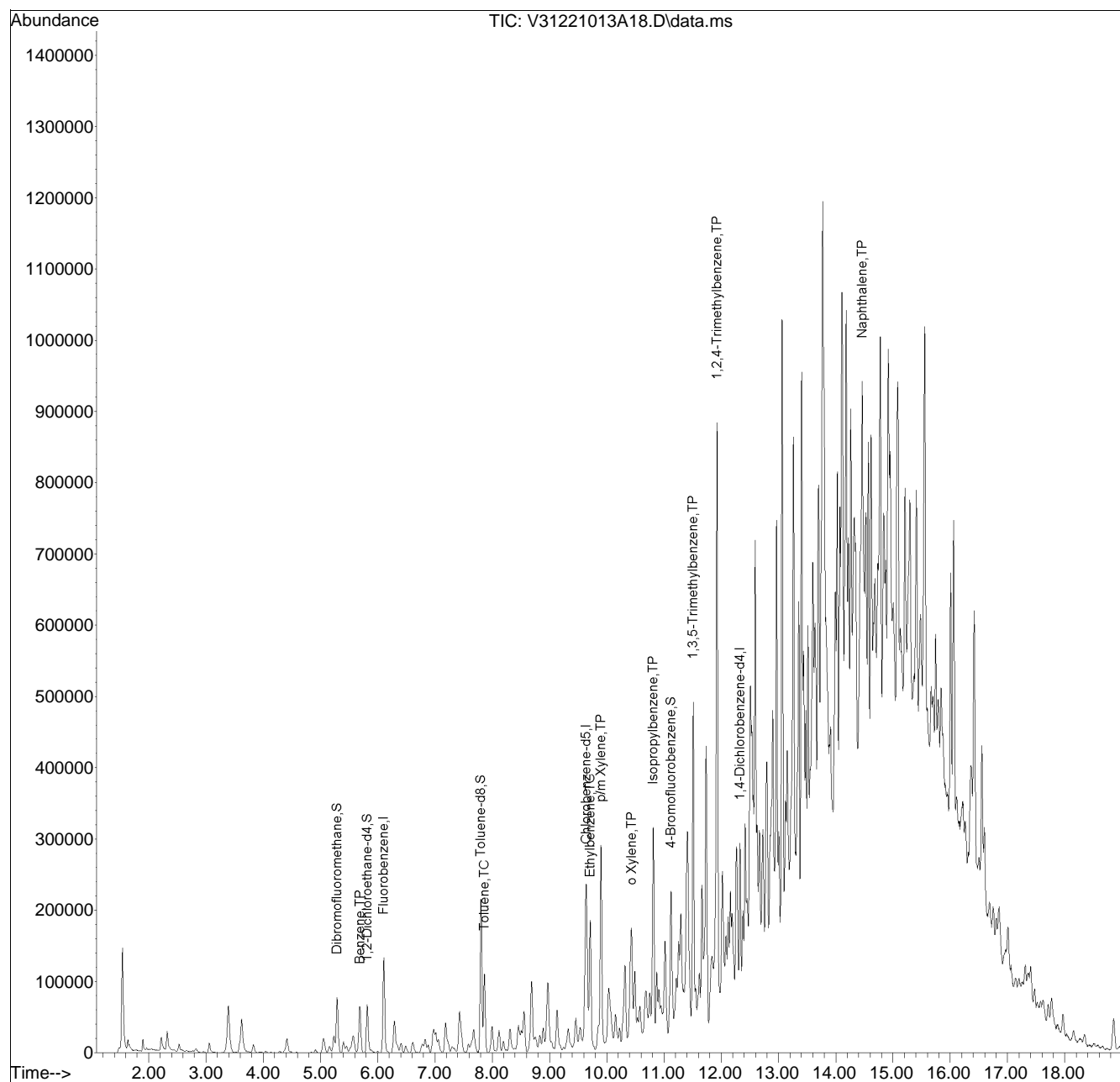
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221013A\  
 Data File : V31221013A18.D  
 Acq On : 13 Oct 2022 02:04 pm  
 Operator : VOA131:JIC  
 Sample : 12256226-01,31,3.28,5,,b,r2f  
 Misc : WG1699572,ICAL19336  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Oct 14 06:40:58 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221013A\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list13A\V31221013A01.D•





## ANALYTICAL REPORT

Lab Number:	L2256458
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/18/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256458

Report Date: 10/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2256458-01	302-AP02-C1-VOC	SOIL	PHILADELPHIA, PA	10/11/22 09:30	10/11/22
L2256458-02	302-AP02-C1-COMP	SOIL	PHILADELPHIA, PA	10/11/22 09:30	10/11/22
L2256458-03	302-AP02-C2-VOC	SOIL	PHILADELPHIA, PA	10/11/22 09:45	10/11/22
L2256458-04	302-AP02-C2-COMP	SOIL	PHILADELPHIA, PA	10/11/22 09:45	10/11/22
L2256458-05	302-AP02-C3-VOC	SOIL	PHILADELPHIA, PA	10/11/22 10:00	10/11/22
L2256458-06	302-AP02-C3-COMP	SOIL	PHILADELPHIA, PA	10/11/22 10:00	10/11/22
L2256458-07	302-AT01-C1-VOC	SOIL	PHILADELPHIA, PA	10/11/22 11:00	10/11/22
L2256458-08	302-AT01-C1-COMP	SOIL	PHILADELPHIA, PA	10/11/22 11:00	10/11/22
L2256458-09	302-AT01-C2-VOC	SOIL	PHILADELPHIA, PA	10/11/22 11:15	10/11/22
L2256458-10	302-AT01-C2-COMP	SOIL	PHILADELPHIA, PA	10/11/22 11:15	10/11/22
L2256458-11	302-AT01-C3-VOC	SOIL	PHILADELPHIA, PA	10/11/22 11:30	10/11/22
L2256458-12	302-AT01-C3-COMP	SOIL	PHILADELPHIA, PA	10/11/22 11:30	10/11/22
L2256458-13	302-AU01-C1-VOC	SOIL	PHILADELPHIA, PA	10/11/22 12:45	10/11/22
L2256458-14	302-AU01-C1-COMP	SOIL	PHILADELPHIA, PA	10/11/22 12:45	10/11/22
L2256458-15	302-AU01-C2-VOC	SOIL	PHILADELPHIA, PA	10/11/22 13:00	10/11/22
L2256458-16	302-AU01-C2-COMP	SOIL	PHILADELPHIA, PA	10/11/22 13:00	10/11/22
L2256458-17	302-AU01-C3-VOC	SOIL	PHILADELPHIA, PA	10/11/22 13:15	10/11/22
L2256458-18	302-AU01-C3-COMP	SOIL	PHILADELPHIA, PA	10/11/22 13:15	10/11/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2256458-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (225%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2256458-18D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 10/18/22

# ORGANICS

# VOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-01  
 Client ID: 302-AP02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 09:30  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 15:25  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	112		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-03  
 Client ID: 302-AP02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 09:45  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 15:52  
 Analyst: NLK  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	84		70-130
Dibromofluoromethane	118		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-05  
 Client ID: 302-AP02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 10:00  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 16:19  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-07  
 Client ID: 302-AT01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:00  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 16:46  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	83		70-130
Dibromofluoromethane	116		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-09  
 Client ID: 302-AT01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:15  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 17:13  
 Analyst: NLK  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	117		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-11  
 Client ID: 302-AT01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:30  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 17:39  
 Analyst: NLK  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	116		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-13  
 Client ID: 302-AU01-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 12:45  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 18:06  
 Analyst: NLK  
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00023	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	123		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-15  
 Client ID: 302-AU01-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 13:00  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 18:33  
 Analyst: NLK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00026	1
Benzene	0.00081		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	0.0017		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	0.00059	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.033		mg/kg	0.0025	0.00071	1
o-Xylene	0.0046		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.038		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.0022		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.011		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.0084		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	119		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-17  
 Client ID: 302-AU01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 13:15  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 02:03  
 Analyst: JIC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	0.0023		mg/kg	0.00076	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00039	1
Toluene	0.0028		mg/kg	0.0015	0.00082	1
1,2-Dibromoethane	ND		mg/kg	0.00076	0.00044	1
Ethylbenzene	0.0012	J	mg/kg	0.0015	0.00021	1
p/m-Xylene	0.011		mg/kg	0.0030	0.00084	1
o-Xylene	0.0074		mg/kg	0.0015	0.00044	1
Xylenes, Total	0.018		mg/kg	0.0015	0.00044	1
Isopropylbenzene	0.013		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	0.0035		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	0.0028	J	mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	225	Q	70-130
Dibromofluoromethane	107		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 10/13/22 14:04  
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,07,09,11,13,15 Batch: WG1700486-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	83		70-130
Dibromofluoromethane	110		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/17/22 20:18  
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 17 Batch: WG1700914-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	0.00085	J	mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	0.00058	J	mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	0.00058	J	mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	109		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,07,09,11,13,15 Batch: WG1700486-3 WG1700486-4								
Methyl tert butyl ether	80		81		66-130	1		30
Benzene	93		91		70-130	2		30
1,2-Dichloroethane	85		85		70-130	0		30
Toluene	93		91		70-130	2		30
1,2-Dibromoethane	80		78		70-130	3		30
Ethylbenzene	91		88		70-130	3		30
p/m-Xylene	97		94		70-130	3		30
o-Xylene	94		91		70-130	3		30
Isopropylbenzene	87		87		70-130	0		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	87		86		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		95		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	76		78		70-130
Dibromofluoromethane	104		104		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 17 Batch: WG1700914-3 WG1700914-4								
Methyl tert butyl ether	117		117		66-130	0		30
Benzene	106		102		70-130	4		30
1,2-Dichloroethane	102		104		70-130	2		30
Toluene	104		102		70-130	2		30
1,2-Dibromoethane	98		98		70-130	0		30
Ethylbenzene	99		99		70-130	0		30
p/m-Xylene	105		105		70-130	0		30
o-Xylene	105		105		70-130	0		30
Isopropylbenzene	99		97		70-130	2		30
1,3,5-Trimethylbenzene	102		99		70-130	3		30
1,2,4-Trimethylbenzene	100		98		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		100		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	95		100		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-02  
 Client ID: 302-AP02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 09:30  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 21:24  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.022	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-04  
 Client ID: 302-AP02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 09:45  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 21:48  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	68		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-06  
 Client ID: 302-AP02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 10:00  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 22:12  
 Analyst: CMM  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-08  
 Client ID: 302-AT01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:00  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 22:37  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-10  
 Client ID: 302-AT01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:15  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 23:01  
 Analyst: CMM  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.27		mg/kg	0.18	0.022	1
Fluorene	2.7		mg/kg	0.18	0.017	1
Phenanthrene	14.	E	mg/kg	0.11	0.021	1
Anthracene	7.1	E	mg/kg	0.11	0.034	1
Pyrene	14.	E	mg/kg	0.11	0.018	1
Benzo(a)anthracene	8.1	E	mg/kg	0.11	0.020	1
Chrysene	8.8	E	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	9.0	E	mg/kg	0.11	0.030	1
Benzo(a)pyrene	5.2		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	3.0		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	50		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-10 D  
 Client ID: 302-AT01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:15  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 13:17  
 Analyst: IM  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
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Phenanthrene	22.		mg/kg	1.1	0.21	10
Anthracene	7.9		mg/kg	1.1	0.34	10
Pyrene	27.		mg/kg	1.1	0.18	10
Benzo(a)anthracene	12.		mg/kg	1.1	0.20	10
Chrysene	15.		mg/kg	1.1	0.18	10
Benzo(b)fluoranthene	17.		mg/kg	1.1	0.30	10

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-12  
 Client ID: 302-AT01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 11:30  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 23:26  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	0.030	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.029	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.037	J	mg/kg	0.11	0.021	1
Chrysene	0.041	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.059	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.038	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-14  
 Client ID: 302-AU01-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 12:45  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/16/22 23:50  
 Analyst: CMM  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	39		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-16  
 Client ID: 302-AU01-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 13:00  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/17/22 00:15  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	54		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-18 D  
 Client ID: 302-AU01-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 13:15  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 13:40  
 Analyst: IM  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.63	J	mg/kg	1.7	0.21	10
Fluorene	1.8		mg/kg	1.7	0.17	10
Phenanthrene	3.6		mg/kg	1.0	0.21	10
Anthracene	8.8		mg/kg	1.0	0.34	10
Pyrene	3.0		mg/kg	1.0	0.17	10
Benzo(a)anthracene	0.70	J	mg/kg	1.0	0.20	10
Chrysene	1.4		mg/kg	1.0	0.18	10
Benzo(b)fluoranthene	1.0		mg/kg	1.0	0.29	10
Benzo(a)pyrene	0.52	J	mg/kg	1.4	0.42	10
Benzo(ghi)perylene	0.43	J	mg/kg	1.4	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	49		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/16/22 16:36  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 10/16/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1699954-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	98		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1699954-2 WG1699954-3								
Naphthalene	73		80		40-140	9		50
Fluorene	78		83		40-140	6		50
Phenanthrene	75		80		40-140	6		50
Anthracene	76		83		40-140	9		50
Pyrene	80		87		35-142	8		50
Benzo(a)anthracene	75		80		40-140	6		50
Chrysene	75		78		40-140	4		50
Benzo(b)fluoranthene	79		84		40-140	6		50
Benzo(a)pyrene	84		86		40-140	2		50
Benzo(ghi)perylene	80		87		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	98		105		23-120
2-Fluorobiphenyl	77		83		30-120
4-Terphenyl-d14	86		88		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-02

Date Collected: 10/11/22 09:30

Client ID: 302-AP02-C1-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	36.0		mg/kg	2.27	0.122	1	10/12/22 20:10	10/14/22 23:28	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-04

Date Collected: 10/11/22 09:45

Client ID: 302-AP02-C2-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.2		mg/kg	2.19	0.117	1	10/12/22 20:10	10/14/22 23:14	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-06

Date Collected: 10/11/22 10:00

Client ID: 302-AP02-C3-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	17.3		mg/kg	2.19	0.117	1	10/12/22 20:10	10/14/22 23:19	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-08

Date Collected: 10/11/22 11:00

Client ID: 302-AT01-C1-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.87		mg/kg	2.21	0.118	1	10/12/22 20:10	10/14/22 23:23	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-10

Date Collected: 10/11/22 11:15

Client ID: 302-AT01-C2-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.62		mg/kg	2.10	0.113	1	10/12/22 20:10	10/15/22 00:00	EPA 3050B	1,6010D	MRC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-12

Date Collected: 10/11/22 11:30

Client ID: 302-AT01-C3-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	274		mg/kg	2.17	0.116	1	10/12/22 20:10	10/15/22 00:05	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-14

Date Collected: 10/11/22 12:45

Client ID: 302-AU01-C1-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.7		mg/kg	2.21	0.118	1	10/12/22 20:10	10/15/22 00:10	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-16

Date Collected: 10/11/22 13:00

Client ID: 302-AU01-C2-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.2		mg/kg	2.19	0.117	1	10/12/22 20:10	10/15/22 00:15	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-18

Date Collected: 10/11/22 13:15

Client ID: 302-AU01-C3-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	1290		mg/kg	2.06	0.111	1	10/12/22 20:10	10/15/22 00:20	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1698602-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/12/22 20:10	10/14/22 23:05	1,6010D	MRC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1698602-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		



**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>Qual</u>	<u>RPD Limits</u>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1698602-3    QC Sample: L2256458-02    Client ID: 302-AP02-C1-COMP												
Lead, Total	36.0	48.6	79.2	89		-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2256458

**Report Date:** 10/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1698602-4 QC Sample: L2256458-02 Client ID: 302-AP02-C1-COMP						
Lead, Total	36.0	33.3	mg/kg	8		20





# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-01

Date Collected: 10/11/22 09:30

Client ID: 302-AP02-C1-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.3		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-02

Date Collected: 10/11/22 09:30

Client ID: 302-AP02-C1-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.0		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## SAMPLE RESULTS

Lab ID: L2256458-03

Date Collected: 10/11/22 09:45

Client ID: 302-AP02-C2-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## SAMPLE RESULTS

Lab ID: L2256458-04

Date Collected: 10/11/22 09:45

Client ID: 302-AP02-C2-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## SAMPLE RESULTS

Lab ID: L2256458-05

Date Collected: 10/11/22 10:00

Client ID: 302-AP02-C3-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## SAMPLE RESULTS

Lab ID: L2256458-06

Date Collected: 10/11/22 10:00

Client ID: 302-AP02-C3-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.3		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-07

Date Collected: 10/11/22 11:00

Client ID: 302-AT01-C1-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-08

Date Collected: 10/11/22 11:00

Client ID: 302-AT01-C1-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.2		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-09

Date Collected: 10/11/22 11:15

Client ID: 302-AT01-C2-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.6		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-10

Date Collected: 10/11/22 11:15

Client ID: 302-AT01-C2-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.0		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-11

Date Collected: 10/11/22 11:30

Client ID: 302-AT01-C3-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.9		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-12

Date Collected: 10/11/22 11:30

Client ID: 302-AT01-C3-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## SAMPLE RESULTS

Lab ID: L2256458-13

Date Collected: 10/11/22 12:45

Client ID: 302-AU01-C1-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	97.9		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-14

Date Collected: 10/11/22 12:45

Client ID: 302-AU01-C1-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256458

Project Number: 200.00135.006

Report Date: 10/18/22

## SAMPLE RESULTS

Lab ID: L2256458-15

Date Collected: 10/11/22 13:00

Client ID: 302-AU01-C2-VOC

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.3		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-16

Date Collected: 10/11/22 13:00

Client ID: 302-AU01-C2-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.0		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

**SAMPLE RESULTS**

Lab ID: L2256458-17  
 Client ID: 302-AU01-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/11/22 13:15  
 Date Received: 10/11/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.1		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**SAMPLE RESULTS**

Lab ID: L2256458-18

Date Collected: 10/11/22 13:15

Client ID: 302-AU01-C3-COMP

Date Received: 10/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.6		%	0.100	NA	1	-	10/12/22 12:38	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256458

Report Date: 10/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1698479-1 QC Sample: L2256458-01 Client ID: 302-AP02-C1-VOC						
Solids, Total	87.3	87.2	%	0		20

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10182216:29  
**Lab Number:** L2256458  
**Report Date:** 10/18/22

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256458-01A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-01B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-01C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-01D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-02B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-03A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-03B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-03C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-03D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-04B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-05A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-05B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-05C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-05D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-06B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-07A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-07B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-07C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-07D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256458**Project Number:** 200.00135.006**Report Date:** 10/18/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256458-08B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-09A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-09B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-09C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-09D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-10B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-11A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-11B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-11C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-11D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-12B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-13A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-13B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-13C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-13D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-14B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-15A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-15B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-15C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-15D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-16B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)
L2256458-17A	Vial MeOH preserved	A	NA		5.8	Y	Absent		PA-8260HLW(14)
L2256458-17B	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)
L2256458-17C	Vial water preserved	A	NA		5.8	Y	Absent	12-OCT-22 06:09	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256458-17D	Plastic 120ml unpreserved	A	NA		5.8	Y	Absent		TS(7)
L2256458-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.8	Y	Absent		PB-TI(180)
L2256458-18B	Glass 120ml/4oz unpreserved	A	NA		5.8	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256458  
**Report Date:** 10/18/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256458

**Project Number:** 200.00135.006

**Report Date:** 10/18/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3268

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/12/22

ALPHA Job #: L2256458

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES				
		Date	Time																				
56458 -01	302-AP02-C1-VOC	10/11	0930	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-02	302-AP02-C1-COMP		0930			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AP02-C2-VOC		0945			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AP02-C2-COMP		0945			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AP02-C3-VOC		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AP02-C3-COMP		1000			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AT01-C1-VOC		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AT01-C1-COMP		<del>1100</del>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-09	302-AT01-C2-VOC		1115			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AT01-C2-COMP		1115			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/11/4/10	<i>[Signature]</i>	10/11/4/10
<i>[Signature]</i>	10/11/22	<i>[Signature]</i>	10/12/22 0019

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 2 OF 2



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12151~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcooglobal.com

Date Rec'd in Lab: 10/12/22

ALPHA Job #: L2256458

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	SAMPLE HANDLING										TOTAL # BOTTLES				
		Date	Time						Filtration	Done	Not Needed	Lab to do	Preservation	Lab to do	(Please specify below)								
50458 -11	302-AT01-C3-VOC	10/11	1130	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-12	302-AT01-C3-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-AU01-C1-VOC		1245			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-AU01-C1-COMP		1245			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-AU01-C2-VOC		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-AU01-C2-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-AU01-C3-VOC		1315			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-AU01-C3-COMP		1315			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

Sample Specific Comments

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:

Date/Time

Received By:

Date/Time

<i>[Signature]</i>	10/11/22	Tom Clark	10/11/22
Tom Clark	10/11/22	SLAR	10/12/2025

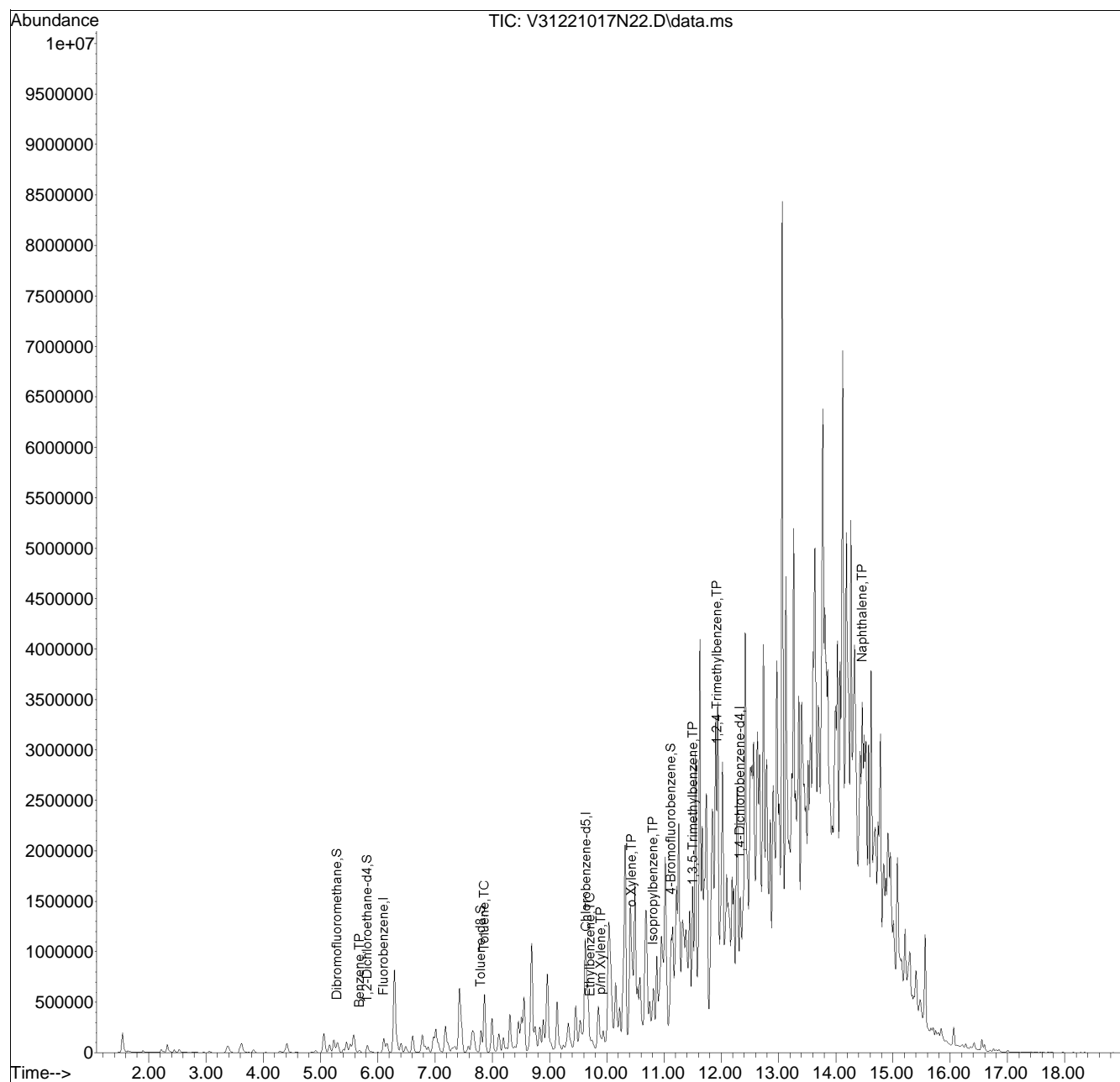
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221017N\  
 Data File : V31221017N22.D  
 Acq On : 18 Oct 2022 02:03 am  
 Operator : VOA131:JIC  
 Sample : 12256458-17,31,3.80,5,,c,r2f  
 Misc : WG1700914,ICAL19336  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 18 08:59:48 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221017N\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17N\V31221017N01.D•





## ANALYTICAL REPORT

Lab Number:	L2256782
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/19/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256782

Report Date: 10/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2256782-01	302-AP04-C1-VOC	SOIL	PHILADELPHIA, PA	10/12/22 10:00	10/12/22
L2256782-02	302-AP04-C1-COMP	SOIL	PHILADELPHIA, PA	10/12/22 10:00	10/12/22
L2256782-03	302-AP04-C2-VOC	SOIL	PHILADELPHIA, PA	10/12/22 10:15	10/12/22
L2256782-04	302-AP04-C2-COMP	SOIL	PHILADELPHIA, PA	10/12/22 10:15	10/12/22
L2256782-05	302-AO05-C1-VOC	SOIL	PHILADELPHIA, PA	10/12/22 12:00	10/12/22
L2256782-06	302-AO05-C1-COMP	SOIL	PHILADELPHIA, PA	10/12/22 12:00	10/12/22
L2256782-07	302-AO05-C2-VOC	SOIL	PHILADELPHIA, PA	10/12/22 12:15	10/12/22
L2256782-08	302-AO05-C2-COMP	SOIL	PHILADELPHIA, PA	10/12/22 12:15	10/12/22
L2256782-09	302-AO05-C3-VOC	SOIL	PHILADELPHIA, PA	10/12/22 12:30	10/12/22
L2256782-10	302-AO05-C3-COMP	SOIL	PHILADELPHIA, PA	10/12/22 12:30	10/12/22
L2256782-11	302-AO04-C1-VOC	SOIL	PHILADELPHIA, PA	10/12/22 13:00	10/12/22
L2256782-12	302-AO04-C1-COMP	SOIL	PHILADELPHIA, PA	10/12/22 13:00	10/12/22
L2256782-13	302-AO04-C2-VOC	SOIL	PHILADELPHIA, PA	10/12/22 13:15	10/12/22
L2256782-14	302-AO04-C2-COMP	SOIL	PHILADELPHIA, PA	10/12/22 13:15	10/12/22
L2256782-15	302-AO04-C3-VOC	SOIL	PHILADELPHIA, PA	10/12/22 13:30	10/12/22
L2256782-16	302-AO04-C3-COMP	SOIL	PHILADELPHIA, PA	10/12/22 13:30	10/12/22
L2256782-17	302-AO04-C4-VOC	SOIL	PHILADELPHIA, PA	10/12/22 13:45	10/12/22
L2256782-18	302-AO04-C4-COMP	SOIL	PHILADELPHIA, PA	10/12/22 13:45	10/12/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2256782-01: The internal standard (IS) response for fluorobenzene (319%) and the surrogate recoveries for 1,2-dichloroethane-d4 (29%) and dibromofluoromethane (31%) and 4-bromofluorobenzene (259%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was re-analyzed on a larger dilution. The results of both analyses are reported.

L2256782-03: The surrogate recoveries are outside the method acceptance criteria for 1,2-dichloroethane-d4 (55%) and dibromofluoromethane (55%) due to interference with the Internal Standard.

L2256782-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (188%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2256782-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (272%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2256782-07: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (177%) and 4-bromofluorobenzene (245%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2256782-09: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2256782-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 10/19/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-01  
 Client ID: 302-AP04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 10:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 21:33  
 Analyst: JIC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.17	0.017	1
Benzene	3.0		mg/kg	0.043	0.014	1
1,2-Dichloroethane	ND		mg/kg	0.087	0.022	1
Toluene	3.0		mg/kg	0.087	0.047	1
1,2-Dibromoethane	ND		mg/kg	0.043	0.025	1
Ethylbenzene	3.4		mg/kg	0.087	0.012	1
p/m-Xylene	9.1		mg/kg	0.17	0.049	1
o-Xylene	1.1		mg/kg	0.087	0.025	1
Xylenes, Total	10.		mg/kg	0.087	0.025	1
Isopropylbenzene	13.		mg/kg	0.087	0.0095	1
1,3,5-Trimethylbenzene	0.92		mg/kg	0.17	0.017	1
1,2,4-Trimethylbenzene	2.5		mg/kg	0.17	0.029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	29	Q	70-130
Toluene-d8	122		70-130
4-Bromofluorobenzene	259	Q	70-130
Dibromofluoromethane	31	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-01 D  
 Client ID: 302-AP04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 10:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 09:18  
 Analyst: JIC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	17	1.7	100
Benzene	10.		mg/kg	4.3	1.4	100
1,2-Dichloroethane	ND		mg/kg	8.7	2.2	100
Toluene	ND		mg/kg	8.7	4.7	100
1,2-Dibromoethane	ND		mg/kg	4.3	2.5	100
Ethylbenzene	4.6	J	mg/kg	8.7	1.2	100
p/m-Xylene	10.	J	mg/kg	17	4.9	100
o-Xylene	ND		mg/kg	8.7	2.5	100
Xylenes, Total	10.	J	mg/kg	8.7	2.5	100
Isopropylbenzene	18.		mg/kg	8.7	0.95	100
1,3,5-Trimethylbenzene	1.7	J	mg/kg	17	1.7	100
1,2,4-Trimethylbenzene	3.6	J	mg/kg	17	2.9	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	79		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-03  
 Client ID: 302-AP04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 10:15  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 21:54  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.30		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.066	0.017	1
Toluene	0.34		mg/kg	0.066	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	1.4		mg/kg	0.066	0.0093	1
p/m-Xylene	0.61		mg/kg	0.13	0.037	1
o-Xylene	0.70		mg/kg	0.066	0.019	1
Xylenes, Total	1.3		mg/kg	0.066	0.019	1
Isopropylbenzene	7.0		mg/kg	0.066	0.0072	1
1,3,5-Trimethylbenzene	6.4		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	0.12	J	mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	55	Q	70-130
Toluene-d8	121		70-130
4-Bromofluorobenzene	188	Q	70-130
Dibromofluoromethane	55	Q	70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-05  
 Client ID: 302-AO05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 23:17  
 Analyst: JIC  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.00021	J	mg/kg	0.0020	0.00020	1
Benzene	0.00086		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.00059	J	mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.023		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.098		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	<b>272</b>	Q	70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-07  
 Client ID: 302-AO05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:15  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 10:37  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00048		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.042		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	0.00073	J	mg/kg	0.00092	0.00027	1
Xylenes, Total	0.00073	J	mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.16		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	177	Q	70-130
4-Bromofluorobenzene	245	Q	70-130
Dibromofluoromethane	75		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-09  
 Client ID: 302-AO05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:30  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 22:14  
 Analyst: JIC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.018	1
Ethylbenzene	0.26		mg/kg	0.063	0.0089	1
p/m-Xylene	ND		mg/kg	0.13	0.035	1
o-Xylene	ND		mg/kg	0.063	0.018	1
Xylenes, Total	ND		mg/kg	0.063	0.018	1
Isopropylbenzene	1.5		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	86		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-11  
 Client ID: 302-AO04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 09:58  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00099		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	0.00062	J	mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	0.0014		mg/kg	0.00085	0.00012	1
p/m-Xylene	0.0031		mg/kg	0.0017	0.00048	1
o-Xylene	0.00046	J	mg/kg	0.00085	0.00025	1
Xylenes, Total	0.0036	J	mg/kg	0.00085	0.00025	1
Isopropylbenzene	0.0014		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	0.0021		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	0.0059		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-13  
 Client ID: 302-AO04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:15  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 22:56  
 Analyst: JIC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.076		mg/kg	0.035	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.070	0.018	1
Toluene	0.062	J	mg/kg	0.070	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.035	0.020	1
Ethylbenzene	1.6		mg/kg	0.070	0.0098	1
p/m-Xylene	1.0		mg/kg	0.14	0.039	1
o-Xylene	0.046	J	mg/kg	0.070	0.020	1
Xylenes, Total	1.0	J	mg/kg	0.070	0.020	1
Isopropylbenzene	0.20		mg/kg	0.070	0.0076	1
1,3,5-Trimethylbenzene	0.31		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	2.8		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	86		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-15  
 Client ID: 302-AO04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:30  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 12:22  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-17  
 Client ID: 302-AO04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:45  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 12:48  
 Analyst: JIC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 08:52  
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,15,17 Batch: WG1701022-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	102		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/18/22 18:24  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,09,13 Batch: WG1701372-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/18/22 18:24  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1701375-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/17/22 08:52  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1701386-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 08:33  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11 Batch: WG1701479-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	97		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,15,17 Batch: WG1701022-3 WG1701022-4								
Methyl tert butyl ether	114		112		66-130	2		30
Benzene	105		107		70-130	2		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	102		106		70-130	4		30
1,2-Dibromoethane	96		94		70-130	2		30
Ethylbenzene	100		104		70-130	4		30
p/m-Xylene	106		108		70-130	2		30
o-Xylene	102		105		70-130	3		30
Isopropylbenzene	110		114		70-130	4		30
1,3,5-Trimethylbenzene	103		106		70-130	3		30
1,2,4-Trimethylbenzene	101		104		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	84		83		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	82		83		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,09,13 Batch: WG1701372-3 WG1701372-4								
Methyl tert butyl ether	98		102		66-130	4		30
Benzene	99		101		70-130	2		30
1,2-Dichloroethane	110		113		70-130	3		30
Toluene	96		100		70-130	4		30
1,2-Dibromoethane	102		108		70-130	6		30
Ethylbenzene	98		103		70-130	5		30
p/m-Xylene	103		107		70-130	4		30
o-Xylene	104		109		70-130	5		30
Isopropylbenzene	92		95		70-130	3		30
1,3,5-Trimethylbenzene	96		100		70-130	4		30
1,2,4-Trimethylbenzene	95		100		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		110		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	95		96		70-130
Dibromofluoromethane	99		98		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1701375-3 WG1701375-4								
Methyl tert butyl ether	98		102		66-130	4		30
Benzene	99		101		70-130	2		30
1,2-Dichloroethane	110		113		70-130	3		30
Toluene	96		100		70-130	4		30
1,2-Dibromoethane	102		108		70-130	6		30
Ethylbenzene	98		103		70-130	5		30
p/m-Xylene	103		107		70-130	4		30
o-Xylene	104		109		70-130	5		30
Isopropylbenzene	92		95		70-130	3		30
1,3,5-Trimethylbenzene	96		100		70-130	4		30
1,2,4-Trimethylbenzene	95		100		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	111		111		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	95		96		70-130
Dibromofluoromethane	99		98		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1701386-3 WG1701386-4								
Methyl tert butyl ether	114		112		66-130	2		30
Benzene	105		107		70-130	2		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	102		106		70-130	4		30
1,2-Dibromoethane	96		94		70-130	2		30
Ethylbenzene	100		104		70-130	4		30
p/m-Xylene	106		108		70-130	2		30
o-Xylene	102		105		70-130	3		30
Isopropylbenzene	110		114		70-130	4		30
1,3,5-Trimethylbenzene	103		106		70-130	3		30
1,2,4-Trimethylbenzene	101		104		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	84		83		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	82		83		70-130





## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11 Batch: WG1701479-3 WG1701479-4								
Methyl tert butyl ether	100		102		66-130	2		30
Benzene	95		93		70-130	2		30
1,2-Dichloroethane	103		105		70-130	2		30
Toluene	93		91		70-130	2		30
1,2-Dibromoethane	98		100		70-130	2		30
Ethylbenzene	97		94		70-130	3		30
p/m-Xylene	101		98		70-130	3		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	93		89		70-130	4		30
1,3,5-Trimethylbenzene	95		92		70-130	3		30
1,2,4-Trimethylbenzene	95		92		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		108		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	95		97		70-130
Dibromofluoromethane	96		95		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-02  
 Client ID: 302-AP04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 10:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 17:43  
 Analyst: MG  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.18	J	mg/kg	0.20	0.025	1
Fluorene	0.031	J	mg/kg	0.20	0.020	1
Phenanthrene	0.088	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.081	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.049	J	mg/kg	0.12	0.023	1
Chrysene	0.047	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.054	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.038	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-04  
 Client ID: 302-AP04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 10:15  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 18:07  
 Analyst: MG  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.1		mg/kg	0.21	0.025	1
Fluorene	0.097	J	mg/kg	0.21	0.020	1
Phenanthrene	0.18		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.061	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.027	J	mg/kg	0.12	0.023	1
Chrysene	0.024	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	66		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-06  
 Client ID: 302-AO05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 18:30  
 Analyst: MG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.048	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.026	J	mg/kg	0.12	0.022	1
Chrysene	0.022	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-08  
 Client ID: 302-AO05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:15  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 18:54  
 Analyst: MG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.040	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-10  
 Client ID: 302-AO05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:30  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 19:17  
 Analyst: MG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.038	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-12  
 Client ID: 302-AO04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 19:41  
 Analyst: MG  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.031	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	65		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-14  
 Client ID: 302-AO04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:15  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 20:04  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.025	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	64		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-16  
 Client ID: 302-AO04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:30  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 20:28  
 Analyst: SLR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.12	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.026	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-18  
 Client ID: 302-AO04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:45  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 20:51  
 Analyst: SLR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.8		mg/kg	0.21	0.025	1
Fluorene	0.10	J	mg/kg	0.21	0.020	1
Phenanthrene	0.20		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.043	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.025	J	mg/kg	0.12	0.023	1
Chrysene	0.028	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270E  
 Analytical Date: 10/18/22 11:52  
 Analyst: IM

Extraction Method: EPA 3546  
 Extraction Date: 10/17/22 19:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1700667-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	78		25-120
Phenol-d6	78		10-120
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	64		30-120
2,4,6-Tribromophenol	56		10-136
4-Terphenyl-d14	66		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1700667-2 WG1700667-3								
Naphthalene	64		69		40-140	8		50
Fluorene	64		67		40-140	5		50
Phenanthrene	61		66		40-140	8		50
Anthracene	64		69		40-140	8		50
Pyrene	61		66		35-142	8		50
Benzo(a)anthracene	64		71		40-140	10		50
Chrysene	62		67		40-140	8		50
Benzo(b)fluoranthene	62		69		40-140	11		50
Benzo(a)pyrene	64		69		40-140	8		50
Benzo(ghi)perylene	64		69		40-140	8		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	80		85		25-120
Phenol-d6	79		85		10-120
Nitrobenzene-d5	76		80		23-120
2-Fluorobiphenyl	65		68		30-120
2,4,6-Tribromophenol	55		58		10-136
4-Terphenyl-d14	59		64		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-02

Date Collected: 10/12/22 10:00

Client ID: 302-AP04-C1-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	23.5		mg/kg	2.31	0.124	1	10/14/22 08:20	10/17/22 10:27	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-04

Date Collected: 10/12/22 10:15

Client ID: 302-AP04-C2-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.17		mg/kg	2.35	0.126	1	10/14/22 08:20	10/17/22 10:32	EPA 3050B	1,6010D	NB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-06

Date Collected: 10/12/22 12:00

Client ID: 302-AO05-C1-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	96.0		mg/kg	2.42	0.130	1	10/14/22 08:20	10/17/22 10:36	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-08

Date Collected: 10/12/22 12:15

Client ID: 302-AO05-C2-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.03		mg/kg	2.33	0.125	1	10/14/22 08:20	10/17/22 10:41	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-10  
 Client ID: 302-AO05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 12:30  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.93		mg/kg	2.32	0.124	1	10/14/22 08:20	10/17/22 10:46	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-12  
 Client ID: 302-AO04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/12/22 13:00  
 Date Received: 10/12/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	39.7		mg/kg	2.14	0.115	1	10/14/22 08:20	10/17/22 10:50	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-14

Date Collected: 10/12/22 13:15

Client ID: 302-AO04-C2-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	38.1		mg/kg	2.30	0.123	1	10/14/22 08:20	10/17/22 10:55	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-16

Date Collected: 10/12/22 13:30

Client ID: 302-AO04-C3-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.4		mg/kg	2.29	0.123	1	10/14/22 08:20	10/17/22 10:59	EPA 3050B	1,6010D	NB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-18

Date Collected: 10/12/22 13:45

Client ID: 302-AO04-C4-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	11.5		mg/kg	2.47	0.132	1	10/14/22 08:20	10/17/22 11:04	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1699335-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/14/22 08:20	10/14/22 10:20	1,6010D	NB

### Prep Information

Digestion Method: EPA 3050B





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 Batch: WG1699335-2 SRM Lot Number: D113-540								
Lead, Total	87		-		72-128			-



**Matrix Spike Analysis**  
**Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

<b>Parameter</b>	<b>Native Sample</b>	<b>MS Added</b>	<b>MS Found</b>	<b>MS %Recovery</b>	<b>Qual</b>	<b>MSD Found</b>	<b>MSD %Recovery</b>	<b>Qual</b>	<b>Recovery Limits</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18    QC Batch ID: WG1699335-3    QC Sample: L2257182-02    Client ID: MS Sample												
Lead, Total	1.64J	45.2	41.7	92		-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2256782

**Report Date:** 10/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18 QC Batch ID: WG1699335-4 QC Sample: L2257182-02 Client ID: DUP Sample						
Lead, Total	1.64J	1.85J	mg/kg	NC		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-01

Date Collected: 10/12/22 10:00

Client ID: 302-AP04-C1-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-02

Date Collected: 10/12/22 10:00

Client ID: 302-AP04-C1-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-03

Date Collected: 10/12/22 10:15

Client ID: 302-AP04-C2-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-04

Date Collected: 10/12/22 10:15

Client ID: 302-AP04-C2-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.9		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-05

Date Collected: 10/12/22 12:00

Client ID: 302-AO05-C1-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.8		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

## SAMPLE RESULTS

Lab ID: L2256782-06

Date Collected: 10/12/22 12:00

Client ID: 302-AO05-C1-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-07

Date Collected: 10/12/22 12:15

Client ID: 302-AO05-C2-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.2		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-08

Date Collected: 10/12/22 12:15

Client ID: 302-AO05-C2-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

## SAMPLE RESULTS

Lab ID: L2256782-09

Date Collected: 10/12/22 12:30

Client ID: 302-AO05-C3-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

**SAMPLE RESULTS**

Lab ID: L2256782-10

Date Collected: 10/12/22 12:30

Client ID: 302-AO05-C3-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.1		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

## SAMPLE RESULTS

Lab ID: L2256782-11

Date Collected: 10/12/22 13:00

Client ID: 302-AO04-C1-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.5		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-12

Date Collected: 10/12/22 13:00

Client ID: 302-AO04-C1-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.7		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-13

Date Collected: 10/12/22 13:15

Client ID: 302-AO04-C2-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.7		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2256782

Project Number: 200.00135.006

Report Date: 10/19/22

## SAMPLE RESULTS

Lab ID: L2256782-14

Date Collected: 10/12/22 13:15

Client ID: 302-AO04-C2-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-15

Date Collected: 10/12/22 13:30

Client ID: 302-AO04-C3-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-16

Date Collected: 10/12/22 13:30

Client ID: 302-AO04-C3-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.6		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-17

Date Collected: 10/12/22 13:45

Client ID: 302-AO04-C4-VOC

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.8		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**SAMPLE RESULTS**

Lab ID: L2256782-18

Date Collected: 10/12/22 13:45

Client ID: 302-AO04-C4-COMP

Date Received: 10/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.7		%	0.100	NA	1	-	10/14/22 12:11	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2256782

Report Date: 10/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1699413-1 QC Sample: L2256782-01 Client ID: 302-AP04-C1-VOC						
Solids, Total	87.0	85.7	%	2		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256782-01A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-01B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-01C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-01D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-02B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-03A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-03B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-03C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-03D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-04B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-05A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-05B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-05C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-05D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-06B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-07A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-07B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-07C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-07D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2256782**Project Number:** 200.00135.006**Report Date:** 10/19/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256782-08B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-09A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-09B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-09C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-09D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-10B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-11A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-11B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-11C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-11D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-12B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-13A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-13B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-13C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-13D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-14B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-15A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-15B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-15C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-15D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-16B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)
L2256782-17A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2256782-17B	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)
L2256782-17C	Vial water preserved	A	NA		4.1	Y	Absent	13-OCT-22 15:55	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

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**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2256782-17D	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		TS(7)
L2256782-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2256782-18B	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2256782  
**Report Date:** 10/19/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
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**Report Date:** 10/19/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2256782

**Project Number:** 200.00135.006

**Report Date:** 10/19/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalena using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/13/22

ALPHA Job #: U2256792

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	SAMPLE HANDLING										TOTAL # BOTTLES			
		Date	Time						Filtration	Done	Not Needed	Lab to do	Preservation	Lab to do	(Please specify below)	Sample Specific Comments						
56782-01	302-AP04-C1-VOC	10/12	1000	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-02	302-AP04-C1-Comp		1000			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AP04-C2-VOC		1015			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AP04-C2-Comp		1015			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-A005-C1-VOC		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-A005-C1-Comp		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-A005-C2-VOC		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-A005-C2-Comp		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-09	302-A005-C3-VOC		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-A005-C3-Comp		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
56782-01	302-AP04-C1-VOC	10/12	1000	S	TS
-02	302-AP04-C1-Comp		1000		
-03	302-AP04-C2-VOC		1015		
-04	302-AP04-C2-Comp		1015		
-05	302-A005-C1-VOC		1200		
-06	302-A005-C1-Comp		1200		
-07	302-A005-C2-VOC		1215		
-08	302-A005-C2-Comp		1215		
-09	302-A005-C3-VOC		1230		
-10	302-A005-C3-Comp		1230		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

EDD  
10/13/22  
0200  
10/13/22 0200

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/12 15:15	ST- AA	10-12-22 15:35
<i>[Signature]</i>	10/12/22 10:00	<i>[Signature]</i>	10-12-22 18:00
<i>[Signature]</i>	10-12-22 2:00	<i>[Signature]</i>	10/12/22 2:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery  
 Project Location: Philadelphia, PA  
 Project #: 200.00135.006  
 Project Manager: William Schmidt  
 ALPHA Quote #: ~~18554~~ ~~18553~~ 18554

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974  
 Fax:  
 Email: William.Schmidt@ransomenv.com  
 These samples have been Previously analyzed by Alpha

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)  
 Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to [edd@terraphase.com](mailto:edd@terraphase.com), [William.Schmidt@ransomenv.com](mailto:William.Schmidt@ransomenv.com), and [ijeray@hilcoglobal.com](mailto:ijeray@hilcoglobal.com)

Date Rec'd in Lab: 10/13/22    ALPHA Job #: 22256782

**Report Information**    **Data Deliverables**    **Billing Information**  
 FAX     EMAIL     Same as Client info    PO #: 3562  
 ADEx     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	SAMPLE HANDLING										TOTAL # BOTTLES				
		Date	Time						Filtration	Done	Not Needed	Lab to do	Preservation	Lab to do	(Please specify below)		Sample Specific Comments						
56782-11	302-A004-C1-VOC	10/12	1360	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-12	302-A004-C1-COMP		1300			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-A004-C2-VOC		1315			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-A004-C2-COMP		1315			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-A004-C3-VOC		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-A004-C3-COMP		1330			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-A004-CA-VOC		1345			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-A004-CA-COMP	↓	1345			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
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ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
56782-11	302-A004-C1-VOC	10/12	1360	S	TS
-12	302-A004-C1-COMP		1300		
-13	302-A004-C2-VOC		1315		
-14	302-A004-C2-COMP		1315		
-15	302-A004-C3-VOC		1330		
-16	302-A004-C3-COMP		1330		
-17	302-A004-CA-VOC		1345		
-18	302-A004-CA-COMP	↓	1345		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Stamp: 10/13/22 0200  
 10/13/22 0200

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/12 1315	<i>[Signature]</i> AAL	10-12-22 1545
<i>[Signature]</i>	10/12/22 1800	<i>[Signature]</i>	10/12/22 1800
<i>[Signature]</i>	10-12 2100	<i>[Signature]</i>	10/12/22 2100

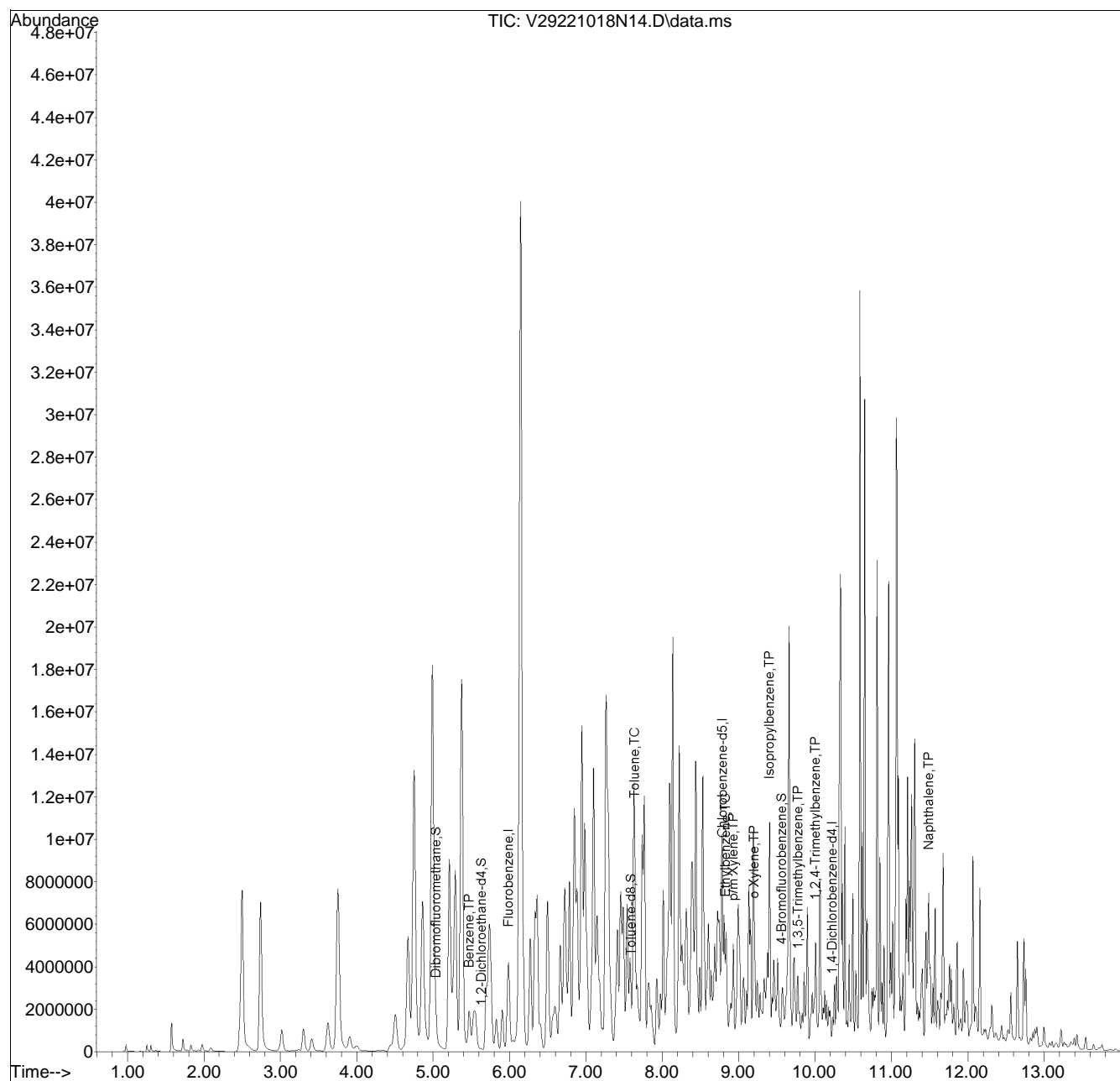
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221018N\  
 Data File : V29221018N14.D  
 Acq On : 18 Oct 2022 09:33 pm  
 Operator : VOA129:JIC  
 Sample : 12256782-01,31h,3.62,5,0.100,,a,r2f  
 Misc : WG1701372,ICAL19353  
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Oct 19 07:27:31 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221018N\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V29221018N01.D•

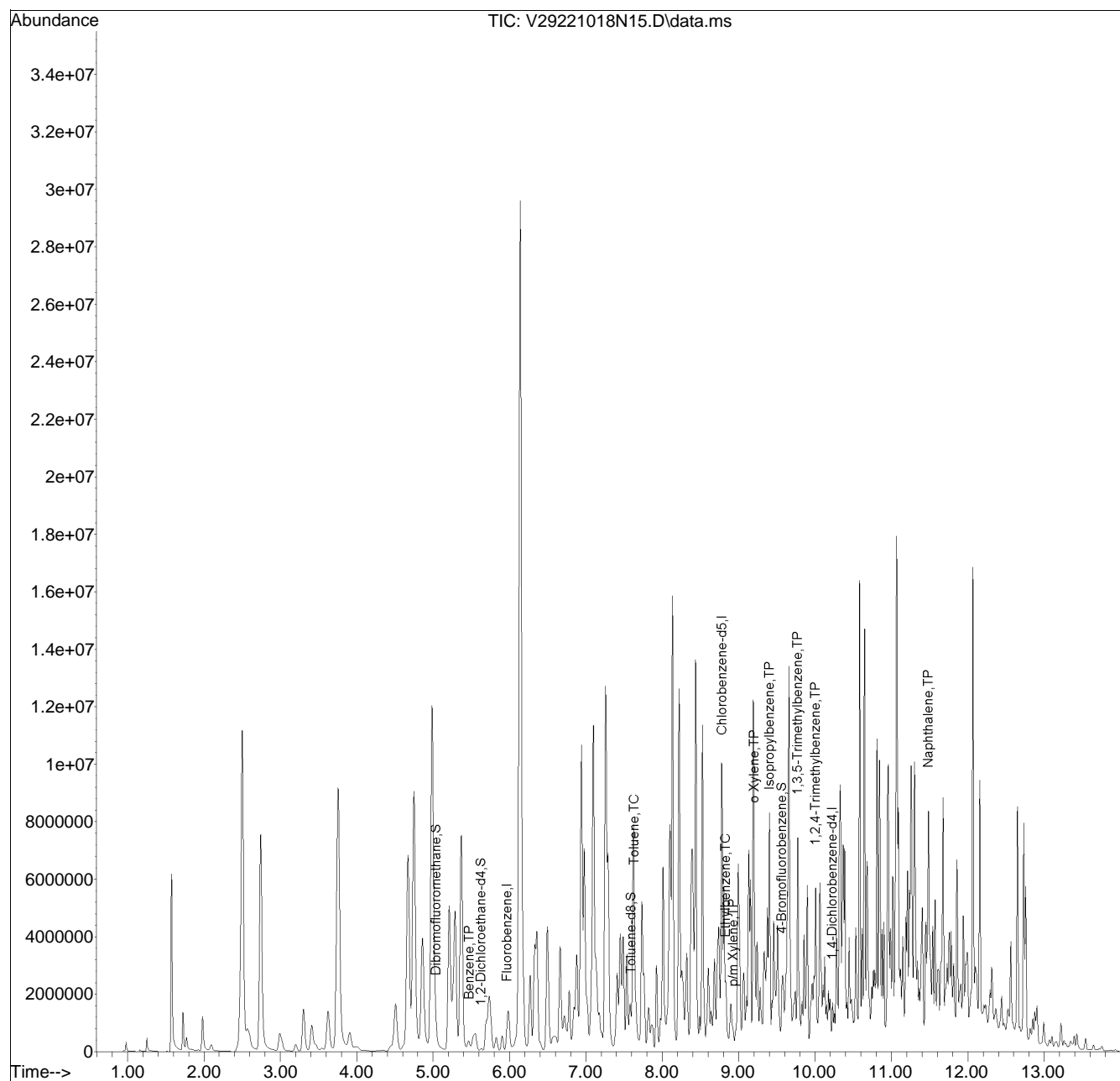


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221018N\  
 Data File : V29221018N15.D  
 Acq On : 18 Oct 2022 09:54 pm  
 Operator : VOA129:JIC  
 Sample : 12256782-03,31h,5.48,5,0.100,,a,r2f  
 Misc : WG1701372,ICAL19353  
 ALS Vial : 15 Sample Multiplier: 1

Quant Time: Oct 19 07:27:59 2022  
 Quant Method : I:\VOLATILES\VOA129\2022\221018N\V129\_220921N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Thu Sep 22 07:23:42 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V29221018N01.D•

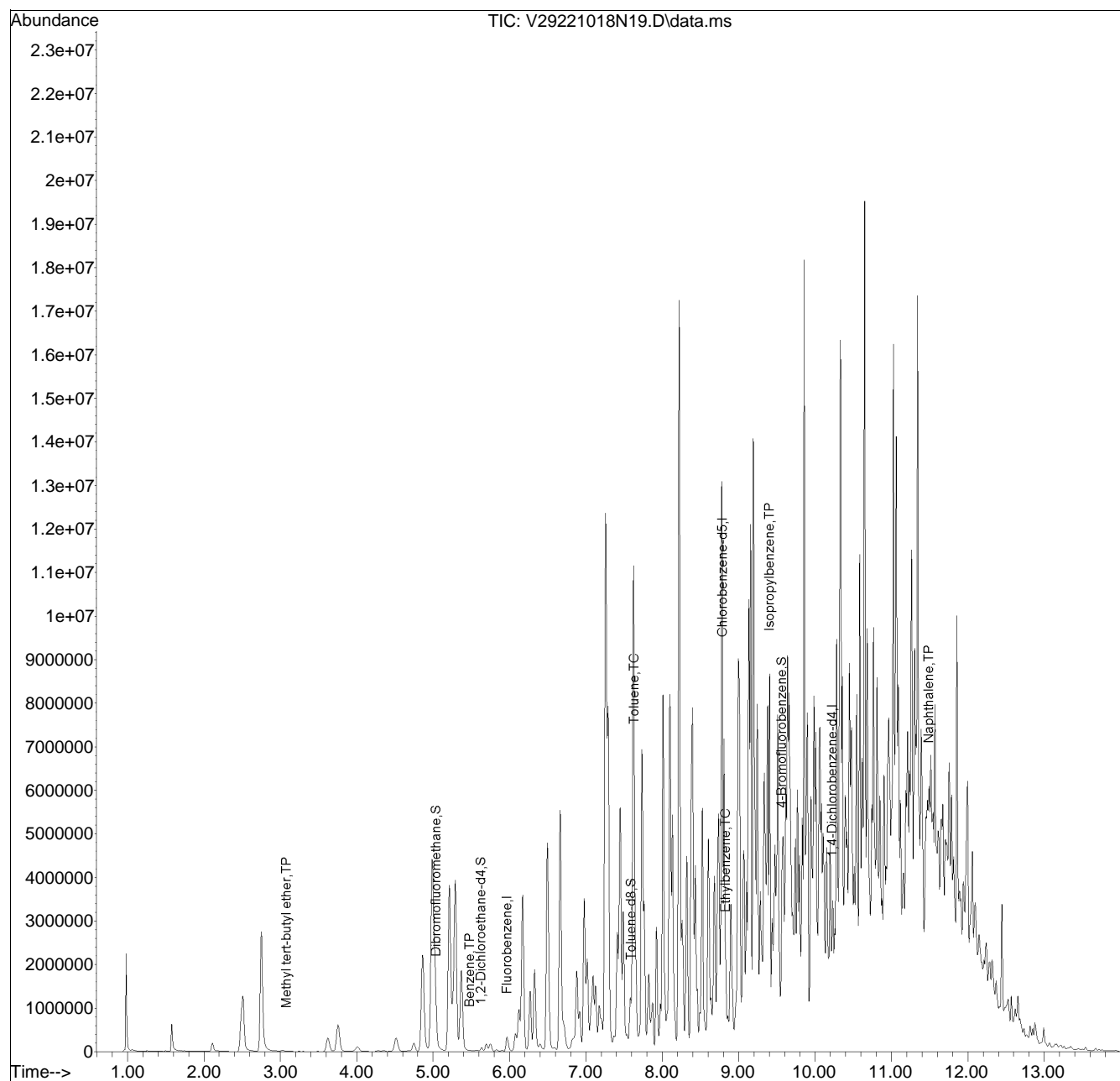


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221018N\  
Data File : V29221018N19.D  
Acq On : 18 Oct 2022 11:17 pm  
Operator : VOA129:JIC  
Sample : 12256782-05,31,6.28,5,,b,r2f  
Misc : WG1701375,ICAL19353  
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 19 07:30:58 2022  
Quant Method : I:\VOLATILES\VOA129\2022\221018N\V129\_220921N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Sep 22 07:23:42 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V29221018N01.D•

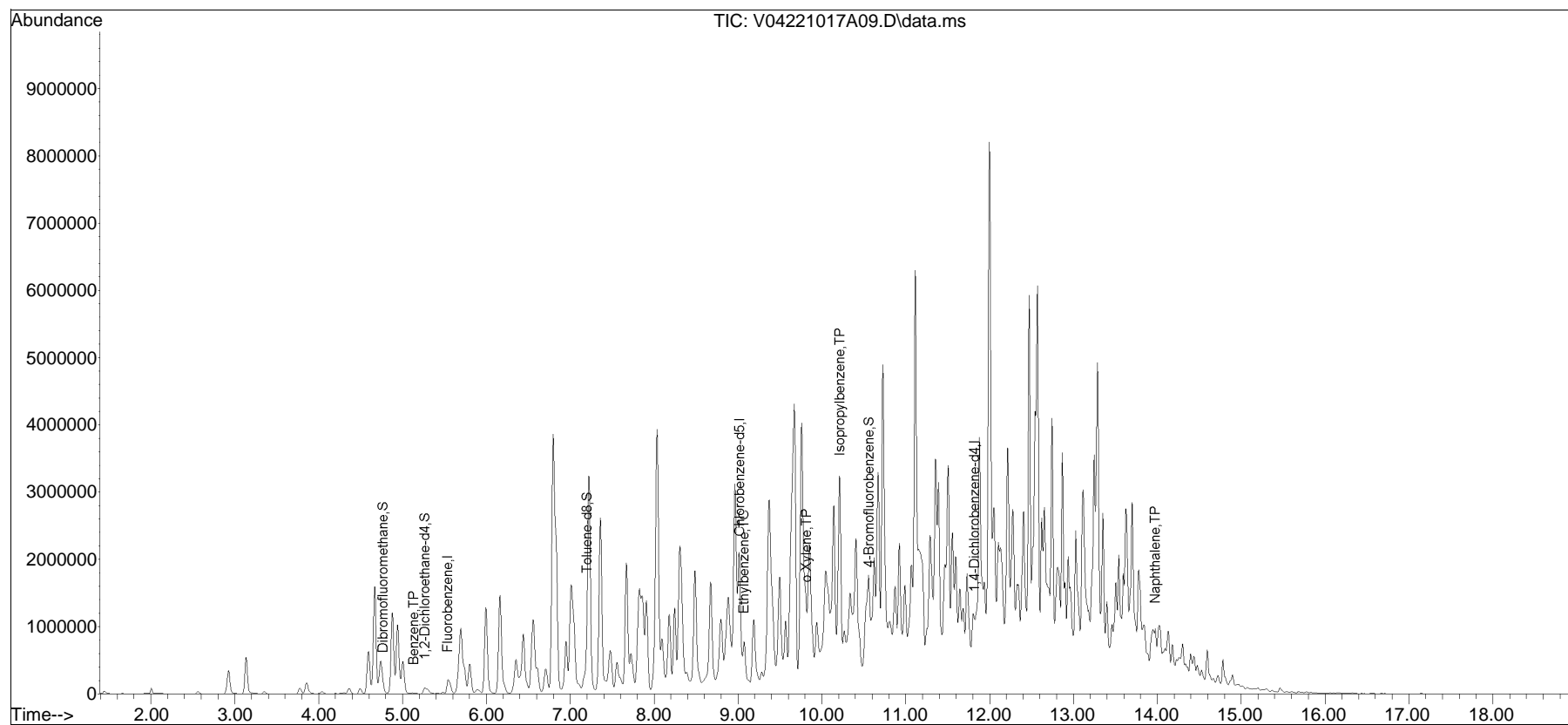


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\221017A\  
Data File : V04221017A09.D  
Acq On : 17 Oct 2022 10:37 am  
Operator : VOA104:JIC  
Sample : L2256782-07,31,6.52,5,,C,R2F  
Misc : WG1701022,ICAL19119  
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 18 12:45:44 2022  
Quant Method : I:\VOLATILES\VOA104\2022\221017A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list17A\V04221017A02.D•

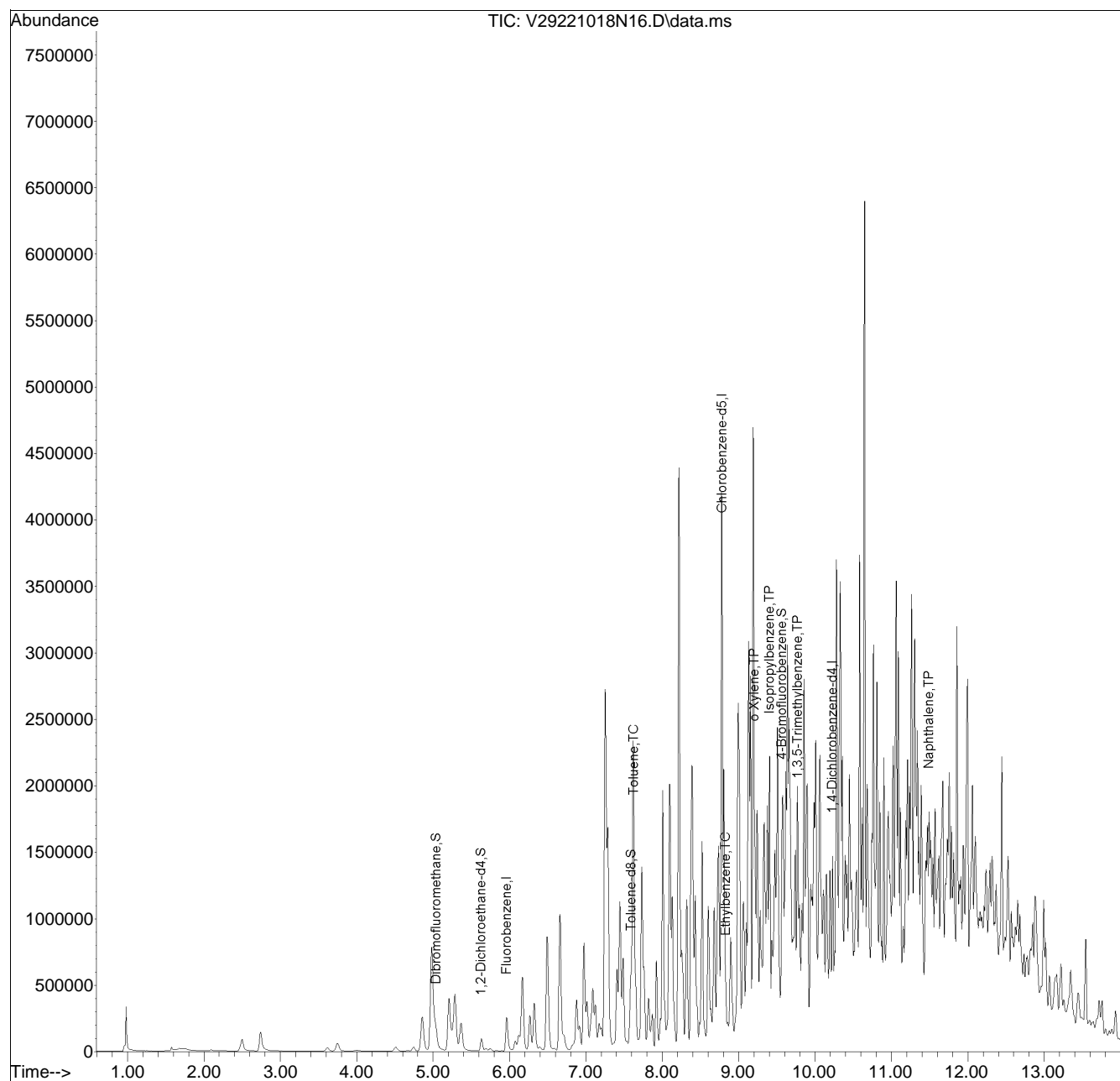


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\221018N\  
Data File : V29221018N16.D  
Acq On : 18 Oct 2022 10:14 pm  
Operator : VOA129:JIC  
Sample : 12256782-09,31h,5.80,5,0.100,,a,r2f  
Misc : WG1701372,ICAL19353  
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Oct 19 07:28:46 2022  
Quant Method : I:\VOLATILES\VOA129\2022\221018N\V129\_220921N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Thu Sep 22 07:23:42 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V29221018N01.D•





## ANALYTICAL REPORT

Lab Number:	L2257140
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/20/22

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508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2257140-01	302-AN03-C1-VOC	SOIL	PHILADELPHIA, PA	10/13/22 09:45	10/13/22
L2257140-02	302-AN03-C1-COMP	SOIL	PHILADELPHIA, PA	10/13/22 09:45	10/13/22
L2257140-03	302-AN03-C2-VOC	SOIL	PHILADELPHIA, PA	10/13/22 10:00	10/13/22
L2257140-04	302-AN03-C2-COMP	SOIL	PHILADELPHIA, PA	10/13/22 10:00	10/13/22
L2257140-05	302-AN03-C3-VOC	SOIL	PHILADELPHIA, PA	10/13/22 10:15	10/13/22
L2257140-06	302-AN03-C3-COMP	SOIL	PHILADELPHIA, PA	10/13/22 10:15	10/13/22
L2257140-07	302-AN03-C4-VOC	SOIL	PHILADELPHIA, PA	10/13/22 10:30	10/13/22
L2257140-08	302-AN03-C4-COMP	SOIL	PHILADELPHIA, PA	10/13/22 10:30	10/13/22
L2257140-09	302-AM04-C1-VOC	SOIL	PHILADELPHIA, PA	10/13/22 12:00	10/13/22
L2257140-10	302-AM04-C1-COMP	SOIL	PHILADELPHIA, PA	10/13/22 12:00	10/13/22
L2257140-11	302-AM04-C2-VOC	SOIL	PHILADELPHIA, PA	10/13/22 12:15	10/13/22
L2257140-12	302-AM04-C2-COMP	SOIL	PHILADELPHIA, PA	10/13/22 12:15	10/13/22
L2257140-13	302-AM04-C3-VOC	SOIL	PHILADELPHIA, PA	10/13/22 12:30	10/13/22
L2257140-14	302-AM04-C3-COMP	SOIL	PHILADELPHIA, PA	10/13/22 12:30	10/13/22
L2257140-15	302-AM04-C4-VOC	SOIL	PHILADELPHIA, PA	10/13/22 12:45	10/13/22
L2257140-16	302-AM04-C4-COMP	SOIL	PHILADELPHIA, PA	10/13/22 12:45	10/13/22
L2257140-17	302-AM04-C5-VOC	SOIL	PHILADELPHIA, PA	10/13/22 13:00	10/13/22
L2257140-18	302-AM04-C5-COMP	SOIL	PHILADELPHIA, PA	10/13/22 13:00	10/13/22
L2257140-19	302-AM05-C1-VOC	SOIL	PHILADELPHIA, PA	10/13/22 13:30	10/13/22
L2257140-20	302-AM05-C1-COMP	SOIL	PHILADELPHIA, PA	10/13/22 13:30	10/13/22
L2257140-21	302-AM05-C2-VOC	SOIL	PHILADELPHIA, PA	10/13/22 13:45	10/13/22
L2257140-22	302-AM05-C2-COMP	SOIL	PHILADELPHIA, PA	10/13/22 13:45	10/13/22
L2257140-23	302-AM05-C3-VOC	SOIL	PHILADELPHIA, PA	10/13/22 14:00	10/13/22
L2257140-24	302-AM05-C3-COMP	SOIL	PHILADELPHIA, PA	10/13/22 14:00	10/13/22



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2257140-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (209%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257140-11: The internal standard (IS) response for fluorobenzene (252%) and the surrogate recoveries for dibromofluoromethane (38%) and 4-bromofluorobenzene (851%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was re-analyzed on a larger dilution in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial analysis; however, since the IS response was above method criteria, all associated compounds and surrogate recoveries are considered to have a potentially low bias. The results of both analyses are reported.

L2257140-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (141%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257140-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (161%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257140-17 and -23: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (157%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257140-17: The surrogate recovery is outside the method acceptance criteria for bromofluoromethane (66%) due to interference with the Internal Standard.

L2257140-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (160%);

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

### Case Narrative (continued)

however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Total Metals

The WG1699768-3 MS recovery, performed on L2257140-02, is outside the acceptance criteria for lead (279%). A post digestion spike was performed and yielded an unacceptable recovery for lead (52%). The serial dilution recovery was acceptable; therefore, the matrix test passed for the sample matrix.

The WG1699768-4 Laboratory Duplicate RPD for lead (37%), performed on L2257140-02, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Melissa Sturgis

Title: Technical Director/Representative

Date: 10/20/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-01  
 Client ID: 302-AN03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 09:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 10:52  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	102		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-03  
 Client ID: 302-AN03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 11:31  
 Analyst: JIC  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-05  
 Client ID: 302-AN03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 12:10  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	103		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-07  
 Client ID: 302-AN03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 01:28  
 Analyst: JIC  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00043	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00025	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	209	Q	70-130
Dibromofluoromethane	105		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-09  
 Client ID: 302-AM04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 01:51  
 Analyst: JIC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.0012	J	mg/kg	0.0023	0.00023	1
Benzene	0.00084		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	0.00073	J	mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	0.0011	J	mg/kg	0.0012	0.00016	1
p/m-Xylene	0.0017	J	mg/kg	0.0023	0.00065	1
o-Xylene	0.0011	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.0028	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.020		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00063	J	mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-11  
 Client ID: 302-AM04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 02:37  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	0.0045		mg/kg	0.0022	0.00022	1
Benzene	0.0011		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	0.0069		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	0.0076		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.030		mg/kg	0.0022	0.00062	1
o-Xylene	0.021		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.051		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.73	E	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0023		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	116		70-130
4-Bromofluorobenzene	851	Q	70-130
Dibromofluoromethane	38	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-11 D  
 Client ID: 302-AM04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 14:46  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.20	0.020	2
Benzene	ND		mg/kg	0.050	0.017	2
1,2-Dichloroethane	ND		mg/kg	0.10	0.026	2
Toluene	ND		mg/kg	0.10	0.055	2
1,2-Dibromoethane	ND		mg/kg	0.050	0.030	2
Ethylbenzene	0.024	J	mg/kg	0.10	0.014	2
p/m-Xylene	0.064	J	mg/kg	0.20	0.056	2
o-Xylene	0.030	J	mg/kg	0.10	0.029	2
Xylenes, Total	0.094	J	mg/kg	0.10	0.029	2
Isopropylbenzene	1.1		mg/kg	0.10	0.011	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.20	0.019	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.20	0.034	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-13  
 Client ID: 302-AM04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 23:57  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.025	J	mg/kg	0.062	0.0087	1
p/m-Xylene	0.057	J	mg/kg	0.12	0.034	1
o-Xylene	0.097		mg/kg	0.062	0.018	1
Xylenes, Total	0.15	J	mg/kg	0.062	0.018	1
Isopropylbenzene	2.2		mg/kg	0.062	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	141	Q	70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-15  
 Client ID: 302-AM04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 00:20  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.041		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.12		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.078		mg/kg	0.065	0.0092	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	0.48		mg/kg	0.065	0.019	1
Xylenes, Total	0.48		mg/kg	0.065	0.019	1
Isopropylbenzene	8.9		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	161	Q	70-130
Dibromofluoromethane	74		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-17  
 Client ID: 302-AM04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 00:43  
 Analyst: JIC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.24		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	0.11		mg/kg	0.064	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.11		mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	0.42		mg/kg	0.064	0.018	1
Xylenes, Total	0.42		mg/kg	0.064	0.018	1
Isopropylbenzene	6.2		mg/kg	0.064	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	157	Q	70-130
Dibromofluoromethane	66	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-19  
 Client ID: 302-AM05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 12:49  
 Analyst: JIC  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.00038	J	mg/kg	0.00062	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	0.00038	J	mg/kg	0.0012	0.00017	1
p/m-Xylene	0.00071	J	mg/kg	0.0025	0.00069	1
o-Xylene	0.00052	J	mg/kg	0.0012	0.00036	1
Xylenes, Total	0.0012	J	mg/kg	0.0012	0.00036	1
Isopropylbenzene	0.0034		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.00033	J	mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.00094	J	mg/kg	0.0025	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	96		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-21  
 Client ID: 302-AM05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 02:14  
 Analyst: JIC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00047	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.00084	J	mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.011		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0013	J	mg/kg	0.0023	0.00064	1
o-Xylene	0.00059	J	mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0019	J	mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.040		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00026	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	160	Q	70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-23  
 Client ID: 302-AM05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 14:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 01:05  
 Analyst: JIC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	3.5		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	0.23		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	18.		mg/kg	0.068	0.0096	1
p/m-Xylene	18.		mg/kg	0.14	0.038	1
o-Xylene	0.65		mg/kg	0.068	0.020	1
Xylenes, Total	19.		mg/kg	0.068	0.020	1
Isopropylbenzene	4.6		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	15.		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	21.	E	mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	157	Q	70-130
Dibromofluoromethane	75		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-23 D  
 Client ID: 302-AM05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 14:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/17/22 18:01  
 Analyst: JIC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
1,2,4-Trimethylbenzene	23.		mg/kg	0.27	0.045	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	87		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/17/22 09:35  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05,19 Batch: WG1701054-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/17/22 09:35  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11,23 Batch: WG1701055-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/18/22 19:00  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13,15,17,23 Batch: WG1701750-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	110		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/18/22 19:00  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,09,11,21 Batch: WG1701752-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	110		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05,19 Batch: WG1701054-3 WG1701054-4								
Methyl tert butyl ether	100		95		66-130	5		30
Benzene	105		100		70-130	5		30
1,2-Dichloroethane	106		102		70-130	4		30
Toluene	102		97		70-130	5		30
1,2-Dibromoethane	105		101		70-130	4		30
Ethylbenzene	104		100		70-130	4		30
p/m-Xylene	102		98		70-130	4		30
o-Xylene	102		97		70-130	5		30
Isopropylbenzene	101		97		70-130	4		30
1,3,5-Trimethylbenzene	101		97		70-130	4		30
1,2,4-Trimethylbenzene	102		98		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		101		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	99		99		70-130





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11,23 Batch: WG1701055-3 WG1701055-4								
Methyl tert butyl ether	100		95		66-130	5		30
Benzene	105		100		70-130	5		30
1,2-Dichloroethane	106		102		70-130	4		30
Toluene	102		97		70-130	5		30
1,2-Dibromoethane	105		101		70-130	4		30
Ethylbenzene	104		100		70-130	4		30
p/m-Xylene	102		98		70-130	4		30
o-Xylene	102		97		70-130	5		30
Isopropylbenzene	101		97		70-130	4		30
1,3,5-Trimethylbenzene	101		97		70-130	4		30
1,2,4-Trimethylbenzene	102		98		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		101		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	99		100		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13,15,17,23 Batch: WG1701750-3 WG1701750-4								
Methyl tert butyl ether	112		112		66-130	0		30
Benzene	93		91		70-130	2		30
1,2-Dichloroethane	100		99		70-130	1		30
Toluene	89		82		70-130	8		30
1,2-Dibromoethane	92		89		70-130	3		30
Ethylbenzene	88		81		70-130	8		30
p/m-Xylene	93		86		70-130	8		30
o-Xylene	95		88		70-130	8		30
Isopropylbenzene	84		75		70-130	11		30
1,3,5-Trimethylbenzene	89		80		70-130	11		30
1,2,4-Trimethylbenzene	89		80		70-130	11		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		103		70-130
Toluene-d8	98		96		70-130
4-Bromofluorobenzene	102		98		70-130
Dibromofluoromethane	100		99		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,09,11,21 Batch: WG1701752-3 WG1701752-4								
Methyl tert butyl ether	112		112		66-130	0		30
Benzene	93		91		70-130	2		30
1,2-Dichloroethane	100		99		70-130	1		30
Toluene	89		82		70-130	8		30
1,2-Dibromoethane	92		89		70-130	3		30
Ethylbenzene	88		81		70-130	8		30
p/m-Xylene	93		86		70-130	8		30
o-Xylene	95		88		70-130	8		30
Isopropylbenzene	84		75		70-130	11		30
1,3,5-Trimethylbenzene	89		80		70-130	11		30
1,2,4-Trimethylbenzene	89		80		70-130	11		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		103		70-130
Toluene-d8	98		96		70-130
4-Bromofluorobenzene	102		98		70-130
Dibromofluoromethane	100		99		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-02  
 Client ID: 302-AN03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 09:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 18:40  
 Analyst: SLR  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.14	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.12		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.10	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.069	J	mg/kg	0.11	0.021	1
Chrysene	0.082	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.10	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.098	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.076	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	40		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-04  
 Client ID: 302-AN03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/20/22 14:35  
 Analyst: JG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.060	J	mg/kg	0.19	0.023	1
Fluorene	0.070	J	mg/kg	0.19	0.018	1
Phenanthrene	0.28		mg/kg	0.11	0.023	1
Anthracene	0.055	J	mg/kg	0.11	0.037	1
Pyrene	0.23		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.11		mg/kg	0.11	0.021	1
Chrysene	0.18		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.17		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	63		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-06  
 Client ID: 302-AN03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 19:13  
 Analyst: SLR  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.080	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.14		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.14		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.076	J	mg/kg	0.11	0.021	1
Chrysene	0.082	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.083	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.11	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.059	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	54		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-08  
 Client ID: 302-AN03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 19:30  
 Analyst: SLR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.041	J	mg/kg	0.20	0.024	1
Fluorene	0.24		mg/kg	0.20	0.019	1
Phenanthrene	0.41		mg/kg	0.12	0.024	1
Anthracene	0.039	J	mg/kg	0.12	0.039	1
Pyrene	0.037	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	62		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-10  
 Client ID: 302-AM04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 19:47  
 Analyst: SLR  
 Percent Solids: 73%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.084	J	mg/kg	0.22	0.027	1
Fluorene	0.23		mg/kg	0.22	0.022	1
Phenanthrene	0.64		mg/kg	0.13	0.027	1
Anthracene	0.12	J	mg/kg	0.13	0.044	1
Pyrene	0.32		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.16		mg/kg	0.13	0.025	1
Chrysene	0.14		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.19		mg/kg	0.13	0.038	1
Benzo(a)pyrene	0.16	J	mg/kg	0.18	0.054	1
Benzo(ghi)perylene	0.059	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	48		30-120
4-Terphenyl-d14	27		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-12  
 Client ID: 302-AM04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 20:03  
 Analyst: SLR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.1		mg/kg	0.20	0.024	1
Fluorene	2.6		mg/kg	0.20	0.019	1
Phenanthrene	6.1		mg/kg	0.12	0.024	1
Anthracene	0.19		mg/kg	0.12	0.039	1
Pyrene	0.46		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.12		mg/kg	0.12	0.022	1
Chrysene	0.12		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.087	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.031	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	225	Q	23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	41		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-14  
 Client ID: 302-AM04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 20:20  
 Analyst: SLR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.54		mg/kg	0.19	0.023	1
Fluorene	2.5		mg/kg	0.19	0.018	1
Phenanthrene	5.7		mg/kg	0.11	0.023	1
Anthracene	0.12		mg/kg	0.11	0.037	1
Pyrene	0.37		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.11		mg/kg	0.11	0.022	1
Chrysene	0.12		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.10	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.10	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	204	Q	23-120
2-Fluorobiphenyl	47		30-120
4-Terphenyl-d14	40		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-16  
 Client ID: 302-AM04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 20:36  
 Analyst: SLR  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.43		mg/kg	0.19	0.023	1
Fluorene	1.8		mg/kg	0.19	0.019	1
Phenanthrene	4.0		mg/kg	0.12	0.023	1
Anthracene	0.25		mg/kg	0.12	0.038	1
Pyrene	0.17		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.038	J	mg/kg	0.12	0.022	1
Chrysene	0.061	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.040	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	146	Q	23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-18  
 Client ID: 302-AM04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 20:53  
 Analyst: SLR  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.24		mg/kg	0.20	0.025	1
Fluorene	1.6		mg/kg	0.20	0.020	1
Phenanthrene	2.9		mg/kg	0.12	0.025	1
Anthracene	0.20		mg/kg	0.12	0.040	1
Pyrene	0.10	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	0.038	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	43		30-120
4-Terphenyl-d14	42		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-20  
 Client ID: 302-AM05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 21:10  
 Analyst: SLR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.025	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	36		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-22  
 Client ID: 302-AM05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 21:27  
 Analyst: SLR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	2.7		mg/kg	0.20	0.024	1
Fluorene	0.40		mg/kg	0.20	0.019	1
Phenanthrene	0.82		mg/kg	0.12	0.024	1
Anthracene	0.060	J	mg/kg	0.12	0.039	1
Pyrene	0.043	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-24  
 Client ID: 302-AM05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 14:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/15/22 21:44  
 Analyst: SLR  
 Percent Solids: 80%

Extraction Method: EPA 3546  
 Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	1.1		mg/kg	0.20	0.025	1
Fluorene	0.37		mg/kg	0.20	0.020	1
Phenanthrene	0.95		mg/kg	0.12	0.025	1
Anthracene	0.079	J	mg/kg	0.12	0.040	1
Pyrene	0.050	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	30		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	50		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/15/22 12:20  
Analyst: SLR

Extraction Method: EPA 3546  
Extraction Date: 10/14/22 18:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1699705-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	62		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1699705-2 WG1699705-3								
Naphthalene	77		80		40-140	4		50
Fluorene	79		84		40-140	6		50
Phenanthrene	77		83		40-140	8		50
Anthracene	81		86		40-140	6		50
Pyrene	78		83		35-142	6		50
Benzo(a)anthracene	80		86		40-140	7		50
Chrysene	76		82		40-140	8		50
Benzo(b)fluoranthene	73		78		40-140	7		50
Benzo(a)pyrene	77		82		40-140	6		50
Benzo(ghi)perylene	69		74		40-140	7		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	93		93		23-120
2-Fluorobiphenyl	72		76		30-120
4-Terphenyl-d14	68		72		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-02  
 Client ID: 302-AN03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 09:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	197		mg/kg	2.16	0.116	1	10/15/22 07:15	10/18/22 13:12	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-04  
 Client ID: 302-AN03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	839		mg/kg	2.25	0.121	1	10/15/22 07:15	10/18/22 12:58	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-06  
 Client ID: 302-AN03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	989		mg/kg	2.15	0.115	1	10/15/22 07:15	10/18/22 13:02	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-08  
 Client ID: 302-AN03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	79.5		mg/kg	2.41	0.129	1	10/15/22 07:15	10/18/22 13:07	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257140

**Project Number:** 200.00135.006

**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-10

Date Collected: 10/13/22 12:00

Client ID: 302-AM04-C1-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	82.2		mg/kg	2.60	0.139	1	10/15/22 07:15	10/18/22 15:33	EPA 3050B	1,6010D	DMB





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-12  
 Client ID: 302-AM04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:15  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	15.9		mg/kg	2.31	0.124	1	10/15/22 07:15	10/18/22 15:48	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257140

**Project Number:** 200.00135.006

**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-14

Date Collected: 10/13/22 12:30

Client ID: 302-AM04-C3-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.64		mg/kg	2.22	0.119	1	10/15/22 07:15	10/18/22 15:52	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-16  
 Client ID: 302-AM04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.80		mg/kg	2.22	0.119	1	10/15/22 07:15	10/18/22 16:17	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257140

**Project Number:** 200.00135.006

**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-18

Date Collected: 10/13/22 13:00

Client ID: 302-AM04-C5-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.20		mg/kg	2.34	0.125	1	10/15/22 07:15	10/18/22 16:22	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-20  
 Client ID: 302-AM05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	492		mg/kg	2.29	0.123	1	10/15/22 07:15	10/18/22 16:27	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-22  
 Client ID: 302-AM05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:45  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.79		mg/kg	2.33	0.125	1	10/15/22 07:15	10/18/22 16:31	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-24  
 Client ID: 302-AM05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 14:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.07		mg/kg	2.42	0.130	1	10/15/22 07:15	10/18/22 16:36	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24						Batch: WG1699768-1			
Lead, Total	ND	mg/kg	2.00	0.107	1	10/15/22 07:15	10/18/22 12:46	1,6010D	DMB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 Batch: WG1699768-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24    QC Batch ID: WG1699768-3    QC Sample: L2257140-02    Client ID: 302-AN03-C1-COMP												
Lead, Total	197	46.6	327	279	Q	-	-		75-125	-		20

## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2257140

Report Date: 10/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1699768-4 QC Sample: L2257140-02 Client ID: 302-AN03-C1-COMP						
Lead, Total	197	135	mg/kg	37	Q	20

**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24 QC Batch ID: WG1699768-6 QC Sample: L2257140-02 Client ID: 302-AN03-C1-COMP						
Lead, Total	197	225	mg/kg	14		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-01

Date Collected: 10/13/22 09:45

Client ID: 302-AN03-C1-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.4		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

**Lab ID:** L2257140-02  
**Client ID:** 302-AN03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/13/22 09:45  
**Date Received:** 10/13/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.5		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-03  
 Client ID: 302-AN03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.2		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-04

Date Collected: 10/13/22 10:00

Client ID: 302-AN03-C2-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.5		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-05

Date Collected: 10/13/22 10:15

Client ID: 302-AN03-C3-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257140

Project Number: 200.00135.006

Report Date: 10/20/22

## SAMPLE RESULTS

Lab ID: L2257140-06

Date Collected: 10/13/22 10:15

Client ID: 302-AN03-C3-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.5		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257140

Project Number: 200.00135.006

Report Date: 10/20/22

## SAMPLE RESULTS

Lab ID: L2257140-07

Date Collected: 10/13/22 10:30

Client ID: 302-AN03-C4-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.5		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-08  
 Client ID: 302-AN03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 10:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-09  
 Client ID: 302-AM04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:00  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.7		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257140

Project Number: 200.00135.006

Report Date: 10/20/22

## SAMPLE RESULTS

Lab ID: L2257140-10

Date Collected: 10/13/22 12:00

Client ID: 302-AM04-C1-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.8		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257140

Project Number: 200.00135.006

Report Date: 10/20/22

## SAMPLE RESULTS

Lab ID: L2257140-11

Date Collected: 10/13/22 12:15

Client ID: 302-AM04-C2-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2257140

Project Number: 200.00135.006

Report Date: 10/20/22

## SAMPLE RESULTS

Lab ID: L2257140-12

Date Collected: 10/13/22 12:15

Client ID: 302-AM04-C2-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257140

Project Number: 200.00135.006

Report Date: 10/20/22

## SAMPLE RESULTS

Lab ID: L2257140-13

Date Collected: 10/13/22 12:30

Client ID: 302-AM04-C3-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-14  
 Client ID: 302-AM04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 12:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-15

Date Collected: 10/13/22 12:45

Client ID: 302-AM04-C4-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.6		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

**Lab ID:** L2257140-16  
**Client ID:** 302-AM04-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/13/22 12:45  
**Date Received:** 10/13/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-17

Date Collected: 10/13/22 13:00

Client ID: 302-AM04-C5-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-18

Date Collected: 10/13/22 13:00

Client ID: 302-AM04-C5-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.1		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-19

Date Collected: 10/13/22 13:30

Client ID: 302-AM05-C1-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.0		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257140  
**Report Date:** 10/20/22

**SAMPLE RESULTS**

Lab ID: L2257140-20  
 Client ID: 302-AM05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/13/22 13:30  
 Date Received: 10/13/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.7		%	0.100	NA	1	-	10/15/22 10:46	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-21

Date Collected: 10/13/22 13:45

Client ID: 302-AM05-C2-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.6		%	0.100	NA	1	-	10/15/22 10:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-22

Date Collected: 10/13/22 13:45

Client ID: 302-AM05-C2-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.9		%	0.100	NA	1	-	10/15/22 10:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-23

Date Collected: 10/13/22 14:00

Client ID: 302-AM05-C3-VOC

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.7		%	0.100	NA	1	-	10/15/22 10:38	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**SAMPLE RESULTS**

Lab ID: L2257140-24

Date Collected: 10/13/22 14:00

Client ID: 302-AM05-C3-COMP

Date Received: 10/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.1		%	0.100	NA	1	-	10/15/22 10:38	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2257140

Report Date: 10/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 21-24 QC Batch ID: WG1699809-1 QC Sample: L2256652-01 Client ID: DUP Sample						
Solids, Total	83.3	83.0	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1699810-1 QC Sample: L2257140-01 Client ID: 302-AN03-C1-VOC						
Solids, Total	85.4	85.3	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257140-01A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2257140-01B	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-01C	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-01D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2257140-02A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2257140-02B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2257140-03A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-03B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-03C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-03D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-04B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)
L2257140-05A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-05B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-05C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-05D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-06B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)
L2257140-07A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2257140-07B	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-07C	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-07D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257140-08A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2257140-08B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2257140-09A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-09B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-09C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-09D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-10B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)
L2257140-11A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2257140-11B	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260H(14),PA-8260HLW(14)
L2257140-11C	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260H(14),PA-8260HLW(14)
L2257140-11D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2257140-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2257140-12B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2257140-13A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2257140-13B	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-13C	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-13D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2257140-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2257140-14B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2257140-15A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-15B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-15C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-15D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-16B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)
L2257140-17A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2257140-17B	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257140**Project Number:** 200.00135.006**Report Date:** 10/20/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257140-17C	Vial water preserved	B	NA		4.7	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-17D	Plastic 2oz unpreserved for TS	B	NA		4.7	Y	Absent		TS(7)
L2257140-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2257140-18B	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		TS(7),PA-PAH(14)
L2257140-19A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-19B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-19C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-19D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-20B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)
L2257140-21A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-21B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-21C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-21D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-22B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)
L2257140-23A	Vial MeOH preserved	A	NA		5.3	Y	Absent		PA-8260HLW(14)
L2257140-23B	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-23C	Vial water preserved	A	NA		5.3	Y	Absent	14-OCT-22 13:16	PA-8260HLW(14)
L2257140-23D	Plastic 2oz unpreserved for TS	A	NA		5.3	Y	Absent		TS(7)
L2257140-24A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.3	Y	Absent		PB-TI(180)
L2257140-24B	Glass 120ml/4oz unpreserved	A	NA		5.3	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
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## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257140

**Project Number:** 200.00135.006

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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 2 OF 3



## Project Information

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

Project Name: Philadelphia Refinery

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~13851~~ ~~17853~~ 18559

## Turn-Around Time

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

Due Date: Time:

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/14/22

ALPHA Job #: 02257140

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES		
		Date	Time																		
67140-09	302-AM04-C1-VOC	10/13	1200	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AM04-C1-Comp		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-11	302-AM04-C2-VOC		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-12	302-AM04-C2-Comp		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	302-AM04-C3-VOC		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	302-AM04-C3-Comp		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	302-AM04-C4-VOC		1245			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-AM04-C4-Comp		1245			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-AM04-C5-VOC		1300			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-AM04-C5-Comp		1300			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)  
 Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
67140-09	302-AM04-C1-VOC	10/13	1200	S	TS
-10	302-AM04-C1-Comp		1200		
-11	302-AM04-C2-VOC		1215		
-12	302-AM04-C2-Comp		1215		
-13	302-AM04-C3-VOC		1230		
-14	302-AM04-C3-Comp		1230		
-15	302-AM04-C4-VOC		1245		
-16	302-AM04-C4-Comp		1245		
-17	302-AM04-C5-VOC		1300		
-18	302-AM04-C5-Comp		1300		

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Relinquished By: [Signature] Date/Time: 10/13/22 1530  
 Received By: [Signature] Date/Time: 10/13/22 2100  
 [Signature] Date/Time: 10/13/22 2100  
 [Signature] Date/Time: 10/13/22 2100  
 [Signature] Date/Time: 10/14/22 0020

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 3 OF 3

Westborough, MA  
 TEL: 508-896-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax: \_\_\_\_\_  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
57140-19	302-AM05-C1-VOC	10/13	1330	↓	↓
-20	302-AM05-C1-COMP		1330		
-21	302-AM05-C2-VOC		1345		
-22	302-AM05-C2-COMP		1345		
-23	302-AM05-C3-VOC		1400		
-24	302-AM05-C3-COMP		1400		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-
	F	A	A	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 10/13 1530  
 Received By: *[Signature]* Date/Time: 10/13/12 1105

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 10/14/12

ALPHA Job #: 0257140

### Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client Info PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

### ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead																		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

4  
2  
4  
2  
4  
2  
4  
2

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

*Scan*  
 10/14/12  
 0155  
 10/14/12 0155

*[Signature]*

10/13/12

*[Signature]*

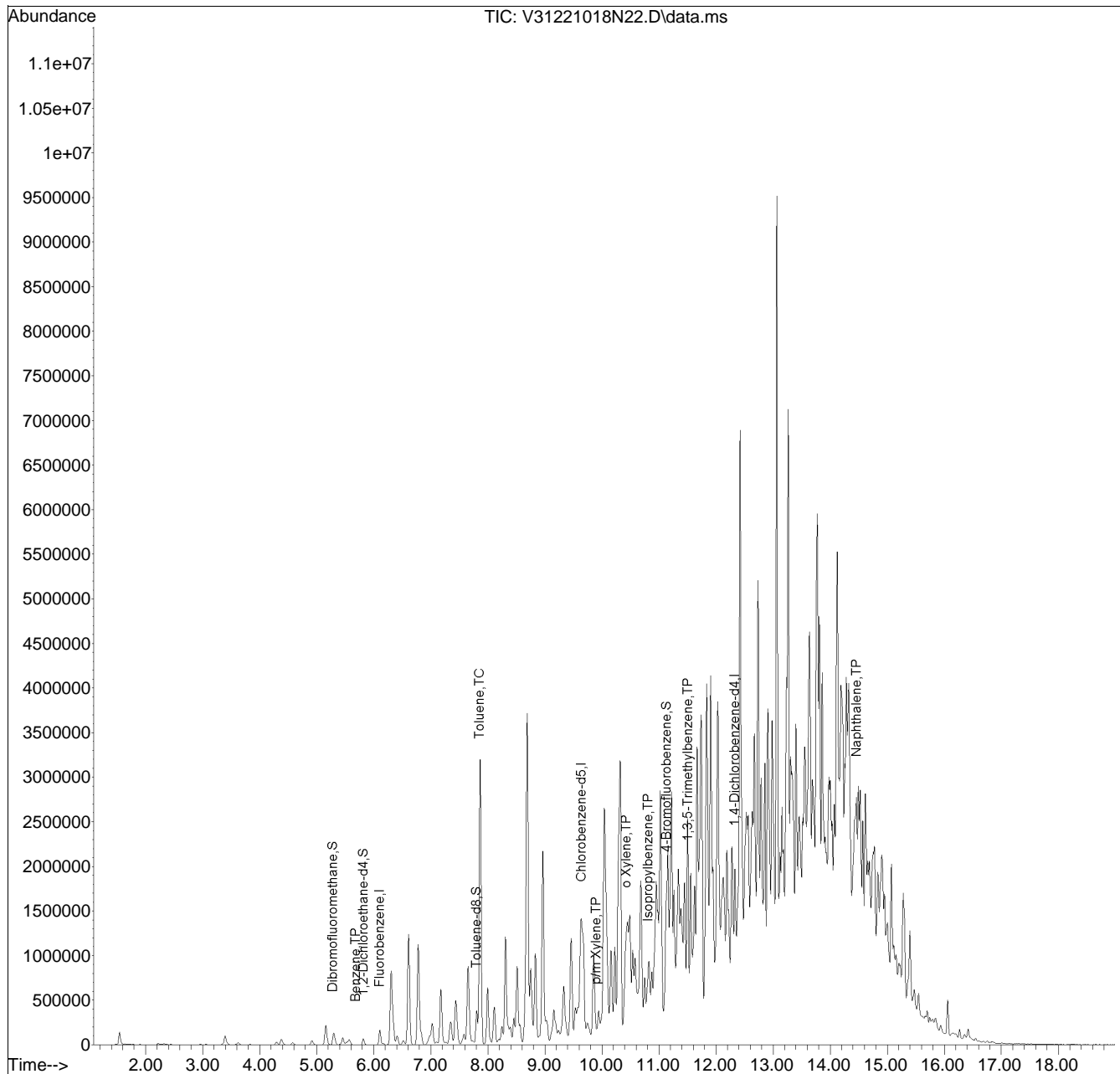
10/13/12 2100

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
Data File : V31221018N22.D  
Acq On : 19 Oct 2022 01:28 am  
Operator : VOA131:JIC  
Sample : 12257140-07,31,5.49,5,,b,r2f  
Misc : WG1701752,ICAL19336  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 19 11:41:12 2022  
Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Sep 16 08:31:24 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•

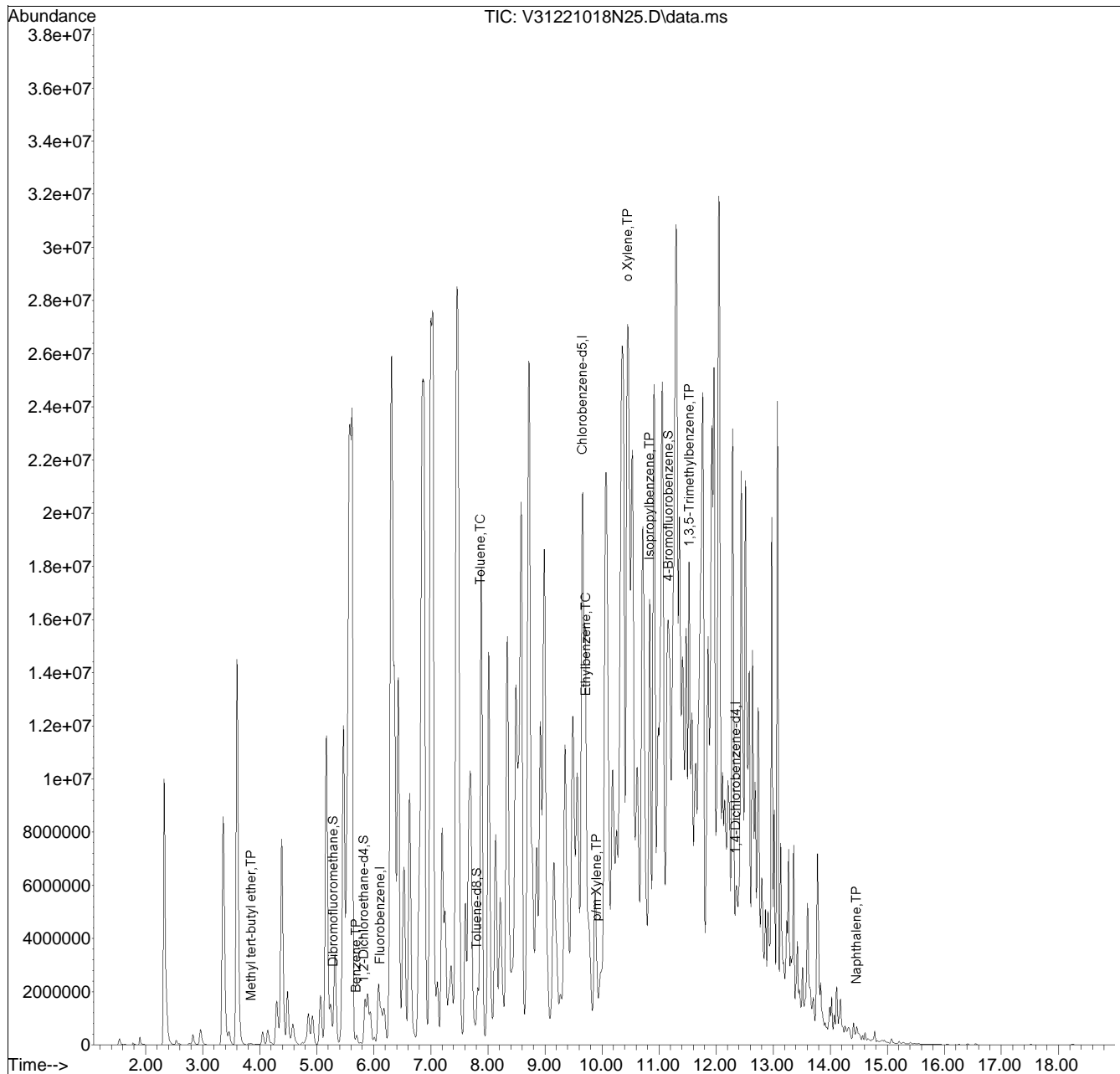


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
Data File : V31221018N25.D  
Acq On : 19 Oct 2022 02:37 am  
Operator : VOA131:JIC  
Sample : 12257140-11,31,5.29,5,,b,r2f  
Misc : WG1701752,ICAL19336  
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Oct 19 11:42:30 2022  
Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Sep 16 08:31:24 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•

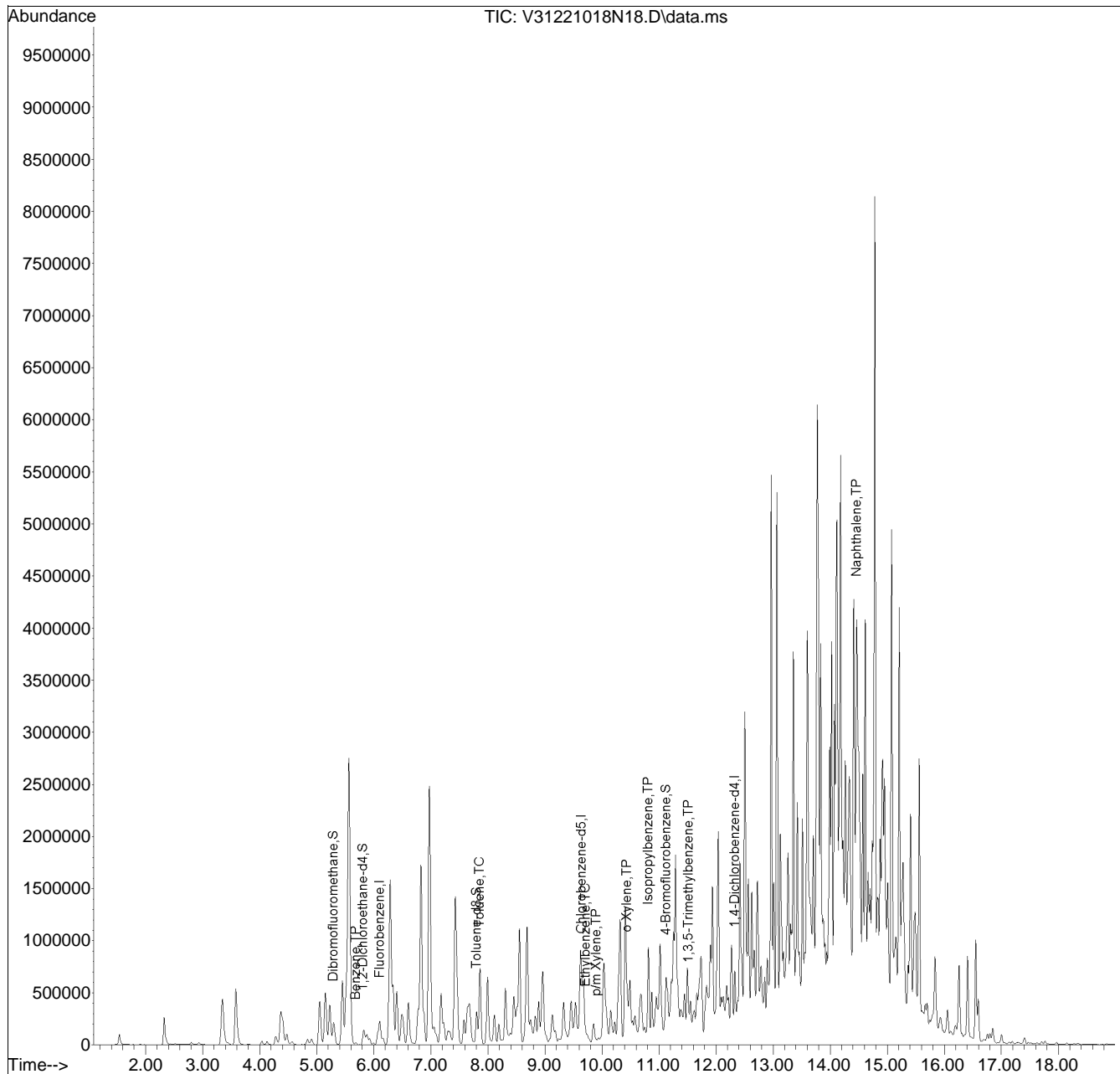


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
 Data File : V31221018N18.D  
 Acq On : 18 Oct 2022 11:57 pm  
 Operator : VOA131:JIC  
 Sample : 12257140-13,31h,5.83,5,0.100,,a,r2f  
 Misc : WG1701750,ICAL19336  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Oct 19 11:39:25 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•

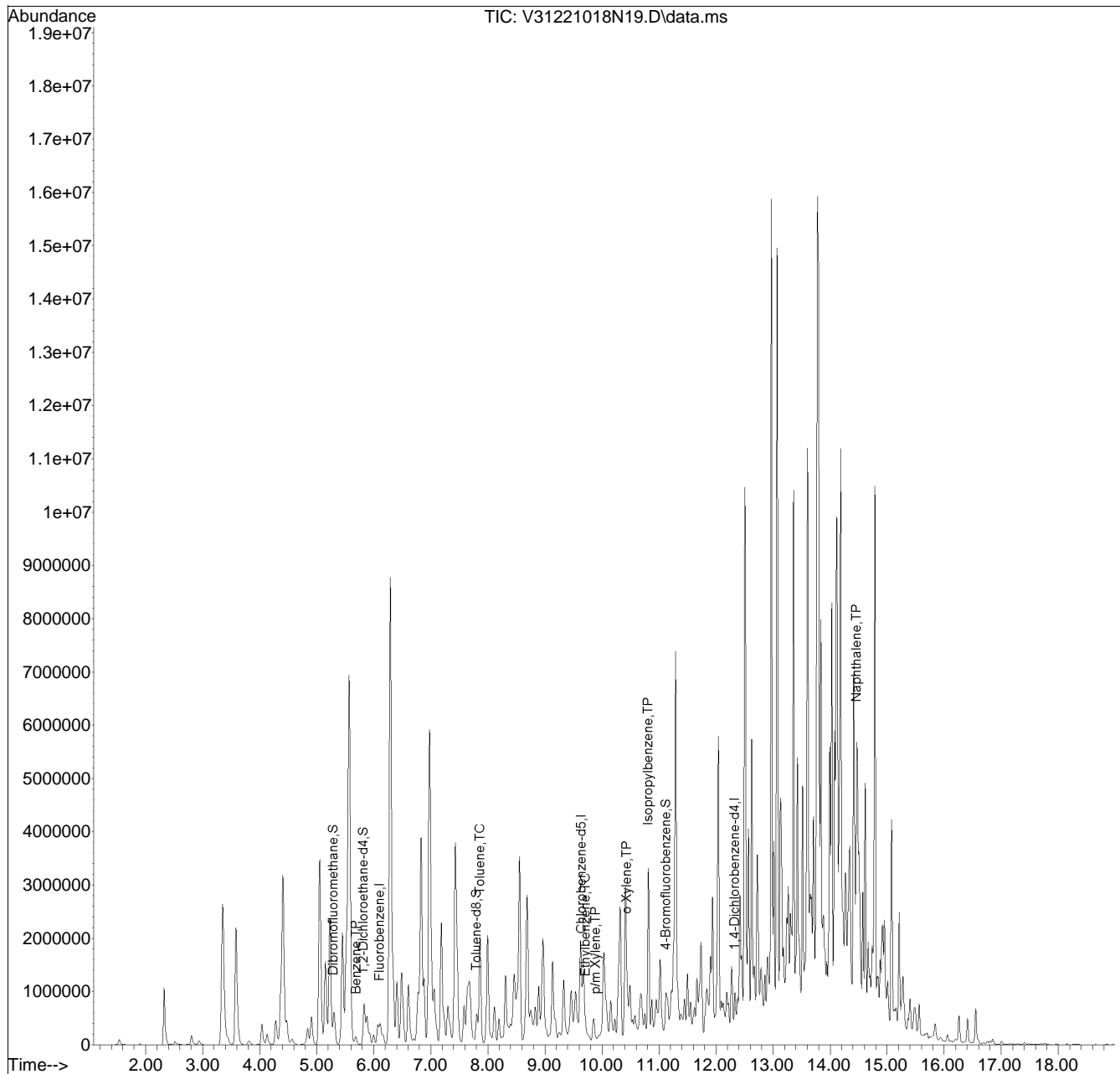


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
 Data File : V31221018N19.D  
 Acq On : 19 Oct 2022 12:20 am  
 Operator : VOA131:JIC  
 Sample : 12257140-15,31h,5.54,5,0.100,,a,r2f  
 Misc : WG1701750,ICAL19336  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 19 11:39:49 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•

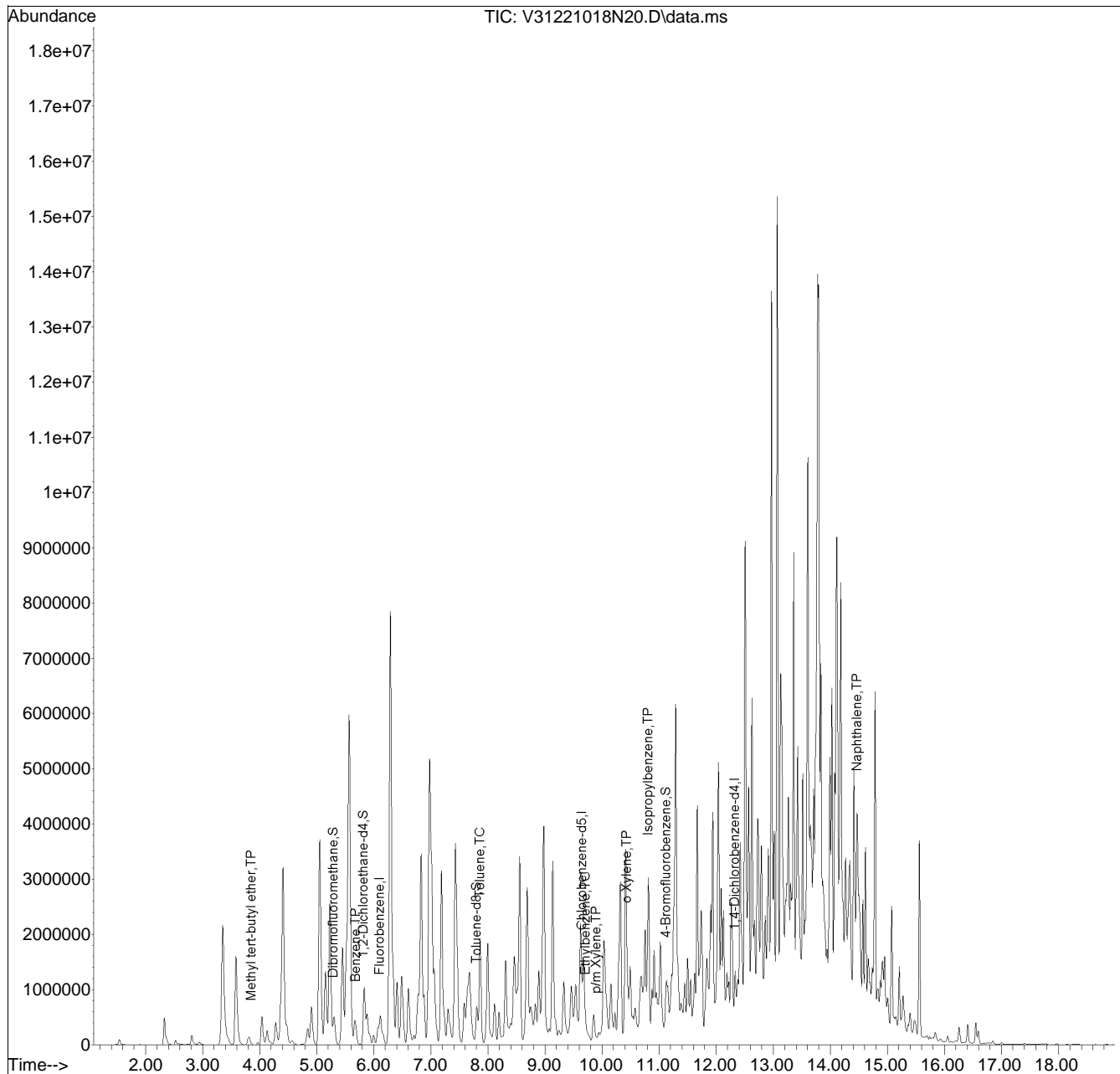


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
 Data File : V31221018N20.D  
 Acq On : 19 Oct 2022 12:43 am  
 Operator : VOA131:JIC  
 Sample : 12257140-17,31h,5.96,5,0.100,,a,r2f  
 Misc : WG1701750,ICAL19336  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 19 11:40:11 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•

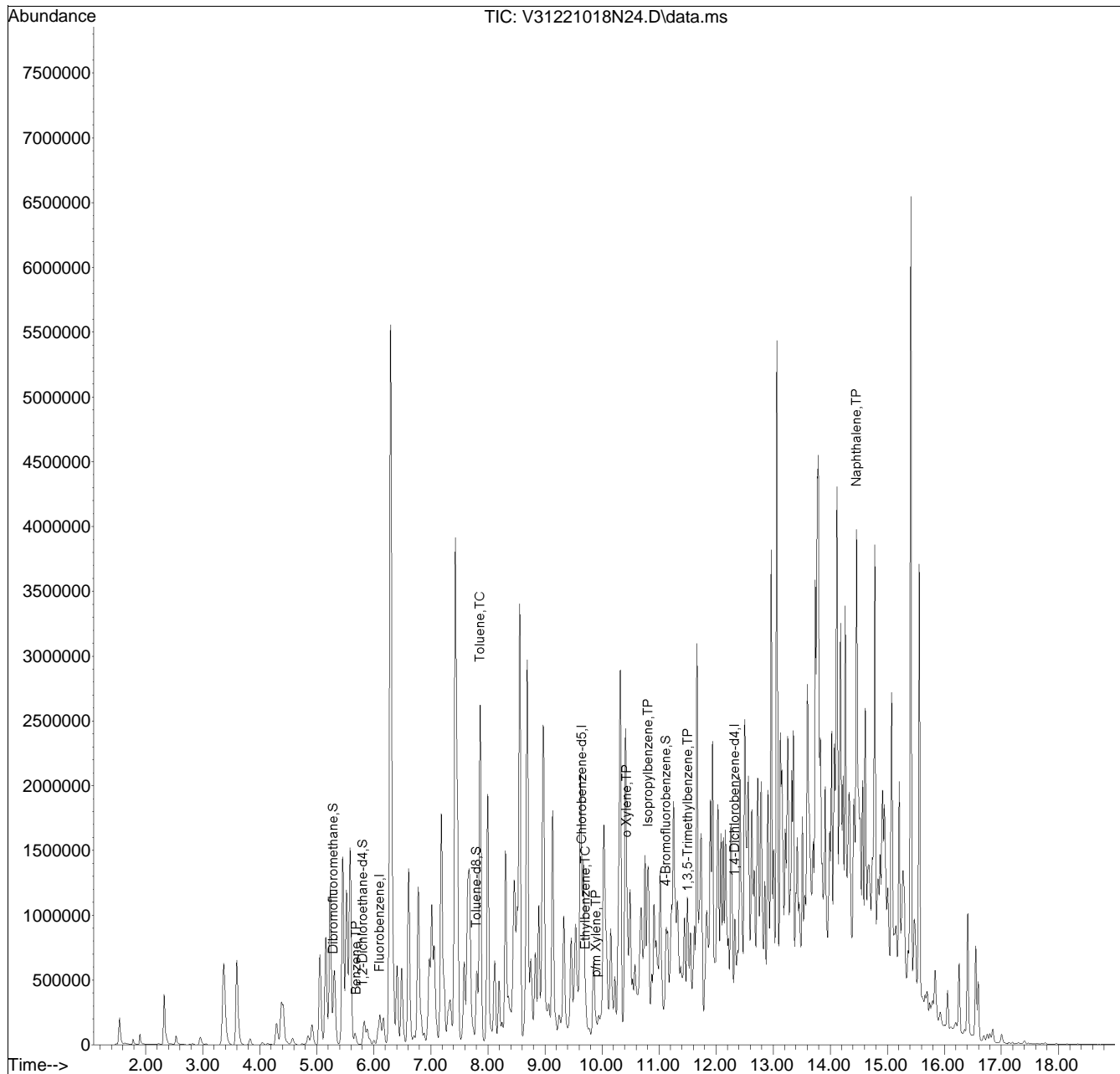


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
 Data File : V31221018N24.D  
 Acq On : 19 Oct 2022 02:14 am  
 Operator : VOA131:JIC  
 Sample : 12257140-21,31,5.25,5,,b,r2f  
 Misc : WG1701752,ICAL19336  
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 19 11:41:58 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•

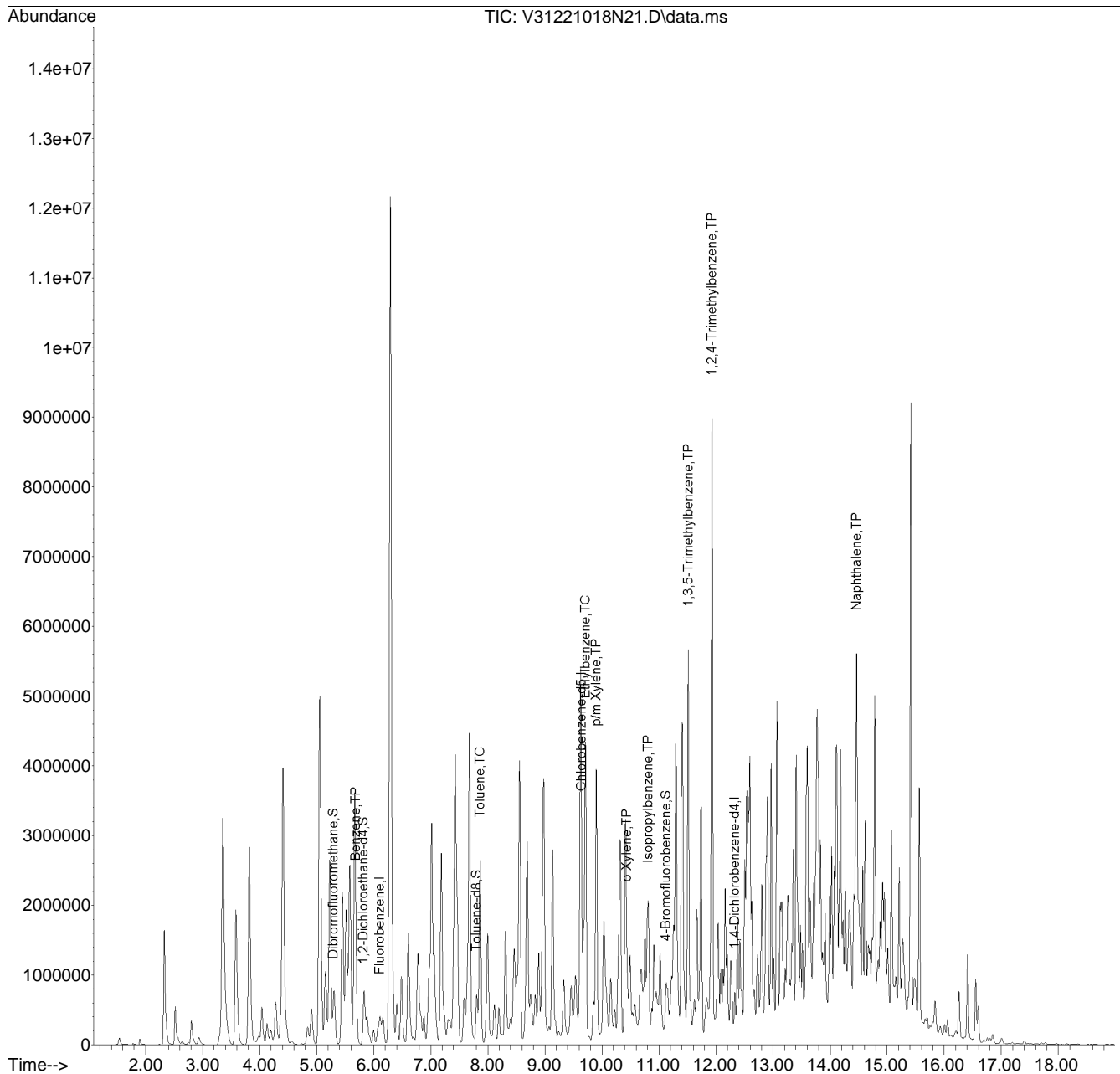


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\221018N\  
 Data File : V31221018N21.D  
 Acq On : 19 Oct 2022 01:05 am  
 Operator : VOA131:JIC  
 Sample : 12257140-23,31h,5.55,5,0.100,,a,r2f  
 Misc : WG1701750,ICAL19336  
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 19 11:40:32 2022  
 Quant Method : I:\VOLATILES\VOA131\2022\221018N\V31\_220915N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Sep 16 08:31:24 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list18N\V31221018N01.D•







## ANALYTICAL REPORT

Lab Number:	L2257557
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/23/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2257557-01	302-AL07-C1-VOC	SOIL	PHILADELPHIA, PA	10/14/22 09:15	10/14/22
L2257557-02	302-AL07-C1-COMP	SOIL	PHILADELPHIA, PA	10/14/22 09:15	10/14/22
L2257557-03	302-AL07-C2-VOC	SOIL	PHILADELPHIA, PA	10/14/22 09:30	10/14/22
L2257557-04	302-AL07-C2-COMP	SOIL	PHILADELPHIA, PA	10/14/22 09:30	10/14/22
L2257557-05	302-AL07-C3-VOC	SOIL	PHILADELPHIA, PA	10/14/22 09:45	10/14/22
L2257557-06	302-AL07-C3-COMP	SOIL	PHILADELPHIA, PA	10/14/22 09:45	10/14/22
L2257557-07	302-AK07-C1-VOC	SOIL	PHILADELPHIA, PA	10/14/22 12:00	10/14/22
L2257557-08	302-AK07-C1-COMP	SOIL	PHILADELPHIA, PA	10/14/22 12:00	10/14/22
L2257557-09	302-AK07-C2-VOC	SOIL	PHILADELPHIA, PA	10/14/22 12:15	10/14/22
L2257557-10	302-AK07-C2-COMP	SOIL	PHILADELPHIA, PA	10/14/22 12:15	10/14/22
L2257557-11	302-AK07-C3-VOC	SOIL	PHILADELPHIA, PA	10/14/22 12:30	10/14/22
L2257557-12	302-AK07-C3-COMP	SOIL	PHILADELPHIA, PA	10/14/22 12:30	10/14/22
L2257557-13	302-AP03-C1-VOC	SOIL	PHILADELPHIA, PA	10/14/22 13:50	10/14/22
L2257557-14	302-AP03-C1-COMP	SOIL	PHILADELPHIA, PA	10/14/22 13:50	10/14/22
L2257557-15	302-AP03-C2-VOC	SOIL	PHILADELPHIA, PA	10/14/22 14:00	10/14/22
L2257557-16	302-AP03-C2-COMP	SOIL	PHILADELPHIA, PA	10/14/22 14:00	10/14/22
L2257557-17	302-AP03-C3-VOC	SOIL	PHILADELPHIA, PA	10/14/22 14:10	10/14/22
L2257557-18	302-AP03-C3-COMP	SOIL	PHILADELPHIA, PA	10/14/22 14:10	10/14/22
L2257557-19	302-AP03-C4-VOC	SOIL	PHILADELPHIA, PA	10/14/22 14:20	10/14/22
L2257557-20	302-AP03-C4-COMP	SOIL	PHILADELPHIA, PA	10/14/22 14:20	10/14/22
L2257557-21	302-AP03-C5-VOC	SOIL	PHILADELPHIA, PA	10/14/22 14:30	10/14/22
L2257557-22	302-AP03-C5-COMP	SOIL	PHILADELPHIA, PA	10/14/22 14:30	10/14/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L2257557-07 through -12: The analyses performed were specified by the client.

#### Volatile Organics

L2257557-01, -03, and -05: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2257557-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (133%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257557-01: The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (67%) due to interference with the Internal Standard.

L2257557-03: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (133%) and 4-bromofluorobenzene (148%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257557-03: The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (60%) due to interference with the Internal Standard.

L2257557-05: The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (61%) due to interference with the Internal Standard.

L2257557-05: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (136%) and 4-bromofluorobenzene (175%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Total Metals

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**Case Narrative (continued)**

The WG1700015-3 MS recovery, performed on L2257557-22, is outside the acceptance criteria for lead (137%). A post digestion spike was performed and yielded an unacceptable recovery for lead (64%). The serial dilution recovery was acceptable; therefore, the matrix test passed for the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: *Melissa Sturgis* Melissa Sturgis

Title: Technical Director/Representative

Date: 10/23/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-01  
 Client ID: 302-AL07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:15  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 04:11  
 Analyst: JIC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.019	J	mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	0.089		mg/kg	0.060	0.033	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	0.056	J	mg/kg	0.060	0.0085	1
p/m-Xylene	0.41		mg/kg	0.12	0.034	1
o-Xylene	0.12		mg/kg	0.060	0.018	1
Xylenes, Total	0.53		mg/kg	0.060	0.018	1
Isopropylbenzene	0.87		mg/kg	0.060	0.0066	1
1,3,5-Trimethylbenzene	0.16		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.44		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	133	Q	70-130
Dibromofluoromethane	67	Q	70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-03  
 Client ID: 302-AL07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 04:38  
 Analyst: JIC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.019	J	mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.040	J	mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.054	J	mg/kg	0.065	0.0091	1
p/m-Xylene	0.16		mg/kg	0.13	0.036	1
o-Xylene	0.056	J	mg/kg	0.065	0.019	1
Xylenes, Total	0.22	J	mg/kg	0.065	0.019	1
Isopropylbenzene	2.1		mg/kg	0.065	0.0070	1
1,3,5-Trimethylbenzene	0.13		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.13		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	133	Q	70-130
4-Bromofluorobenzene	148	Q	70-130
Dibromofluoromethane	60	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-05  
 Client ID: 302-AL07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:45  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 05:04  
 Analyst: JIC  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.013	J	mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	0.056	J	mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.036	J	mg/kg	0.064	0.0090	1
p/m-Xylene	0.18		mg/kg	0.13	0.036	1
o-Xylene	0.049	J	mg/kg	0.064	0.018	1
Xylenes, Total	0.23	J	mg/kg	0.064	0.018	1
Isopropylbenzene	0.94		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	0.10	J	mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.13		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	136	Q	70-130
4-Bromofluorobenzene	175	Q	70-130
Dibromofluoromethane	61	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-07  
 Client ID: 302-AK07-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:00  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 02:53  
 Analyst: JIC  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-09  
 Client ID: 302-AK07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:15  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 03:19  
 Analyst: JIC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0011		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	0.00033	J	mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.0020		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-11  
 Client ID: 302-AK07-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 12:05  
 Analyst: MKS  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00038	J	mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.00016	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-13  
 Client ID: 302-AP03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 13:50  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 12:31  
 Analyst: MKS  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-15  
 Client ID: 302-AP03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:00  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 03:45  
 Analyst: JIC  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.00020	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	86		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-17  
 Client ID: 302-AP03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:10  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 13:24  
 Analyst: MKS  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	84		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-19  
 Client ID: 302-AP03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:20  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 13:50  
 Analyst: MKS  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-21  
 Client ID: 302-AP03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/18/22 14:16  
 Analyst: MKS  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/18/22 09:27  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 11,13,17,19,21 Batch: WG1701468-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	88		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 21:12  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,09,15 Batch: WG1701975-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 21:12  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05 Batch: WG1701977-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	94		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2257557

Project Number: 200.00135.006

Report Date: 10/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 11,13,17,19,21 Batch: WG1701468-3 WG1701468-4								
Methyl tert butyl ether	123		118		66-130	4		30
Benzene	112		110		70-130	2		30
1,2-Dichloroethane	95		92		70-130	3		30
Toluene	112		108		70-130	4		30
1,2-Dibromoethane	101		98		70-130	3		30
Ethylbenzene	108		104		70-130	4		30
p/m-Xylene	113		110		70-130	3		30
o-Xylene	110		107		70-130	3		30
Isopropylbenzene	118		116		70-130	2		30
1,3,5-Trimethylbenzene	110		108		70-130	2		30
1,2,4-Trimethylbenzene	108		106		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		79		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	103		105		70-130
Dibromofluoromethane	78		79		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,09,15 Batch: WG1701975-3 WG1701975-4								
Methyl tert butyl ether	114		115		66-130	1		30
Benzene	113		112		70-130	1		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	109		109		70-130	0		30
1,2-Dibromoethane	96		96		70-130	0		30
Ethylbenzene	105		105		70-130	0		30
p/m-Xylene	110		110		70-130	0		30
o-Xylene	107		106		70-130	1		30
Isopropylbenzene	114		115		70-130	1		30
1,3,5-Trimethylbenzene	106		107		70-130	1		30
1,2,4-Trimethylbenzene	104		105		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	81		80		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	101		103		70-130
Dibromofluoromethane	81		81		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05 Batch: WG1701977-3 WG1701977-4								
Methyl tert butyl ether	114		115		66-130	1		30
Benzene	113		112		70-130	1		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	109		109		70-130	0		30
1,2-Dibromoethane	96		96		70-130	0		30
Ethylbenzene	105		105		70-130	0		30
p/m-Xylene	110		110		70-130	0		30
o-Xylene	107		106		70-130	1		30
Isopropylbenzene	114		115		70-130	1		30
1,3,5-Trimethylbenzene	106		107		70-130	1		30
1,2,4-Trimethylbenzene	104		105		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	81		80		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	101		102		70-130
Dibromofluoromethane	81		81		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-02  
 Client ID: 302-AL07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:15  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 14:14  
 Analyst: MG  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.32		mg/kg	0.20	0.025	1
Fluorene	1.5		mg/kg	0.20	0.020	1
Phenanthrene	3.6		mg/kg	0.12	0.025	1
Anthracene	0.40		mg/kg	0.12	0.040	1
Pyrene	0.38		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.14		mg/kg	0.12	0.023	1
Chrysene	0.17		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.087	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.059	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	59		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-04  
 Client ID: 302-AL07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 14:38  
 Analyst: MG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.098	J	mg/kg	0.18	0.022	1
Fluorene	0.28		mg/kg	0.18	0.018	1
Phenanthrene	0.57		mg/kg	0.11	0.022	1
Anthracene	0.065	J	mg/kg	0.11	0.036	1
Pyrene	0.042	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	0.025	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-06  
 Client ID: 302-AL07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:45  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 15:01  
 Analyst: MG  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.097	J	mg/kg	0.20	0.025	1
Fluorene	0.26		mg/kg	0.20	0.020	1
Phenanthrene	0.51		mg/kg	0.12	0.025	1
Anthracene	0.065	J	mg/kg	0.12	0.040	1
Pyrene	0.037	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-08  
 Client ID: 302-AK07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:00  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 15:26  
 Analyst: MG  
 Percent Solids: 78%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.086	J	mg/kg	0.21	0.026	1
Fluorene	0.024	J	mg/kg	0.21	0.021	1
Phenanthrene	0.063	J	mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.041	1
Pyrene	0.077	J	mg/kg	0.13	0.021	1
Benzo(a)anthracene	0.075	J	mg/kg	0.13	0.024	1
Chrysene	0.072	J	mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	0.12	J	mg/kg	0.13	0.036	1
Benzo(a)pyrene	0.097	J	mg/kg	0.17	0.052	1
Benzo(ghi)perylene	0.064	J	mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-10  
 Client ID: 302-AK07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:15  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 16:37  
 Analyst: MG  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.11	J	mg/kg	0.18	0.022	1
Fluorene	0.23		mg/kg	0.18	0.018	1
Phenanthrene	2.0		mg/kg	0.11	0.022	1
Anthracene	0.52		mg/kg	0.11	0.036	1
Pyrene	2.2		mg/kg	0.11	0.018	1
Benzo(a)anthracene	1.2		mg/kg	0.11	0.020	1
Chrysene	1.2		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	1.5		mg/kg	0.11	0.031	1
Benzo(a)pyrene	1.2		mg/kg	0.15	0.044	1
Benzo(ghi)perylene	0.67		mg/kg	0.15	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-12  
 Client ID: 302-AK07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 17:01  
 Analyst: MG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.89		mg/kg	0.19	0.024	1
Fluorene	0.78		mg/kg	0.19	0.019	1
Phenanthrene	5.2		mg/kg	0.12	0.024	1
Anthracene	1.5		mg/kg	0.12	0.038	1
Pyrene	5.3		mg/kg	0.12	0.019	1
Benzo(a)anthracene	3.5		mg/kg	0.12	0.022	1
Chrysene	3.0		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	4.2		mg/kg	0.12	0.033	1
Benzo(a)pyrene	3.5		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	2.2		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	50		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-14  
 Client ID: 302-AP03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 13:50  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 17:25  
 Analyst: MG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.55		mg/kg	0.19	0.023	1
Fluorene	0.33		mg/kg	0.19	0.018	1
Phenanthrene	2.3		mg/kg	0.11	0.023	1
Anthracene	0.81		mg/kg	0.11	0.037	1
Pyrene	3.4		mg/kg	0.11	0.019	1
Benzo(a)anthracene	2.2		mg/kg	0.11	0.021	1
Chrysene	2.0		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	3.1		mg/kg	0.11	0.032	1
Benzo(a)pyrene	2.4		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	1.6		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	57		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-16  
 Client ID: 302-AP03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:00  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 17:49  
 Analyst: MG  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.048	J	mg/kg	0.18	0.022	1
Fluorene	0.022	J	mg/kg	0.18	0.017	1
Phenanthrene	0.13		mg/kg	0.11	0.022	1
Anthracene	0.040	J	mg/kg	0.11	0.035	1
Pyrene	0.19		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.14		mg/kg	0.11	0.020	1
Chrysene	0.13		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.17		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.15		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.094	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	45		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-18  
 Client ID: 302-AP03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:10  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 18:13  
 Analyst: MG  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.028	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	0.024	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.025	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-20  
 Client ID: 302-AP03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:20  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 18:38  
 Analyst: MG  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.34		mg/kg	0.18	0.021	1
Fluorene	0.35		mg/kg	0.18	0.017	1
Phenanthrene	2.4		mg/kg	0.10	0.021	1
Anthracene	0.65		mg/kg	0.10	0.034	1
Pyrene	2.6		mg/kg	0.10	0.017	1
Benzo(a)anthracene	1.7		mg/kg	0.10	0.020	1
Chrysene	1.6		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	2.2		mg/kg	0.10	0.030	1
Benzo(a)pyrene	1.8		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	1.1		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	134	Q	23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-22  
 Client ID: 302-AP03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 19:02  
 Analyst: MG  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.10	J	mg/kg	0.18	0.022	1
Fluorene	0.059	J	mg/kg	0.18	0.018	1
Phenanthrene	0.34		mg/kg	0.11	0.022	1
Anthracene	0.093	J	mg/kg	0.11	0.036	1
Pyrene	0.46		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.30		mg/kg	0.11	0.020	1
Chrysene	0.30		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.38		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.30		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.22		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/21/22 13:02  
Analyst: MG

Extraction Method: EPA 3546  
Extraction Date: 10/21/22 00:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1702256-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	95		18-120

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22 Batch: WG1702256-2 WG1702256-3								
Naphthalene	74		81		40-140	9		50
Fluorene	79		84		40-140	6		50
Phenanthrene	72		78		40-140	8		50
Anthracene	74		80		40-140	8		50
Pyrene	79		84		35-142	6		50
Benzo(a)anthracene	78		83		40-140	6		50
Chrysene	77		82		40-140	6		50
Benzo(b)fluoranthene	84		91		40-140	8		50
Benzo(a)pyrene	87		92		40-140	6		50
Benzo(ghi)perylene	78		86		40-140	10		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	100		112		23-120
2-Fluorobiphenyl	80		86		30-120
4-Terphenyl-d14	75		80		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-02  
 Client ID: 302-AL07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:15  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	27.3		mg/kg	2.35	0.126	1	10/17/22 14:11	10/18/22 20:27	EPA 3050B	1,6010D	MRC





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-04  
 Client ID: 302-AL07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.76		mg/kg	2.20	0.118	1	10/17/22 14:11	10/18/22 20:31	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-06  
 Client ID: 302-AL07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:45  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	2.02	J	mg/kg	2.33	0.125	1	10/17/22 14:11	10/18/22 20:34	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-08  
 Client ID: 302-AK07-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:00  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	12.5		mg/kg	2.47	0.132	1	10/17/22 14:11	10/18/22 20:37	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-10  
 Client ID: 302-AK07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:15  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	337		mg/kg	2.19	0.117	1	10/17/22 14:11	10/18/22 20:41	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-12  
 Client ID: 302-AK07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 12:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	282		mg/kg	2.34	0.125	1	10/17/22 14:11	10/18/22 21:00	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-14  
 Client ID: 302-AP03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 13:50  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	226		mg/kg	2.22	0.119	1	10/17/22 14:11	10/18/22 21:03	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-16  
 Client ID: 302-AP03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:00  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	289		mg/kg	2.08	0.112	1	10/17/22 14:11	10/18/22 21:07	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-18  
 Client ID: 302-AP03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:10  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	341		mg/kg	2.22	0.119	1	10/17/22 14:11	10/18/22 21:10	EPA 3050B	1,6010D	MRC





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-20  
 Client ID: 302-AP03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:20  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.87		mg/kg	2.06	0.110	1	10/17/22 14:11	10/18/22 21:13	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-22  
 Client ID: 302-AP03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 14:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	118		mg/kg	2.20	0.118	1	10/17/22 21:57	10/20/22 09:31	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1700010-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/17/22 14:11	10/17/22 19:38	1,6010D	MC

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 22 Batch: WG1700015-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/17/22 21:57	10/20/22 09:02	1,6010D	DMB

### Prep Information

Digestion Method: EPA 3050B

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1700010-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 22 Batch: WG1700015-2 SRM Lot Number: D113-540								
Lead, Total	95		-		72-128	-		



**Matrix Spike Analysis**  
**Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
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Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1700010-3 WG1700010-4 QC Sample: L2257532-01  
 Client ID: MS Sample

Lead, Total	16.3	49.1	69.1	108		66.0	99		75-125	5		20
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Total Metals - Mansfield Lab Associated sample(s): 22 QC Batch ID: WG1700015-3 QC Sample: L2257557-22 Client ID: 302-AP03-C5-COMP

Lead, Total	118	46	181	137	Q	-	-		75-125	-		20
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**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 22 QC Batch ID: WG1700015-4 QC Sample: L2257557-22 Client ID: 302-AP03-C5-COMP						
Lead, Total	118	141	mg/kg	18		20



**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 22 QC Batch ID: WG1700015-6 QC Sample: L2257557-22 Client ID: 302-AP03-C5-COMP						
Lead, Total	118	134	mg/kg	14		20



# **INORGANICS & MISCELLANEOUS**



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257557**Project Number:** 200.00135.006**Report Date:** 10/23/22**SAMPLE RESULTS**

Lab ID: L2257557-01

Date Collected: 10/14/22 09:15

Client ID: 302-AL07-C1-VOC

Date Received: 10/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-02  
**Client ID:** 302-AL07-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 09:15  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.8		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-03  
 Client ID: 302-AL07-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-04  
 Client ID: 302-AL07-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:30  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-05  
**Client ID:** 302-AL07-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 09:45  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-06  
 Client ID: 302-AL07-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/14/22 09:45  
 Date Received: 10/14/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-07  
**Client ID:** 302-AK07-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 12:00  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-08  
**Client ID:** 302-AK07-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 12:00  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.0		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-09  
**Client ID:** 302-AK07-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 12:15  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.4		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-10  
**Client ID:** 302-AK07-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 12:15  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.2		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-11  
**Client ID:** 302-AK07-C3-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 12:30  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257557**Project Number:** 200.00135.006**Report Date:** 10/23/22**SAMPLE RESULTS**

Lab ID: L2257557-12

Date Collected: 10/14/22 12:30

Client ID: 302-AK07-C3-COMP

Date Received: 10/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.3		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257557

Project Number: 200.00135.006

Report Date: 10/23/22

## SAMPLE RESULTS

Lab ID: L2257557-13

Date Collected: 10/14/22 13:50

Client ID: 302-AP03-C1-VOC

Date Received: 10/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.4		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-14  
**Client ID:** 302-AP03-C1-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 13:50  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-15  
**Client ID:** 302-AP03-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 14:00  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-16  
**Client ID:** 302-AP03-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 14:00  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2257557

Project Number: 200.00135.006

Report Date: 10/23/22

**SAMPLE RESULTS**

Lab ID: L2257557-17

Date Collected: 10/14/22 14:10

Client ID: 302-AP03-C3-VOC

Date Received: 10/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.8		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-18  
**Client ID:** 302-AP03-C3-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 14:10  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.9		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-19  
**Client ID:** 302-AP03-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 14:20  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-20  
**Client ID:** 302-AP03-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 14:20  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.7		%	0.100	NA	1	-	10/15/22 11:19	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257557**Project Number:** 200.00135.006**Report Date:** 10/23/22**SAMPLE RESULTS**

Lab ID: L2257557-21

Date Collected: 10/14/22 14:30

Client ID: 302-AP03-C5-VOC

Date Received: 10/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.8		%	0.100	NA	1	-	10/15/22 11:11	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

**SAMPLE RESULTS**

**Lab ID:** L2257557-22  
**Client ID:** 302-AP03-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/14/22 14:30  
**Date Received:** 10/14/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.0		%	0.100	NA	1	-	10/15/22 11:11	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 21-22 QC Batch ID: WG1699815-1 QC Sample: L2257557-21 Client ID: 302-AP03-C5-VOC						
Solids, Total	90.8	89.5	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1699816-1 QC Sample: L2257557-01 Client ID: 302-AL07-C1-VOC						
Solids, Total	81.9	83.3	%	2		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257557**Project Number:** 200.00135.006**Report Date:** 10/23/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257557-01A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-01B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-01C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-01D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-02B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-03A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-03B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-03C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-03D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-04B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-05A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-05B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-05C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-05D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-06B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-07A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-07B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-07C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-07D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257557**Project Number:** 200.00135.006**Report Date:** 10/23/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257557-08B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-09A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-09B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-09C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-09D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-10B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-11A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-11B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-11C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-11D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-12B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-13A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-13B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-13C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-13D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-14B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-15A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-15B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-15C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-15D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-16A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-16B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-17A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-17B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-17C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10232214:11  
**Lab Number:** L2257557  
**Report Date:** 10/23/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257557-17D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-18A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-18B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-19A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-19B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-19C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-19D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-20B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)
L2257557-21A	Vial MeOH preserved	A	NA		3.3	Y	Absent		PA-8260HLW(14)
L2257557-21B	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-21C	Vial water preserved	A	NA		3.3	Y	Absent	15-OCT-22 06:18	PA-8260HLW(14)
L2257557-21D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2257557-22A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		PB-TI(180)
L2257557-22B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257557  
**Report Date:** 10/23/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~17853~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/14/22

ALPHA Job #: L2257557

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES		
		Date	Time																		
57557-01	302-AL07-C1-VOC	10/14	0915	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 02	302-AL07-C1-COMP		0915			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 03	302-AL07-C2-VOC		0930			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 04	302-AL07-C2-COMP		0930			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 05	302-AL07-C3-VOC		0945			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 06	302-AL07-C3-COMP		0945			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

Sample Specific Comments

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Relinquished By:	Date/Time			Received By:			Date/Time															
<i>[Signature]</i>	10/14 14:50			<i>[Signature]</i>			10/14 14:50															
<i>[Signature]</i>	10/14 15:00			<i>[Signature]</i>			10/14 18:00															
<i>[Signature]</i>	10/14 21:00			<i>[Signature]</i>			10/14 22:00															

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





# CHAIN OF CUSTODY

PAGE 2 OF 3

### Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~12161~~ 18559

### Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

### Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

### Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to [edd@terraphase.com](mailto:edd@terraphase.com), [William.Schmidt@ransomenv.com](mailto:William.Schmidt@ransomenv.com), and [jjray@hilcoglobal.com](mailto:jjray@hilcoglobal.com)

Date Rec'd in Lab: 10/14/22

ALPHA Job #: L2257557

### Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client Info PO #: 3562

### Regulatory Requirements/Report Limits

State/Fed Program

Criteria

### ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead										Sample Specific Comments	TOTAL # BOTTLES
		Date	Time																
S7557-07	302-AK07-C1-VCC	10/19	1200	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
- 08	302-AK07-C1-Camp		1200			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 09	302-AK07-C2-VCC		1215			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
- 10	302-AK07-C2-Camp		1215			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 11	302-AK07-C3-VCC		1230			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
- 12	302-AK07-C3-Camp		1230			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type

Preservative

G G G - - - - -

F A A - - - - -

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 3 OF 3

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1855~~ ~~1855~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-896-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-322-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/14/22

ALPHA Job #: L2257557

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											Sample Specific Comments	TOTAL # BOTTLES		
		Date	Time																			
57557-13	302-AP03-C1-VOC	10/14	1360	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
- 14	302-AP03-C1-Comp		1350			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 15	302-AP03-C2-VOC		1400			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
- 16	302-AP03-C2-Comp		1400			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 17	302-AP03-C3-VOC		1410			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 18	302-AP03-C3-Comp		1410			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 19	302-AP03-C4-VOC		1420			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 20	302-AP03-C4-Comp		1420			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
- 21	302-AP03-C5-VOC		1430			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
- 22	302-AP03-C5-Comp		1430			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

JanL  
10/15/22  
0055  
10/15/22 0055

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/14	<i>[Signature]</i>	10/14 14:50
<i>[Signature]</i>	10/14 18:00	<i>[Signature]</i>	10/14/22
<i>[Signature]</i>	10/14 2:00	<i>[Signature]</i>	10-14-22 2:00

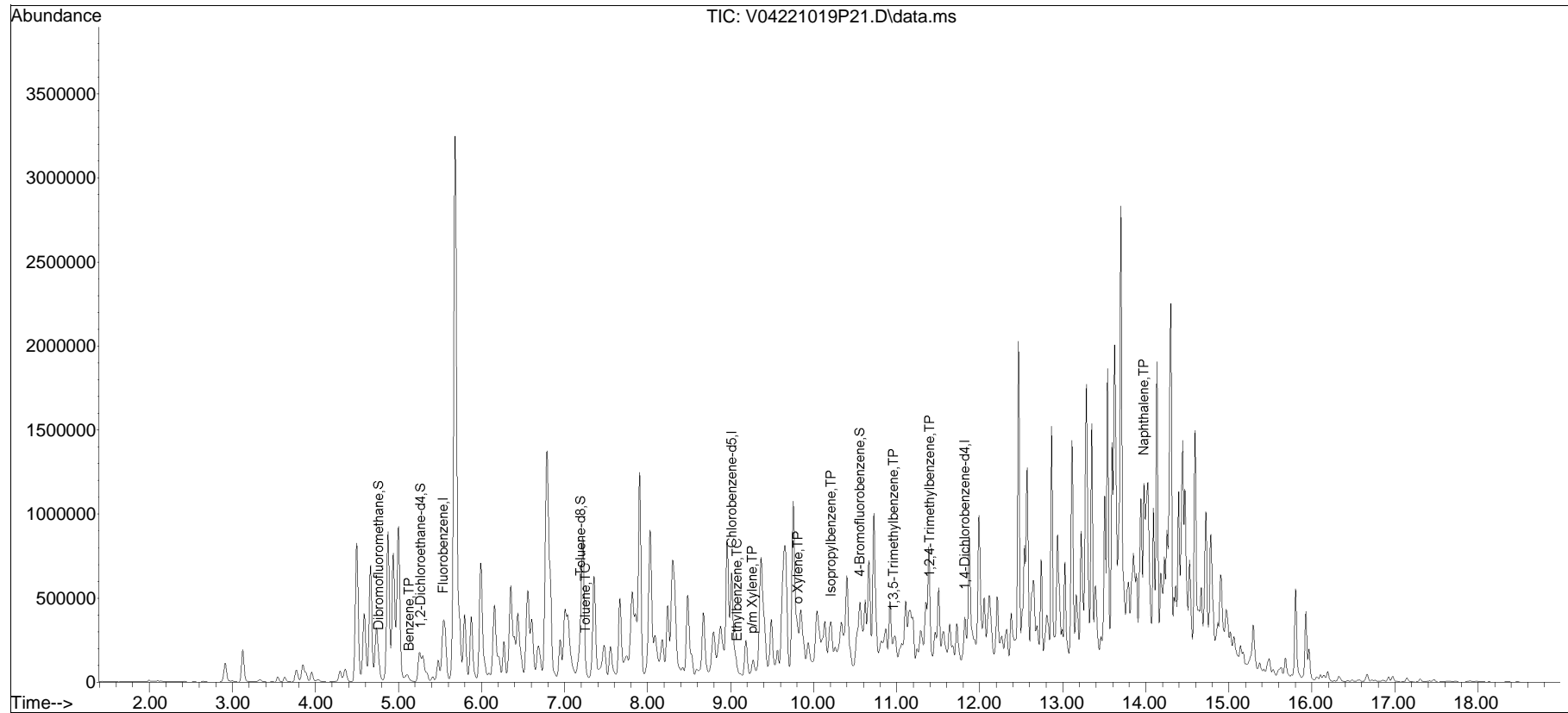
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\221019P\  
Data File : V04221019P21.D  
Acq On : 20 Oct 2022 4:11 am  
Operator : VOA104:JIC  
Sample : L2257557-01,31H,6.21,5,0.100,,A,R2F  
Misc : WG1701977,ICAL19119  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 20 08:50:08 2022  
Quant Method : I:\VOLATILES\VOA104\2022\221019P\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list19P\V04221019P01.D•

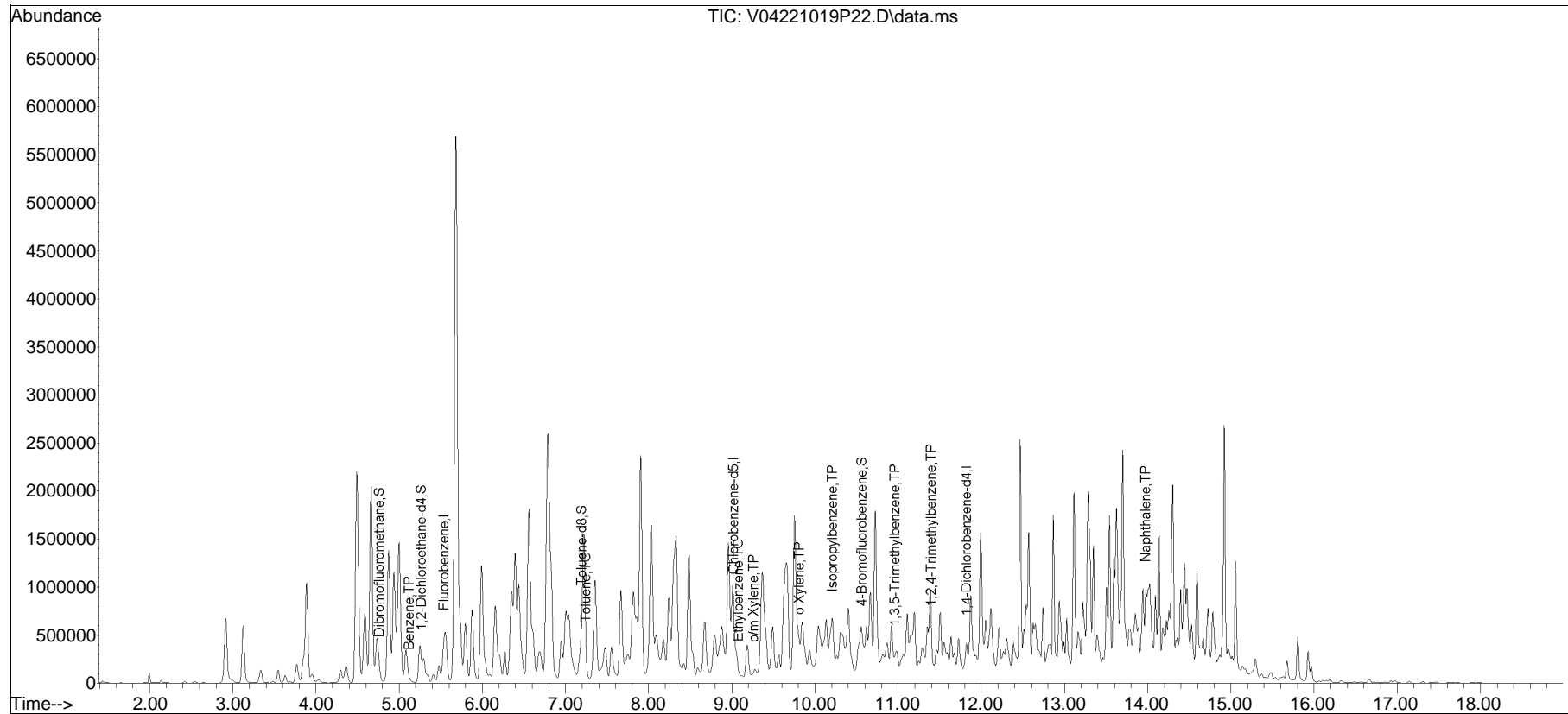


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\221019P\  
 Data File : V04221019P22.D  
 Acq On : 20 Oct 2022 4:38 am  
 Operator : VOA104:JIC  
 Sample : L2257557-03,31H,5.84,5,0.100,,A,R2F  
 Misc : WG1701977,ICAL19119  
 ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 20 08:51:25 2022  
 Quant Method : I:\VOLATILES\VOA104\2022\221019P\V104\_220621A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Wed Jun 22 06:56:43 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list19P\V04221019P01.D•

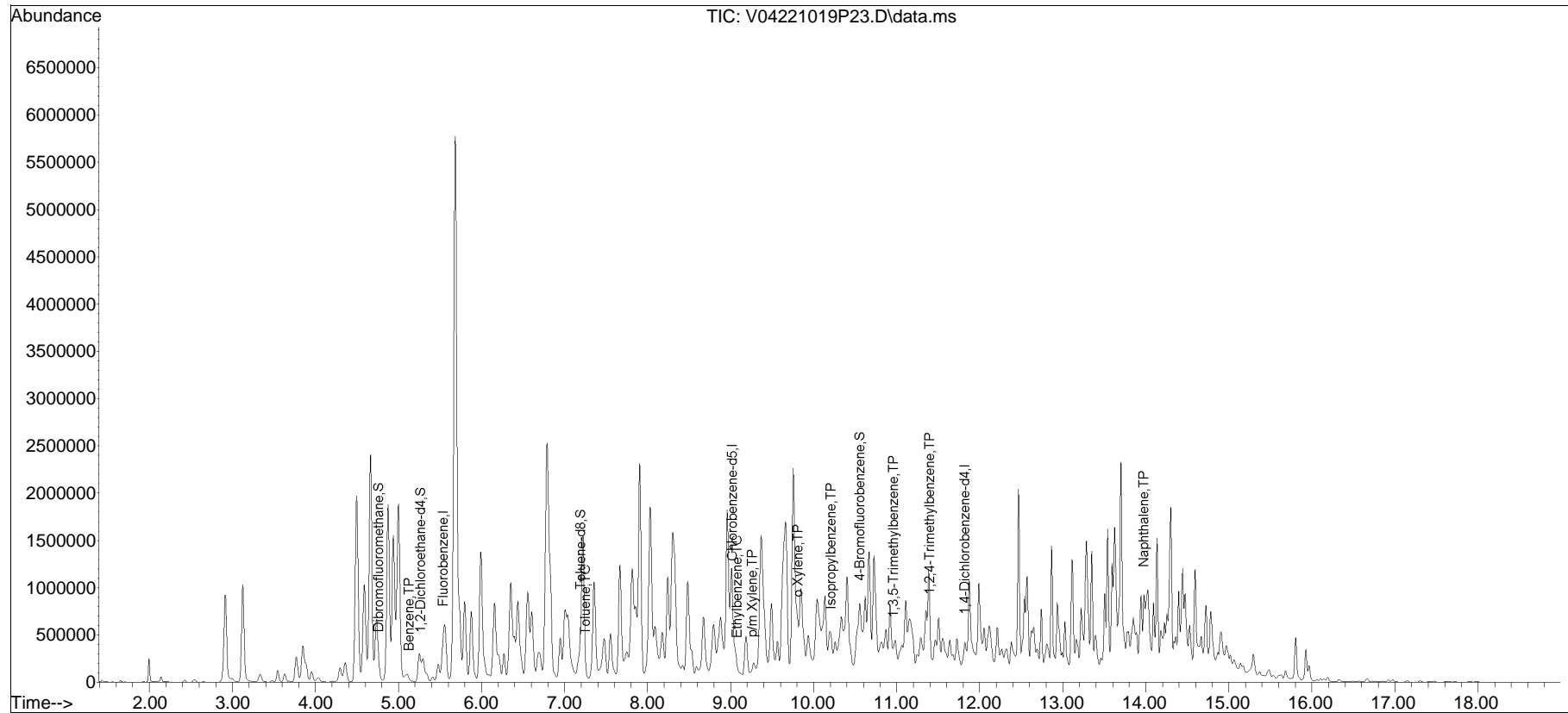


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\221019P\  
 Data File : V04221019P23.D  
 Acq On : 20 Oct 2022 5:04 am  
 Operator : VOA104:JIC  
 Sample : L2257557-05,31H,5.75,5,0.100,,A,R2F  
 Misc : WG1701977,ICAL19119  
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 20 08:51:50 2022  
 Quant Method : I:\VOLATILES\VOA104\2022\221019P\V104\_220621A\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Wed Jun 22 06:56:43 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list19P\V04221019P01.D•





## ANALYTICAL REPORT

Lab Number:	L2257767
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/24/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2257767

Report Date: 10/24/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2257767-01	302-AE03-C1-VOC	SOIL	PHILADELPHIA, PA	10/17/22 11:00	10/17/22
L2257767-02	302-AE03-C1-COMP	SOIL	PHILADELPHIA, PA	10/17/22 11:00	10/17/22
L2257767-03	302-AE03-C2-VOC	SOIL	PHILADELPHIA, PA	10/17/22 11:15	10/17/22
L2257767-04	302-AE03-C2-COMP	SOIL	PHILADELPHIA, PA	10/17/22 11:15	10/17/22
L2257767-05	302-AE03-C3-VOC	SOIL	PHILADELPHIA, PA	10/17/22 11:30	10/17/22
L2257767-06	302-AE03-C3-COMP	SOIL	PHILADELPHIA, PA	10/17/22 11:30	10/17/22
L2257767-07	302-AE03-C4-VOC	SOIL	PHILADELPHIA, PA	10/17/22 11:45	10/17/22
L2257767-08	302-AE03-C4-COMP	SOIL	PHILADELPHIA, PA	10/17/22 11:45	10/17/22
L2257767-09	302-AE03-C5-VOC	SOIL	PHILADELPHIA, PA	10/17/22 12:00	10/17/22
L2257767-10	302-AE03-C5-COMP	SOIL	PHILADELPHIA, PA	10/17/22 12:00	10/17/22
L2257767-11	302-AF03-C1-VOC	SOIL	PHILADELPHIA, PA	10/17/22 13:45	10/17/22
L2257767-12	302-AF03-C1-COMP	SOIL	PHILADELPHIA, PA	10/17/22 13:45	10/17/22
L2257767-13	302-AF03-C2-VOC	SOIL	PHILADELPHIA, PA	10/17/22 13:55	10/17/22
L2257767-14	302-AF03-C2-COMP	SOIL	PHILADELPHIA, PA	10/17/22 13:55	10/17/22
L2257767-15	302-AF03-C3-VOC	SOIL	PHILADELPHIA, PA	10/17/22 14:05	10/17/22
L2257767-16	302-AF03-C3-COMP	SOIL	PHILADELPHIA, PA	10/17/22 14:05	10/17/22
L2257767-17	302-AF03-C4-VOC	SOIL	PHILADELPHIA, PA	10/17/22 14:15	10/17/22
L2257767-18	302-AF03-C4-COMP	SOIL	PHILADELPHIA, PA	10/17/22 14:15	10/17/22
L2257767-19	302-AF03-C5-VOC	SOIL	PHILADELPHIA, PA	10/17/22 14:25	10/17/22
L2257767-20	302-AF03-C5-COMP	SOIL	PHILADELPHIA, PA	10/17/22 14:25	10/17/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2257767-01: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2257767-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2257767-03: The surrogate recoveries were outside the acceptance criteria for 4-bromofluorobenzene (205%) and dibromofluoromethane (136%); however, re-analysis achieved the following results: 4-bromofluorobenzene (767%). The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2257767-05 and -09: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2257767-05: The surrogate recoveries are outside the acceptance criteria for dibromofluoromethane (67%), toluene-d8 (453%) and 4-bromofluorobenzene (261%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Tiffani Morrissey* - Tiffani Morrissey

Title: Technical Director/Representative

Date: 10/24/22

# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-01  
 Client ID: 302-AE03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:00  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 09:53  
 Analyst: MKS  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.14	0.015	1
Benzene	ND		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.073	0.019	1
Toluene	ND		mg/kg	0.073	0.040	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.012	J	mg/kg	0.073	0.010	1
p/m-Xylene	0.049	J	mg/kg	0.14	0.041	1
o-Xylene	0.040	J	mg/kg	0.073	0.021	1
Xylenes, Total	0.089	J	mg/kg	0.073	0.021	1
Isopropylbenzene	0.24		mg/kg	0.073	0.0079	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	0.042	J	mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-03  
 Client ID: 302-AE03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:15  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 02:26  
 Analyst: JIC  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	0.00034	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.00034	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.15		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	205	Q	70-130
Dibromofluoromethane	136	Q	70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-03 R  
 Client ID: 302-AE03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:15  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 17:24  
 Analyst: AJK  
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	0.0032		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	0.0010		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0010		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.54	E	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	<b>767</b>	Q	70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-05  
 Client ID: 302-AE03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:30  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/20/22 02:48  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	ND		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	0.034	J	mg/kg	0.055	0.0078	1
p/m-Xylene	0.070	J	mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.055	0.016	1
Xylenes, Total	0.070	J	mg/kg	0.055	0.016	1
Isopropylbenzene	0.23		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	0.42		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	1.7		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	130		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-05  
 Client ID: 302-AE03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:30  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/21/22 01:56  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	0.0019		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.014		mg/kg	0.0013	0.00018	1
p/m-Xylene	0.036		mg/kg	0.0025	0.00071	1
o-Xylene	0.0046		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.041		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.094		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.38		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	453	Q	70-130
4-Bromofluorobenzene	261	Q	70-130
Dibromofluoromethane	67	Q	70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-07  
 Client ID: 302-AE03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:45  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 13:24  
 Analyst: MKS  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-09  
 Client ID: 302-AE03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 12:00  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 13:47  
 Analyst: MKS  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	ND		mg/kg	0.026	0.0086	1
1,2-Dichloroethane	ND		mg/kg	0.052	0.013	1
Toluene	ND		mg/kg	0.052	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.026	0.015	1
Ethylbenzene	0.014	J	mg/kg	0.052	0.0073	1
p/m-Xylene	0.032	J	mg/kg	0.10	0.029	1
o-Xylene	ND		mg/kg	0.052	0.015	1
Xylenes, Total	0.032	J	mg/kg	0.052	0.015	1
Isopropylbenzene	0.082		mg/kg	0.052	0.0057	1
1,3,5-Trimethylbenzene	0.15		mg/kg	0.10	0.010	1
1,2,4-Trimethylbenzene	0.76		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-09  
 Client ID: 302-AE03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 12:00  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/21/22 01:30  
 Analyst: JIC  
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-11  
 Client ID: 302-AF03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 13:45  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 14:10  
 Analyst: MKS  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	118		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-13  
 Client ID: 302-AF03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 13:55  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 14:33  
 Analyst: AJK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00068		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	0.00019	J	mg/kg	0.00086	0.00012	1
p/m-Xylene	0.00049	J	mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	0.00049	J	mg/kg	0.00086	0.00025	1
Isopropylbenzene	0.0015		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	0.00078	J	mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.0065		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-15  
 Client ID: 302-AF03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 14:05  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 14:56  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-17  
 Client ID: 302-AF03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 14:15  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 15:19  
 Analyst: AJK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	109		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-19  
 Client ID: 302-AF03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 14:25  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 10/19/22 15:42  
 Analyst: AJK  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	91		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 09:00  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01 Batch: WG1701615-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	95		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 08:50  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,11,13,15,17,19 Batch: WG1701723-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 19:15  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05 Batch: WG1702039-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	113		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 08:50  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1702077-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	114		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/20/22 18:04  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05,09 Batch: WG1702395-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	92		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/20/22 10:19  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1702455-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 10/19/22 19:15  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1702502-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	113		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01 Batch: WG1701615-3 WG1701615-4								
Methyl tert butyl ether	90		92		66-130	2		30
Benzene	89		92		70-130	3		30
1,2-Dichloroethane	88		89		70-130	1		30
Toluene	89		95		70-130	7		30
1,2-Dibromoethane	100		103		70-130	3		30
Ethylbenzene	89		94		70-130	5		30
p/m-Xylene	86		91		70-130	6		30
o-Xylene	87		93		70-130	7		30
Isopropylbenzene	94		98		70-130	4		30
1,3,5-Trimethylbenzene	92		99		70-130	7		30
1,2,4-Trimethylbenzene	92		98		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		93		70-130
Toluene-d8	103		106		70-130
4-Bromofluorobenzene	102		103		70-130
Dibromofluoromethane	98		98		70-130





## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,11,13,15,17,19 Batch: WG1701723-3 WG1701723-4								
Methyl tert butyl ether	114		118		66-130	3		30
Benzene	98		99		70-130	1		30
1,2-Dichloroethane	102		104		70-130	2		30
Toluene	95		95		70-130	0		30
1,2-Dibromoethane	95		98		70-130	3		30
Ethylbenzene	95		95		70-130	0		30
p/m-Xylene	102		102		70-130	0		30
o-Xylene	103		104		70-130	1		30
Isopropylbenzene	93		92		70-130	1		30
1,3,5-Trimethylbenzene	96		96		70-130	0		30
1,2,4-Trimethylbenzene	95		95		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	104		104		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05 Batch: WG1702039-3 WG1702039-4								
Methyl tert butyl ether	112		112		66-130	0		30
Benzene	96		97		70-130	1		30
1,2-Dichloroethane	101		102		70-130	1		30
Toluene	91		90		70-130	1		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	91		91		70-130	0		30
p/m-Xylene	98		97		70-130	1		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	86		85		70-130	1		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	90		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	97		95		70-130
4-Bromofluorobenzene	99		98		70-130
Dibromofluoromethane	104		105		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2257767

Project Number: 200.00135.006

Report Date: 10/24/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1702077-3 WG1702077-4								
Methyl tert butyl ether	114		118		66-130	3		30
Benzene	98		99		70-130	1		30
1,2-Dichloroethane	102		104		70-130	2		30
Toluene	95		95		70-130	0		30
1,2-Dibromoethane	95		98		70-130	3		30
Ethylbenzene	95		95		70-130	0		30
p/m-Xylene	102		102		70-130	0		30
o-Xylene	103		104		70-130	1		30
Isopropylbenzene	93		92		70-130	1		30
1,3,5-Trimethylbenzene	96		96		70-130	0		30
1,2,4-Trimethylbenzene	95		95		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	104		104		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05,09 Batch: WG1702395-3 WG1702395-4								
Methyl tert butyl ether	119		118		66-130	1		30
Benzene	113		114		70-130	1		30
1,2-Dichloroethane	96		98		70-130	2		30
Toluene	110		110		70-130	0		30
1,2-Dibromoethane	99		97		70-130	2		30
Ethylbenzene	106		106		70-130	0		30
p/m-Xylene	112		112		70-130	0		30
o-Xylene	108		109		70-130	1		30
Isopropylbenzene	117		117		70-130	0		30
1,3,5-Trimethylbenzene	108		108		70-130	0		30
1,2,4-Trimethylbenzene	106		105		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	81		81		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	106		104		70-130
Dibromofluoromethane	80		82		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1702455-3 WG1702455-4								
Methyl tert butyl ether	81		80		66-130	1		30
Benzene	90		86		70-130	5		30
1,2-Dichloroethane	84		82		70-130	2		30
Toluene	95		91		70-130	4		30
1,2-Dibromoethane	94		93		70-130	1		30
Ethylbenzene	96		92		70-130	4		30
p/m-Xylene	99		95		70-130	4		30
o-Xylene	98		95		70-130	3		30
Isopropylbenzene	97		93		70-130	4		30
1,3,5-Trimethylbenzene	100		95		70-130	5		30
1,2,4-Trimethylbenzene	99		95		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		95		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	102		102		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2257767

Project Number: 200.00135.006

Report Date: 10/24/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1702502-3 WG1702502-4								
Methyl tert butyl ether	112		112		66-130	0		30
Benzene	96		97		70-130	1		30
1,2-Dichloroethane	101		102		70-130	1		30
Toluene	91		90		70-130	1		30
1,2-Dibromoethane	93		92		70-130	1		30
Ethylbenzene	91		91		70-130	0		30
p/m-Xylene	98		97		70-130	1		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	86		85		70-130	1		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	90		88		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	97		95		70-130
4-Bromofluorobenzene	99		98		70-130
Dibromofluoromethane	104		105		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-02  
 Client ID: 302-AE03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:00  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/19/22 22:33  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	53		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-04  
 Client ID: 302-AE03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:15  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/19/22 23:43  
 Analyst: CMM  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	43		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-06  
 Client ID: 302-AE03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:30  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/20/22 02:27  
 Analyst: CMM  
 Percent Solids: 86%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.85		mg/kg	0.19	0.018	1
Phenanthrene	0.89		mg/kg	0.11	0.023	1
Anthracene	0.20		mg/kg	0.11	0.037	1
Pyrene	0.095	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	52		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-08  
 Client ID: 302-AE03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:45  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 05:09  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	45		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-10  
 Client ID: 302-AE03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 12:00  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/20/22 05:59  
 Analyst: CMM  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	1.5		mg/kg	0.20	0.019	1
Phenanthrene	2.7		mg/kg	0.12	0.024	1
Anthracene	0.40		mg/kg	0.12	0.039	1
Pyrene	0.57		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.097	J	mg/kg	0.12	0.022	1
Chrysene	0.10	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.14		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.13	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.065	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	78		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-12  
 Client ID: 302-AF03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 13:45  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 07:06  
 Analyst: CMM  
 Percent Solids: 92%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.043	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.060	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.034	J	mg/kg	0.11	0.020	1
Chrysene	0.037	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.055	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.047	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.036	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	48		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-14  
 Client ID: 302-AF03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 13:55  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/20/22 01:40  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	46		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	41		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-16  
 Client ID: 302-AF03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 14:05  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 02:25  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.072	J	mg/kg	0.20	0.025	1
Fluorene	0.12	J	mg/kg	0.20	0.020	1
Phenanthrene	0.27		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	51		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-18  
 Client ID: 302-AF03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 14:15  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 05:56  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.16	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.66		mg/kg	0.12	0.024	1
Anthracene	0.075	J	mg/kg	0.12	0.039	1
Pyrene	0.13		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.068	J	mg/kg	0.12	0.023	1
Chrysene	0.068	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.084	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.067	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.035	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	42		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-20  
 Client ID: 302-AF03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 14:25  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/19/22 22:09  
 Analyst: CMM  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	57		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/19/22 20:59  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 10/18/22 05:39

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1700762-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	82		18-120

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1700762-2 WG1700762-3								
Naphthalene	72		65		40-140	10		50
Fluorene	73		65		40-140	12		50
Phenanthrene	72		65		40-140	10		50
Anthracene	73		67		40-140	9		50
Pyrene	72		68		35-142	6		50
Benzo(a)anthracene	74		65		40-140	13		50
Chrysene	73		66		40-140	10		50
Benzo(b)fluoranthene	76		71		40-140	7		50
Benzo(a)pyrene	81		76		40-140	6		50
Benzo(ghi)perylene	73		66		40-140	10		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	70		59		23-120
2-Fluorobiphenyl	76		64		30-120
4-Terphenyl-d14	71		66		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-02

Date Collected: 10/17/22 11:00

Client ID: 302-AE03-C1-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.78		mg/kg	2.30	0.123	1	10/18/22 10:40	10/20/22 17:09	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-04  
 Client ID: 302-AE03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 11:15  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.26		mg/kg	2.32	0.124	1	10/18/22 10:40	10/20/22 16:55	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-06

Date Collected: 10/17/22 11:30

Client ID: 302-AE03-C3-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.44		mg/kg	2.30	0.123	1	10/18/22 10:40	10/20/22 17:00	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-08

Date Collected: 10/17/22 11:45

Client ID: 302-AE03-C4-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	263		mg/kg	2.41	0.129	1	10/18/22 10:40	10/20/22 17:04	EPA 3050B	1,6010D	MRC





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-10

Date Collected: 10/17/22 12:00

Client ID: 302-AE03-C5-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	50.4		mg/kg	2.29	0.123	1	10/18/22 10:40	10/20/22 20:12	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-12  
 Client ID: 302-AF03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 13:45  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.7		mg/kg	2.05	0.110	1	10/18/22 10:40	10/20/22 20:17	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-14  
 Client ID: 302-AF03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 13:55  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.88		mg/kg	2.41	0.129	1	10/18/22 10:40	10/20/22 20:23	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-16

Date Collected: 10/17/22 14:05

Client ID: 302-AF03-C3-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.45		mg/kg	2.37	0.127	1	10/18/22 10:40	10/20/22 20:27	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-18

Date Collected: 10/17/22 14:15

Client ID: 302-AF03-C4-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	16.4		mg/kg	2.30	0.123	1	10/18/22 10:40	10/20/22 20:32	EPA 3050B	1,6010D	MRC



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-20

Date Collected: 10/17/22 14:25

Client ID: 302-AF03-C5-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.30		mg/kg	2.19	0.118	1	10/18/22 10:40	10/20/22 20:37	EPA 3050B	1,6010D	MRC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257767

Project Number: 200.00135.006

Report Date: 10/24/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1700905-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/18/22 10:40	10/20/22 16:46	1,6010D	MRC

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1700905-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128			-





### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20    QC Batch ID: WG1700905-3    QC Sample: L2257767-02    Client ID: 302-AE03-C1-COMP												
Lead, Total	6.78	48.6	46.0	81		-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2257767

**Report Date:** 10/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1700905-4 QC Sample: L2257767-02 Client ID: 302-AE03-C1-COMP						
Lead, Total	6.78	5.99	mg/kg	12		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-01

Date Collected: 10/17/22 11:00

Client ID: 302-AE03-C1-VOC

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.6		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-02

Date Collected: 10/17/22 11:00

Client ID: 302-AE03-C1-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

**Lab ID:** L2257767-03  
**Client ID:** 302-AE03-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/17/22 11:15  
**Date Received:** 10/17/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.5		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-04

Date Collected: 10/17/22 11:15

Client ID: 302-AE03-C2-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-05

Date Collected: 10/17/22 11:30

Client ID: 302-AE03-C3-VOC

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.9		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-06

Date Collected: 10/17/22 11:30

Client ID: 302-AE03-C3-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.8		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

**Lab ID:** L2257767-07  
**Client ID:** 302-AE03-C4-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/17/22 11:45  
**Date Received:** 10/17/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

**Lab ID:** L2257767-08  
**Client ID:** 302-AE03-C4-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/17/22 11:45  
**Date Received:** 10/17/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

Lab ID: L2257767-09  
 Client ID: 302-AE03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/17/22 12:00  
 Date Received: 10/17/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.5		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257767

Project Number: 200.00135.006

Report Date: 10/24/22

## SAMPLE RESULTS

Lab ID: L2257767-10

Date Collected: 10/17/22 12:00

Client ID: 302-AE03-C5-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-11

Date Collected: 10/17/22 13:45

Client ID: 302-AF03-C1-VOC

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.0		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-12

Date Collected: 10/17/22 13:45

Client ID: 302-AF03-C1-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.6		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

**SAMPLE RESULTS**

**Lab ID:** L2257767-13  
**Client ID:** 302-AF03-C2-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/17/22 13:55  
**Date Received:** 10/17/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	91.2		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-14

Date Collected: 10/17/22 13:55

Client ID: 302-AF03-C2-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	78.9		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257767

Project Number: 200.00135.006

Report Date: 10/24/22

## SAMPLE RESULTS

Lab ID: L2257767-15

Date Collected: 10/17/22 14:05

Client ID: 302-AF03-C3-VOC

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-16

Date Collected: 10/17/22 14:05

Client ID: 302-AF03-C3-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.2		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-17

Date Collected: 10/17/22 14:15

Client ID: 302-AF03-C4-VOC

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.4		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2257767

Project Number: 200.00135.006

Report Date: 10/24/22

## SAMPLE RESULTS

Lab ID: L2257767-18

Date Collected: 10/17/22 14:15

Client ID: 302-AF03-C4-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-19

Date Collected: 10/17/22 14:25

Client ID: 302-AF03-C5-VOC

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.0		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**SAMPLE RESULTS**

Lab ID: L2257767-20

Date Collected: 10/17/22 14:25

Client ID: 302-AF03-C5-COMP

Date Received: 10/17/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.3		%	0.100	NA	1	-	10/18/22 11:59	121,2540G	RI



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2257767

**Report Date:** 10/24/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1700884-1 QC Sample: L2257767-01 Client ID: 302-AE03-C1-VOC						
Solids, Total	80.6	81.2	%	1		20





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257767-01A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2257767-01B	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-01C	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-01D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2257767-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2257767-02B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2257767-03A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2257767-03B	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-03C	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-03D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2257767-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2257767-04B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2257767-05A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2257767-05B	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260H(14),PA-8260HLW(14)
L2257767-05C	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260H(14),PA-8260HLW(14)
L2257767-05D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2257767-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2257767-06B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2257767-07A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2257767-07B	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-07C	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-07D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2257767**Project Number:** 200.00135.006**Report Date:** 10/24/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257767-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2257767-08B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2257767-09A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2257767-09B	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260H(14),PA-8260HLW(14)
L2257767-09C	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260H(14),PA-8260HLW(14)
L2257767-09D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2257767-10A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2257767-10B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2257767-11A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2257767-11B	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-11C	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-11D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2257767-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2257767-12B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2257767-13A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2257767-13B	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-13C	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-13D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2257767-14A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2257767-14B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2257767-15A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2257767-15B	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-15C	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-15D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2257767-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2257767-16B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2257767-17A	Vial MeOH preserved	B	NA		3.4	Y	Absent		PA-8260HLW(14)
L2257767-17B	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10242213:36  
**Lab Number:** L2257767  
**Report Date:** 10/24/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2257767-17C	Vial water preserved	B	NA		3.4	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-17D	Plastic 120ml unpreserved	B	NA		3.4	Y	Absent		TS(7)
L2257767-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.4	Y	Absent		PB-TI(180)
L2257767-18B	Glass 120ml/4oz unpreserved	B	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2257767-19A	Vial MeOH preserved	A	NA		4.3	Y	Absent		PA-8260HLW(14)
L2257767-19B	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-19C	Vial water preserved	A	NA		4.3	Y	Absent	18-OCT-22 04:54	PA-8260HLW(14)
L2257767-19D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2257767-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2257767-20B	Glass 120ml/4oz unpreserved	A	NA		4.3	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2257767  
**Report Date:** 10/24/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2257767

**Project Number:** 200.00135.006

**Report Date:** 10/24/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpineol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 1 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1745~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9103

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10-18-22

ALPHA Job #: L2257167

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

	VOCs (8260)	SVOCs (8270)	Lead															
302-AE03-C1-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
302-AE03-C1-COMP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>															1100
302-AE03-C2-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
302-AE03-C2-COMP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>															
302-AE03-C3-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
302-AE03-C3-COMP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>															
302-AE03-C4-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
302-AE03-C4-COMP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>															
302-AE03-C5-VOC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
302-AE03-C5-COMP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>															

## SAMPLE HANDLING

Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
57767-01	302-AE03-C1-VOC	11/17	1100	S	JS
-02	302-AE03-C1-COMP		1100		
-03	302-AE03-C2-VOC		1115		
-04	302-AE03-C2-COMP		1115		
-05	302-AE03-C3-VOC		1130		
-06	302-AE03-C3-COMP		1130		
-07	302-AE03-C4-VOC		1145		
-08	302-AE03-C4-COMP		1145		
-09	302-AE03-C5-VOC		1200		
-10	302-AE03-C5-COMP		1200		

Container Type

Preservative

G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:

Date/Time

Received By:

Date/Time

10/18/22  
0105  
10/18/22 0105

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10-18-22

ALPHA Job #: L2257767

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead																		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
577610	302-AF03-C1-VOC	10/17	1345	S	TS
-02	302-AF03-C1-Comp		1345		
-13	302-AF03-C2-VOC		1355		
-14	302-AF03-C2-Comp		1355		
-15	302-AF03-C3-VOC		1405		
-16	302-AF03-C3-Comp		1405		
-17	302-AF03-C4-VOC		1415		
-18	302-AF03-C4-Comp		1415		
-19	302-AF03-C5-VOC		1425		
-20	302-AF03-C5-Comp		1425		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

10/18/22  
0105  
10/18/22 0105

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/17/22 1450	<i>[Signature]</i>	10/17/22 1455
<i>[Signature]</i>	10/17/22 1820	<i>[Signature]</i>	10/17/22 1820
<i>[Signature]</i>	10/17/22 2100	<i>[Signature]</i>	10/17/22 2100

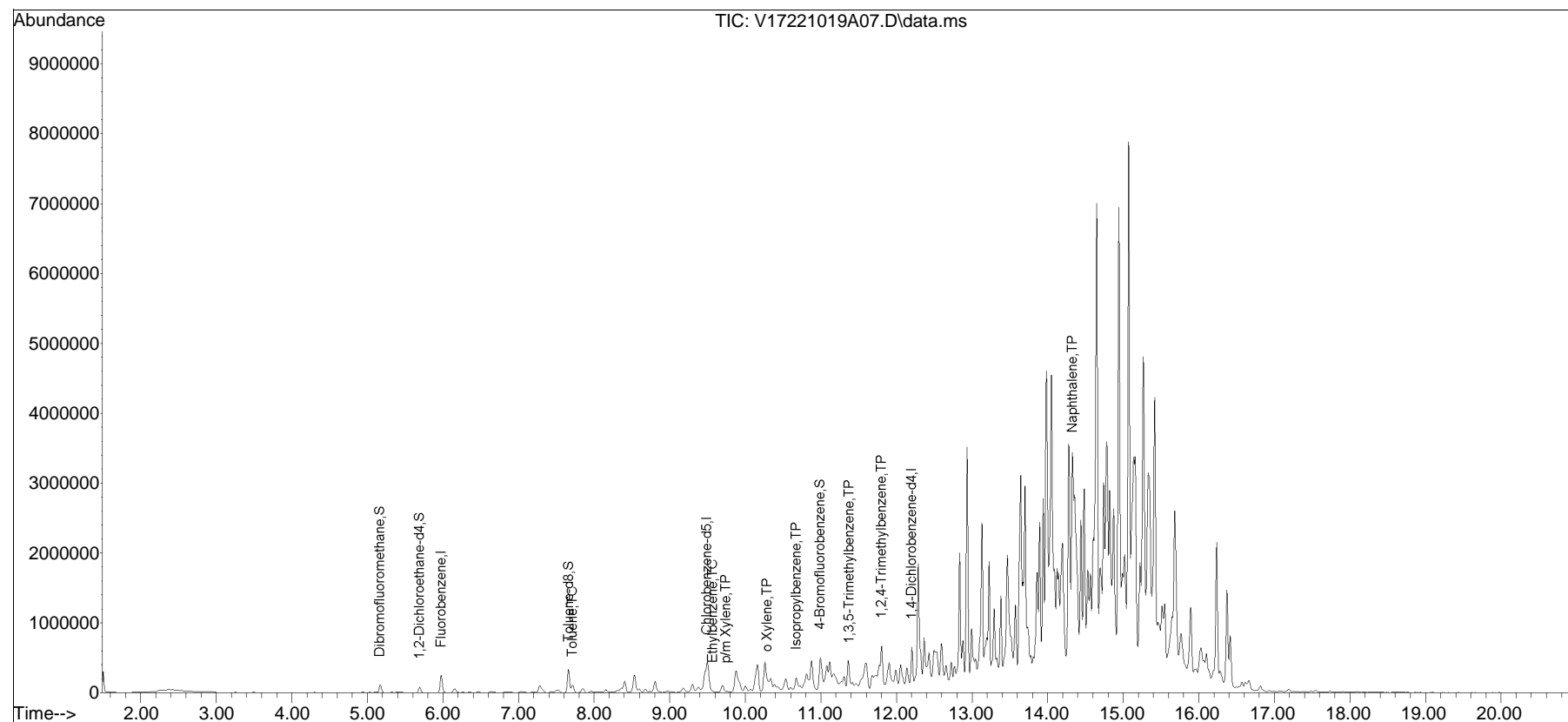
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2022\221019A\  
Data File : V17221019A07.D  
Acq On : 19 Oct 2022 09:53 am  
Operator : VOA117:MKS  
Sample : L2257767-01,31H,5.10,5,0.100,,A,R2F  
Misc : WG1701615,ICAL19363  
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 19 15:31:12 2022  
Quant Method : I:\VOLATILES\VOA117\2022\221019A\V117\_220923N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Sep 28 06:22:25 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list19A\V17221019A01.D•

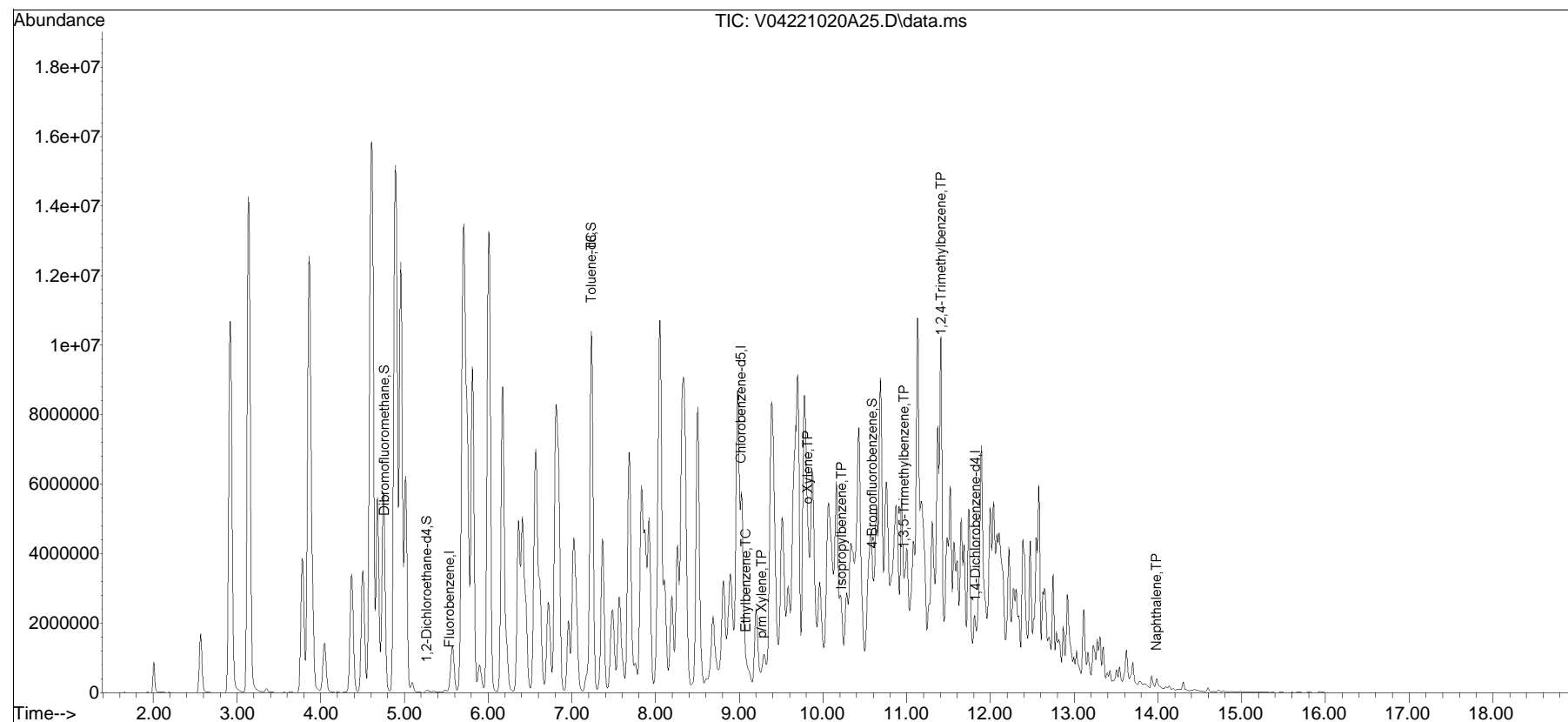


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\221020A\  
Data File : V04221020A25.D  
Acq On : 21 Oct 2022 1:56 am  
Operator : VOA104:JIC  
Sample : L2257767-05,31,4.65,5,,B,R2F  
Misc : WG1702395,ICAL19119  
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Oct 21 08:24:52 2022  
Quant Method : I:\VOLATILES\VOA104\2022\221020A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list20A\V04221020A04.D•





## ANALYTICAL REPORT

Lab Number:	L2258021
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/25/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2258021-01	302-AG03-C1-VOC	SOIL	PHILADELPHIA, PA	10/18/22 14:00	10/18/22
L2258021-02	302-AG03-C1-COMP	SOIL	PHILADELPHIA, PA	10/18/22 14:00	10/18/22
L2258021-03	302-AG03-C2-VOC	SOIL	PHILADELPHIA, PA	10/18/22 14:10	10/18/22
L2258021-04	302-AG03-C2-COMP	SOIL	PHILADELPHIA, PA	10/18/22 14:10	10/18/22
L2258021-05	302-AG03-C3-VOC	SOIL	PHILADELPHIA, PA	10/18/22 14:20	10/18/22
L2258021-06	302-AG03-C3-COMP	SOIL	PHILADELPHIA, PA	10/18/22 14:20	10/18/22
L2258021-07	302-AG03-C4-VOC	SOIL	PHILADELPHIA, PA	10/18/22 14:30	10/18/22
L2258021-08	302-AG03-C4-COMP	SOIL	PHILADELPHIA, PA	10/18/22 14:30	10/18/22
L2258021-09	302-AG03-C5-VOC	SOIL	PHILADELPHIA, PA	10/18/22 14:40	10/18/22
L2258021-10	302-AG03-C5-COMP	SOIL	PHILADELPHIA, PA	10/18/22 14:40	10/18/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2258021-01, -05, -07, and -09: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2258021-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (146%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258021-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (140%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258021-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (158%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258021-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (148%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258021-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (132%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 10/25/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-01  
 Client ID: 302-AG03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:00  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 22:24  
 Analyst: AJK  
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.0099	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	ND		mg/kg	0.060	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	ND		mg/kg	0.060	0.0084	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.060	0.017	1
Xylenes, Total	ND		mg/kg	0.060	0.017	1
Isopropylbenzene	0.82		mg/kg	0.060	0.0065	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	146	Q	70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-03  
 Client ID: 302-AG03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:10  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 22:50  
 Analyst: AJK  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.097	0.0098	1
Benzene	0.021	J	mg/kg	0.024	0.0081	1
1,2-Dichloroethane	ND		mg/kg	0.049	0.012	1
Toluene	ND		mg/kg	0.049	0.026	1
1,2-Dibromoethane	ND		mg/kg	0.024	0.014	1
Ethylbenzene	1.8		mg/kg	0.049	0.0068	1
p/m-Xylene	3.1		mg/kg	0.097	0.027	1
o-Xylene	0.82		mg/kg	0.049	0.014	1
Xylenes, Total	3.9		mg/kg	0.049	0.014	1
Isopropylbenzene	0.60		mg/kg	0.049	0.0053	1
1,3,5-Trimethylbenzene	1.5		mg/kg	0.097	0.0094	1
1,2,4-Trimethylbenzene	5.2		mg/kg	0.097	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	140	Q	70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-05  
 Client ID: 302-AG03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:20  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 23:16  
 Analyst: AJK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.018	1
Ethylbenzene	ND		mg/kg	0.063	0.0089	1
p/m-Xylene	ND		mg/kg	0.13	0.035	1
o-Xylene	0.023	J	mg/kg	0.063	0.018	1
Xylenes, Total	0.023	J	mg/kg	0.063	0.018	1
Isopropylbenzene	1.0		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	158	Q	70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-07  
 Client ID: 302-AG03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:30  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 23:42  
 Analyst: AJK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	0.024	J	mg/kg	0.030	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.060	0.015	1
Toluene	0.042	J	mg/kg	0.060	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.018	1
Ethylbenzene	0.050	J	mg/kg	0.060	0.0085	1
p/m-Xylene	0.099	J	mg/kg	0.12	0.034	1
o-Xylene	0.028	J	mg/kg	0.060	0.017	1
Xylenes, Total	0.13	J	mg/kg	0.060	0.017	1
Isopropylbenzene	0.66		mg/kg	0.060	0.0065	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	0.039	J	mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	148	Q	70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-09  
 Client ID: 302-AG03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:40  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/22/22 00:08  
 Analyst: AJK  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.066	0.017	1
Toluene	ND		mg/kg	0.066	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	ND		mg/kg	0.066	0.0093	1
p/m-Xylene	ND		mg/kg	0.13	0.037	1
o-Xylene	ND		mg/kg	0.066	0.019	1
Xylenes, Total	ND		mg/kg	0.066	0.019	1
Isopropylbenzene	0.54		mg/kg	0.066	0.0072	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	0.026	J	mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	132	Q	70-130
Dibromofluoromethane	96		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/21/22 17:09  
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03,05,07,09 Batch: WG1703181-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130



## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03,05,07,09 Batch: WG1703181-3 WG1703181-4								
Methyl tert butyl ether	124		118		66-130	5		30
Benzene	118		114		70-130	3		30
1,2-Dichloroethane	116		111		70-130	4		30
Toluene	106		103		70-130	3		30
1,2-Dibromoethane	107		104		70-130	3		30
Ethylbenzene	110		107		70-130	3		30
p/m-Xylene	105		102		70-130	3		30
o-Xylene	104		101		70-130	3		30
Isopropylbenzene	106		102		70-130	4		30
1,3,5-Trimethylbenzene	106		102		70-130	4		30
1,2,4-Trimethylbenzene	105		102		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	114		112		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	105		107		70-130
Dibromofluoromethane	100		101		70-130



# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-02  
 Client ID: 302-AG03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:00  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 03:35  
 Analyst: CMM  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	2.6		mg/kg	0.17	0.017	1
Phenanthrene	4.6		mg/kg	0.10	0.021	1
Anthracene	0.82		mg/kg	0.10	0.034	1
Pyrene	0.36		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	0.023	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-04  
 Client ID: 302-AG03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:10  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 07:53  
 Analyst: CMM  
 Percent Solids: 93%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.29		mg/kg	0.18	0.022	1
Fluorene	1.2		mg/kg	0.18	0.017	1
Phenanthrene	2.6		mg/kg	0.11	0.022	1
Anthracene	0.40		mg/kg	0.11	0.034	1
Pyrene	0.32		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.13		mg/kg	0.11	0.020	1
Chrysene	0.13		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.23		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.20		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.16		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	67		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-06  
 Client ID: 302-AG03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:20  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 03:12  
 Analyst: CMM  
 Percent Solids: 79%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	2.4		mg/kg	0.20	0.025	1
Fluorene	1.9		mg/kg	0.20	0.020	1
Phenanthrene	3.7		mg/kg	0.12	0.025	1
Anthracene	0.56		mg/kg	0.12	0.040	1
Pyrene	0.22		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.037	J	mg/kg	0.12	0.023	1
Chrysene	0.038	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.037	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	69		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-08  
 Client ID: 302-AG03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:30  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 06:42  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	4.2		mg/kg	0.20	0.025	1
Fluorene	3.0		mg/kg	0.20	0.020	1
Phenanthrene	4.4		mg/kg	0.12	0.024	1
Anthracene	0.78		mg/kg	0.12	0.039	1
Pyrene	0.40		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.043	J	mg/kg	0.12	0.023	1
Chrysene	0.059	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.024	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-10  
 Client ID: 302-AG03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:40  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 04:22  
 Analyst: CMM  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.096	J	mg/kg	0.22	0.027	1
Fluorene	1.1		mg/kg	0.22	0.021	1
Phenanthrene	2.9		mg/kg	0.13	0.027	1
Anthracene	0.51		mg/kg	0.13	0.043	1
Pyrene	0.21		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.025	1
Chrysene	ND		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.037	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.053	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 1,8270E  
 Analytical Date: 10/21/22 20:56  
 Analyst: CMM

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10 Batch: WG1702289-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	68		18-120



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10 Batch: WG1702289-2 WG1702289-3								
Naphthalene	64		61		40-140	5		50
Fluorene	65		63		40-140	3		50
Phenanthrene	64		62		40-140	3		50
Anthracene	66		63		40-140	5		50
Pyrene	66		65		35-142	2		50
Benzo(a)anthracene	65		61		40-140	6		50
Chrysene	65		62		40-140	5		50
Benzo(b)fluoranthene	69		65		40-140	6		50
Benzo(a)pyrene	74		70		40-140	6		50
Benzo(ghi)perylene	66		63		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	59		58		23-120
2-Fluorobiphenyl	64		60		30-120
4-Terphenyl-d14	61		60		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258021

**Project Number:** 200.00135.006

**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-02

Date Collected: 10/18/22 14:00

Client ID: 302-AG03-C1-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.10		mg/kg	2.03	0.109	1	10/19/22 23:21	10/20/22 20:37	EPA 3050B	1,6010D	NTB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258021

**Project Number:** 200.00135.006

**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-04

Date Collected: 10/18/22 14:10

Client ID: 302-AG03-C2-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	24.3		mg/kg	2.13	0.114	1	10/19/22 23:21	10/20/22 20:41	EPA 3050B	1,6010D	NTB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258021

**Project Number:** 200.00135.006

**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-06

Date Collected: 10/18/22 14:20

Client ID: 302-AG03-C3-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.99		mg/kg	2.40	0.129	1	10/19/22 23:21	10/20/22 20:45	EPA 3050B	1,6010D	NTB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-08  
 Client ID: 302-AG03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:30  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	64.5		mg/kg	2.43	0.130	1	10/19/22 23:21	10/20/22 20:48	EPA 3050B	1,6010D	NTB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-10  
 Client ID: 302-AG03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:40  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	21.0		mg/kg	2.63	0.141	1	10/19/22 23:21	10/20/22 20:51	EPA 3050B	1,6010D	NTB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258021

Project Number: 200.00135.006

Report Date: 10/25/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10 Batch: WG1701459-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/19/22 23:21	10/20/22 11:10	1,6010D	NTB

### Prep Information

Digestion Method: EPA 3050B





## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258021

**Project Number:** 200.00135.006

**Report Date:** 10/25/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10 Batch: WG1701459-2 SRM Lot Number: D113-540								
Lead, Total	88		-		72-128	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10    QC Batch ID: WG1701459-3 WG1701459-4    QC Sample: L2258128-03    Client ID: MS Sample												
Lead, Total	1.18J	41.9	43.2	103		44.3	102		75-125	3		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258021**Project Number:** 200.00135.006**Report Date:** 10/25/22**SAMPLE RESULTS**

Lab ID: L2258021-01

Date Collected: 10/18/22 14:00

Client ID: 302-AG03-C1-VOC

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	95.0		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258021**Project Number:** 200.00135.006**Report Date:** 10/25/22**SAMPLE RESULTS**

Lab ID: L2258021-02

Date Collected: 10/18/22 14:00

Client ID: 302-AG03-C1-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	94.1		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258021**Project Number:** 200.00135.006**Report Date:** 10/25/22**SAMPLE RESULTS**

Lab ID: L2258021-03

Date Collected: 10/18/22 14:10

Client ID: 302-AG03-C2-VOC

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.6		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258021

Project Number: 200.00135.006

Report Date: 10/25/22

## SAMPLE RESULTS

Lab ID: L2258021-04

Date Collected: 10/18/22 14:10

Client ID: 302-AG03-C2-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.1		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-05  
 Client ID: 302-AG03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/18/22 14:20  
 Date Received: 10/18/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.0		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI





Project Name: PHILADELPHIA REFINERY

Lab Number: L2258021

Project Number: 200.00135.006

Report Date: 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-06

Date Collected: 10/18/22 14:20

Client ID: 302-AG03-C3-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	79.4		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258021

Project Number: 200.00135.006

Report Date: 10/25/22

## SAMPLE RESULTS

Lab ID: L2258021-07

Date Collected: 10/18/22 14:30

Client ID: 302-AG03-C4-VOC

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258021**Project Number:** 200.00135.006**Report Date:** 10/25/22**SAMPLE RESULTS**

Lab ID: L2258021-08

Date Collected: 10/18/22 14:30

Client ID: 302-AG03-C4-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.8		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258021**Project Number:** 200.00135.006**Report Date:** 10/25/22**SAMPLE RESULTS**

Lab ID: L2258021-09

Date Collected: 10/18/22 14:40

Client ID: 302-AG03-C5-VOC

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	92.6		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258021

Project Number: 200.00135.006

Report Date: 10/25/22

**SAMPLE RESULTS**

Lab ID: L2258021-10

Date Collected: 10/18/22 14:40

Client ID: 302-AG03-C5-COMP

Date Received: 10/18/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.6		%	0.100	NA	1	-	10/19/22 13:42	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2258021

**Report Date:** 10/25/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1701370-1 QC Sample: L2258021-01 Client ID: 302-AG03-C1-VOC						
Solids, Total	95.0	94.8	%	0		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258021**Project Number:** 200.00135.006**Report Date:** 10/25/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258021-01A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258021-01B	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-01C	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-01D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2258021-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258021-02B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258021-03A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258021-03B	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-03C	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-03D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2258021-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258021-04B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258021-05A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258021-05B	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-05C	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-05D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2258021-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258021-06B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258021-07A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258021-07B	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-07C	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-07D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2258021-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10252210:55  
**Lab Number:** L2258021  
**Report Date:** 10/25/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258021-08B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258021-09A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258021-09B	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-09C	Vial water preserved	A	NA		3.4	Y	Absent	19-OCT-22 07:58	PA-8260HLW(14)
L2258021-09D	Plastic 120ml unpreserved	A	NA		3.4	Y	Absent		TS(7)
L2258021-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258021-10B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)

\*Values in parentheses indicate holding time in days





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258021  
**Report Date:** 10/25/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 1



Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-888-9193 FAX: 508-822-3286

## Client Information

Client: Ransom Consulting, LLC  
 Address: 2127 Hamilton Avenue  
 Trenton, NJ 08619  
 Phone: 215-901-4974

Fax:  Standard  Rush (ONLY IF PRE-APPROVED)  
 Email: William.Schmidt@ransomenv.com  
 These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 \*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hlicoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
58021-01	302-AG03-C1-VOC	10/18	1900	S	TS
-02	302-AG03-C1-COMP		1900		
-03	302-AG03-C2-VOC		1910		
-04	302-AG03-C2-COMP		1910		
-05	302-AG03-C3-VOC		1920		
-06	302-AG03-C3-COMP		1920		
-07	302-AG03-C4-VOC		1930		
-08	302-AG03-C4-COMP		1930		
-09	302-AG03-C5-VOC		1940		
-10	302-AG03-C5-COMP		1940		

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~18559~~ 18559

## Turn-Around Time

Due Date: Time:

Date Rec'd in Lab: 10/19/22

ALPHA Job #: L2258021

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
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Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/18 1900	<i>[Signature]</i>	10/19/22 15:13
<i>[Signature]</i>	10/18/22 200	<i>[Signature]</i>	10/18/22 1900
<i>[Signature]</i>	10/18/22 200	<i>[Signature]</i>	10/19/22 2100

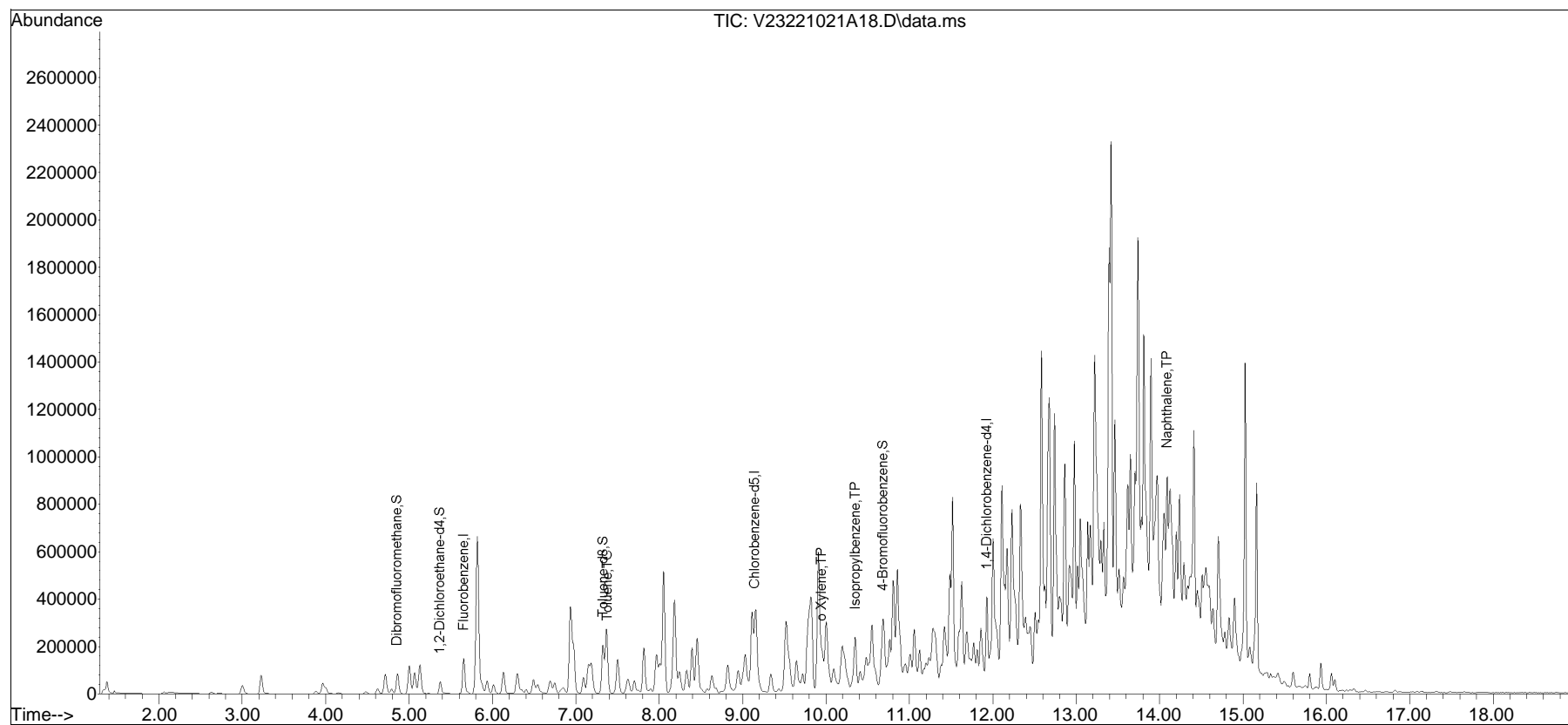
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\221021A\  
Data File : V23221021A18.D  
Acq On : 21 Oct 2022 10:24 pm  
Operator : VOA123:AJK  
Sample : L2258021-01,31H,4.60,5,0.100,,A,R2F  
Misc : WG1703181,ICAL19289  
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Oct 23 17:48:33 2022  
Quant Method : I:\VOLATILES\VOA123\2022\221021A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21A\V23221021A03.D•

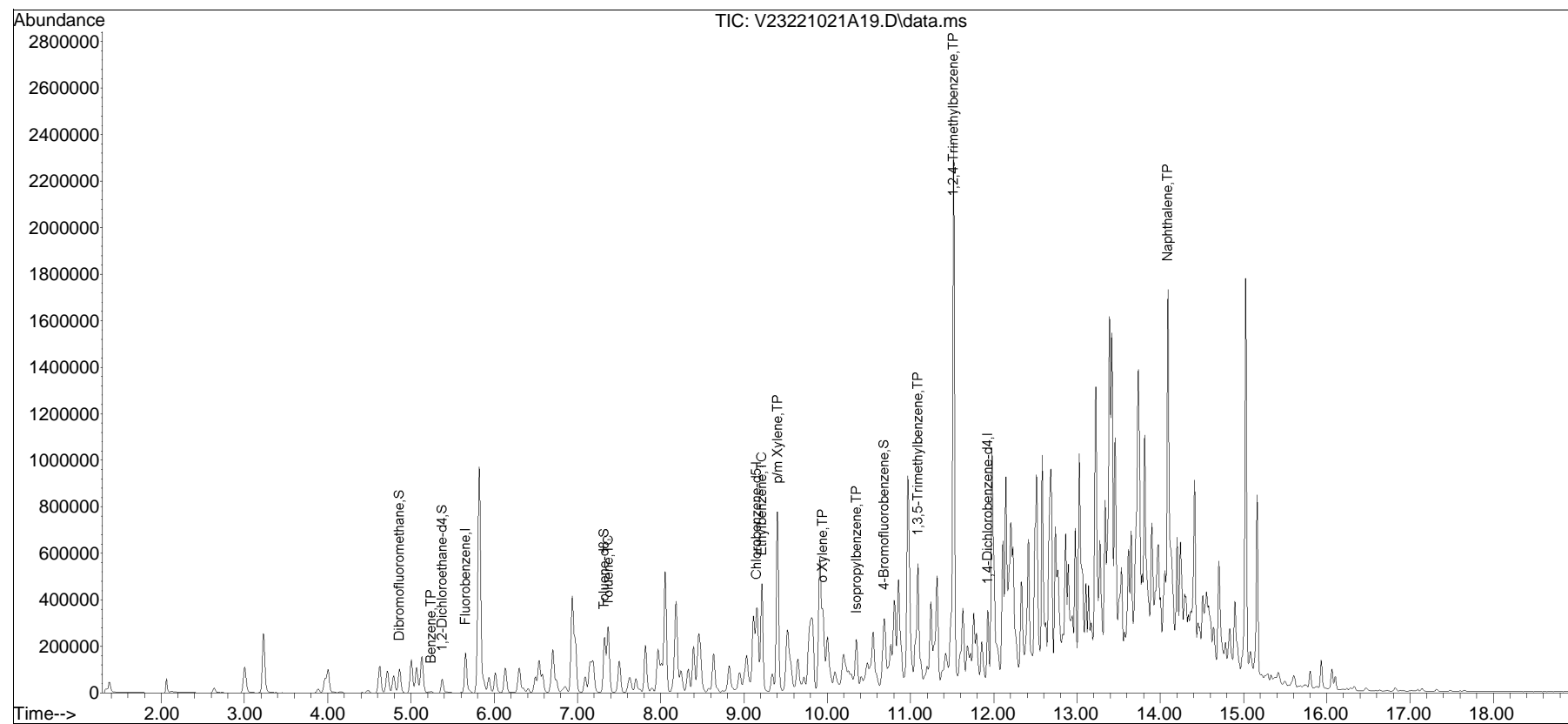


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\221021A\  
 Data File : V23221021A19.D  
 Acq On : 21 Oct 2022 10:50 pm  
 Operator : VOA123:AJK  
 Sample : L2258021-03,31H,5.91,5,0.100,,A,R2F  
 Misc : WG1703181,ICAL19289  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Oct 23 13:26:10 2022  
 Quant Method : I:\VOLATILES\VOA123\2022\221021A\V123\_220825N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Aug 26 09:12:14 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21A\V23221021A03.D•



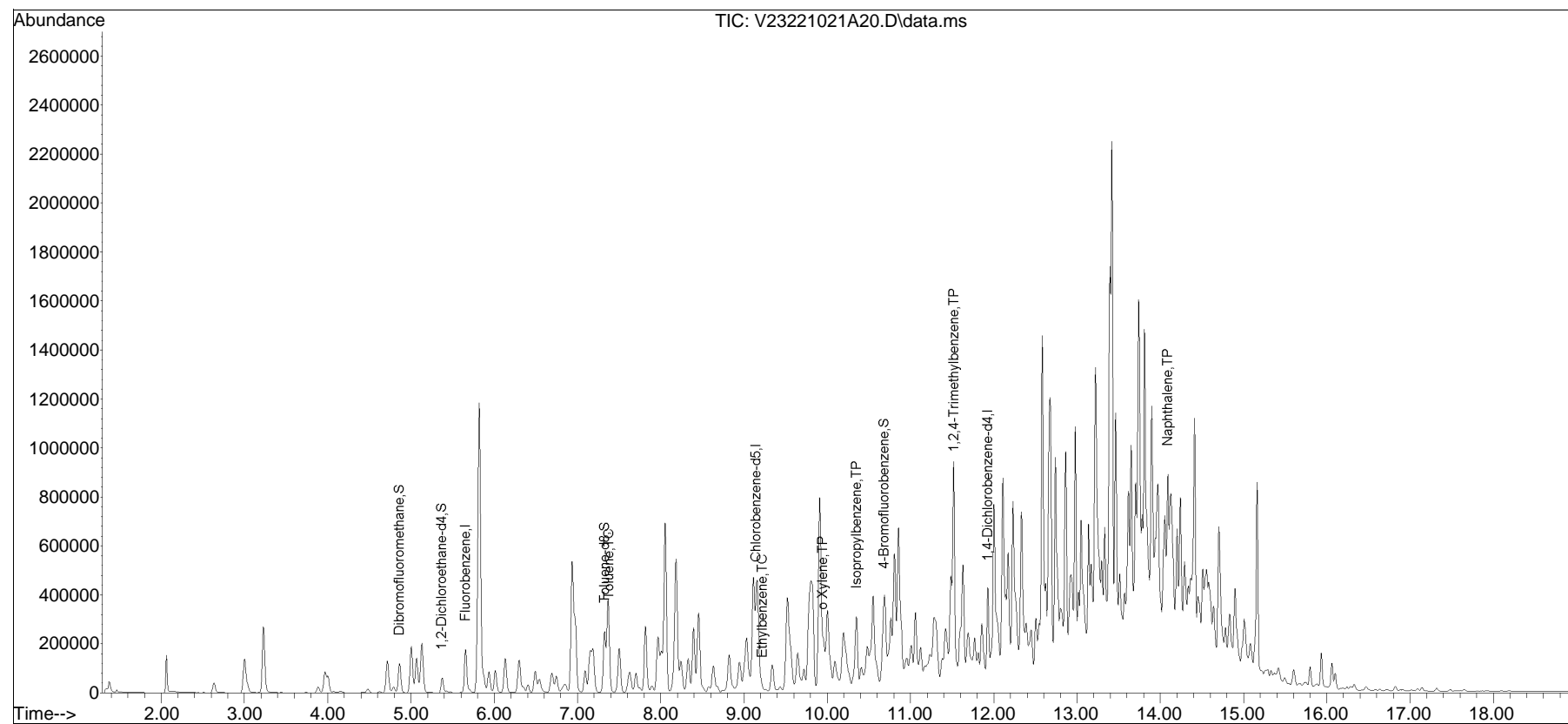


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\221021A\  
Data File : V23221021A20.D  
Acq On : 21 Oct 2022 11:16 pm  
Operator : VOA123:AJK  
Sample : L2258021-05,31H,5.86,5,0.100,,A,R2F  
Misc : WG1703181,ICAL19289  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 23 17:49:51 2022  
Quant Method : I:\VOLATILES\VOA123\2022\221021A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21A\V23221021A03.D•

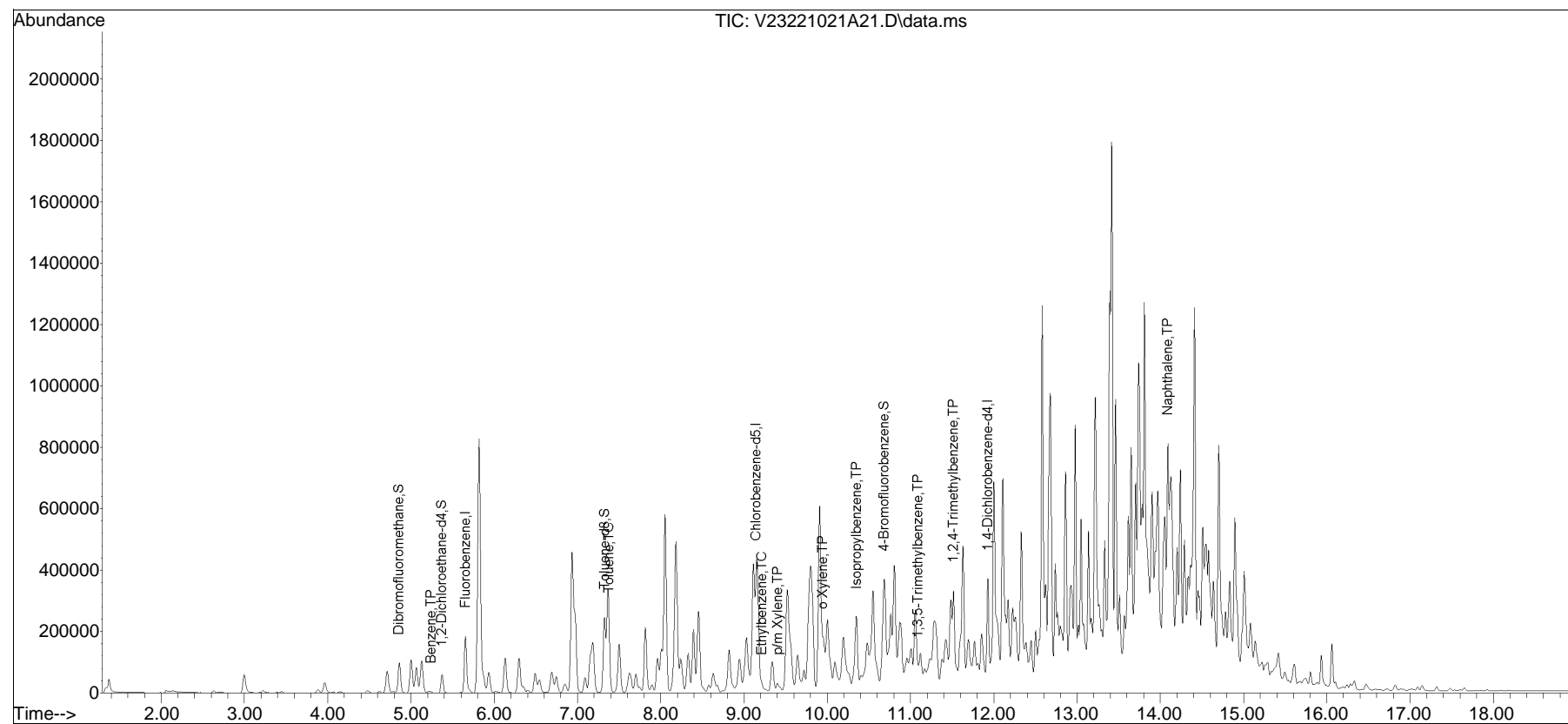


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\221021A\  
Data File : V23221021A21.D  
Acq On : 21 Oct 2022 11:42 pm  
Operator : VOA123:AJK  
Sample : L2258021-07,31H,5.94,5,0.100,,A,R2F  
Misc : WG1703181,ICAL19289  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 23 17:50:11 2022  
Quant Method : I:\VOLATILES\VOA123\2022\221021A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21A\V23221021A03.D•

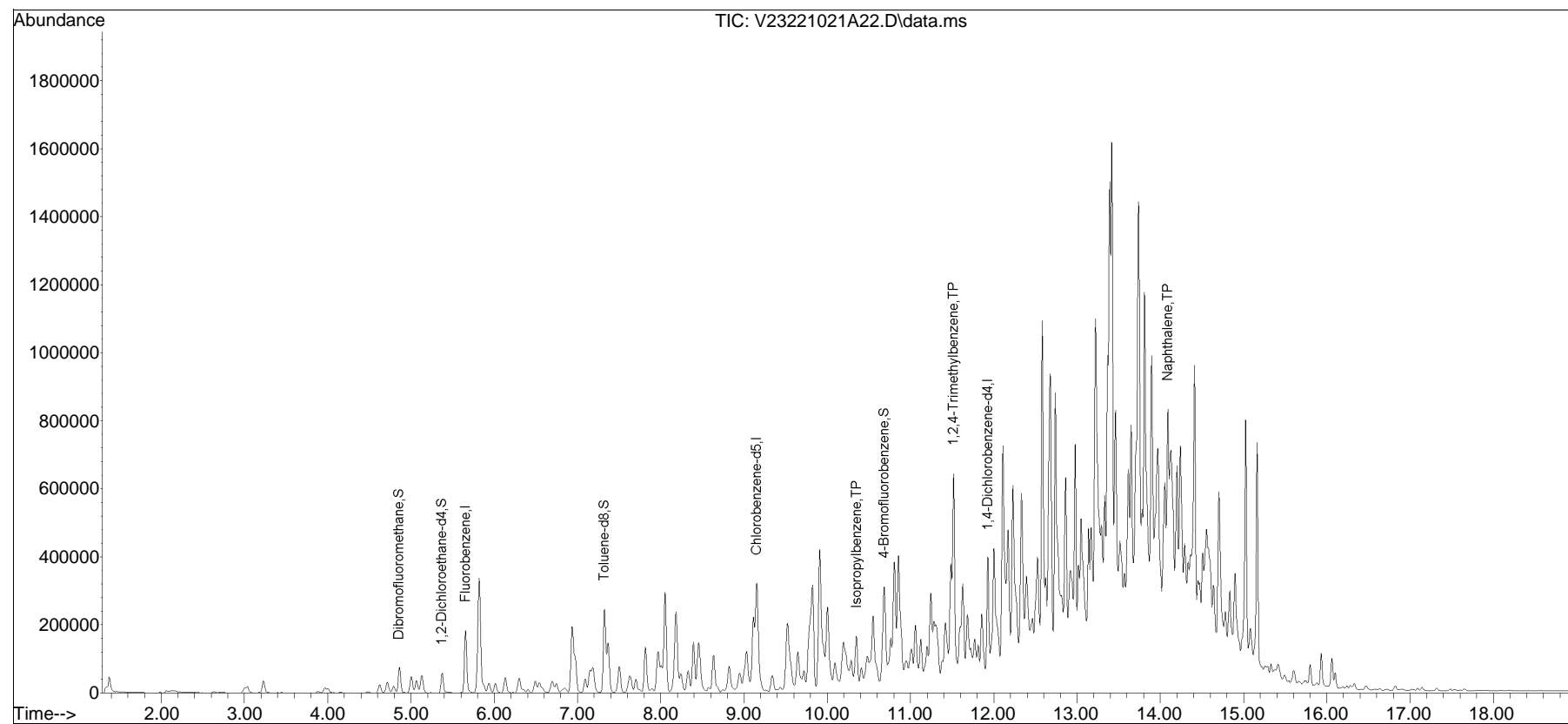


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2022\221021A\  
Data File : V23221021A22.D  
Acq On : 22 Oct 2022 12:08 am  
Operator : VOA123:AJK  
Sample : L2258021-09,31H,4.34,5,0.100,,A,R2F  
Misc : WG1703181,ICAL19289  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 23 13:26:22 2022  
Quant Method : I:\VOLATILES\VOA123\2022\221021A\V123\_220825N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Fri Aug 26 09:12:14 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21A\V23221021A03.D•





## ANALYTICAL REPORT

Lab Number:	L2258472
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/26/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2258472

Report Date: 10/26/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2258472-01	302-AF04-C1-VOC	SOIL	PHILADELPHIA, PA	10/19/22 11:00	10/19/22
L2258472-02	302-AF04-C1-COMP	SOIL	PHILADELPHIA, PA	10/19/22 11:00	10/19/22
L2258472-03	302-AF04-C2-VOC	SOIL	PHILADELPHIA, PA	10/19/22 11:15	10/19/22
L2258472-04	302-AF04-C2-COMP	SOIL	PHILADELPHIA, PA	10/19/22 11:15	10/19/22
L2258472-05	302-AF04-C3-VOC	SOIL	PHILADELPHIA, PA	10/19/22 11:30	10/19/22
L2258472-06	302-AF04-C3-COMP	SOIL	PHILADELPHIA, PA	10/19/22 11:30	10/19/22
L2258472-07	302-AF04-C4-VOC	SOIL	PHILADELPHIA, PA	10/19/22 11:45	10/19/22
L2258472-08	302-AF04-C4-COMP	SOIL	PHILADELPHIA, PA	10/19/22 11:45	10/19/22
L2258472-09	302-AF04-C5-VOC	SOIL	PHILADELPHIA, PA	10/19/22 12:00	10/19/22
L2258472-10	302-AF04-C5-COMP	SOIL	PHILADELPHIA, PA	10/19/22 12:00	10/19/22
L2258472-11	302-AH04-C1-VOC	SOIL	PHILADELPHIA, PA	10/19/22 13:15	10/19/22
L2258472-12	302-AH04-C1-COMP	SOIL	PHILADELPHIA, PA	10/19/22 13:15	10/19/22
L2258472-13	302-AH04-C2-VOC	SOIL	PHILADELPHIA, PA	10/19/22 13:30	10/19/22
L2258472-14	302-AH04-C2-COMP	SOIL	PHILADELPHIA, PA	10/19/22 13:30	10/19/22
L2258472-15	302-AH04-C3-VOC	SOIL	PHILADELPHIA, PA	10/19/22 13:45	10/19/22
L2258472-16	302-AH04-C3-COMP	SOIL	PHILADELPHIA, PA	10/19/22 13:45	10/19/22
L2258472-17	302-AH04-C4-VOC	SOIL	PHILADELPHIA, PA	10/19/22 14:00	10/19/22
L2258472-18	302-AH04-C4-COMP	SOIL	PHILADELPHIA, PA	10/19/22 14:00	10/19/22
L2258472-19	302-AH04-C5-VOC	SOIL	PHILADELPHIA, PA	10/19/22 14:15	10/19/22
L2258472-20	302-AH04-C5-COMP	SOIL	PHILADELPHIA, PA	10/19/22 14:15	10/19/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2258472-05: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2258472-05 (Low): The surrogate recoveries are outside the acceptance criteria for toluene-d8 (151%) and 4-bromofluorobenzene (626%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258472-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (441%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258472-13 and -15: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2258472-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258472-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (134%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258472-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (186%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258472-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (320%);

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

### Case Narrative (continued)

however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Total Metals

The WG1702284-3 MS recovery, performed on L2258472-02, is outside the acceptance criteria for lead (23%). A post digestion spike was performed and yielded unacceptable recoveries for lead (66%). The serial dilution recovery was acceptable; therefore, the matrix test passed for the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Caitlin Walukevich

Title: Technical Director/Representative

Date: 10/26/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-01  
 Client ID: 302-AF04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 13:45  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	106		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-03  
 Client ID: 302-AF04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 14:12  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	104		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-05  
 Client ID: 302-AF04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:30  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/23/22 23:53  
 Analyst: JIC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	ND		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.056	0.014	1
Toluene	ND		mg/kg	0.056	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	ND		mg/kg	0.056	0.0079	1
p/m-Xylene	ND		mg/kg	0.11	0.031	1
o-Xylene	ND		mg/kg	0.056	0.016	1
Xylenes, Total	ND		mg/kg	0.056	0.016	1
Isopropylbenzene	0.80		mg/kg	0.056	0.0061	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	129		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-05  
 Client ID: 302-AF04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:30  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 19:44  
 Analyst: JIC  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.00070	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	0.0021		mg/kg	0.00095	0.00028	1
Xylenes, Total	0.0021		mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.26		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	151	Q	70-130
4-Bromofluorobenzene	626	Q	70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-07  
 Client ID: 302-AF04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:45  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/23/22 22:05  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	0.00031	J	mg/kg	0.00095	0.00028	1
Xylenes, Total	0.00031	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.0045		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	441	Q	70-130
Dibromofluoromethane	106		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-09  
 Client ID: 302-AF04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 12:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 15:34  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.00099	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	103		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-11  
 Client ID: 302-AH04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 16:02  
 Analyst: NLK  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00028	J	mg/kg	0.00097	0.00014	1
p/m-Xylene	0.00090	J	mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	0.00090	J	mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	103		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-13  
 Client ID: 302-AH04-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:30  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/21/22 16:29  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.014	1
Benzene	ND		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Toluene	ND		mg/kg	0.067	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	ND		mg/kg	0.067	0.0095	1
p/m-Xylene	ND		mg/kg	0.13	0.038	1
o-Xylene	ND		mg/kg	0.067	0.020	1
Xylenes, Total	ND		mg/kg	0.067	0.020	1
Isopropylbenzene	0.61		mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-15  
 Client ID: 302-AH04-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:45  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/23/22 23:26  
 Analyst: JIC  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.030	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	ND		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.030	0.017	1
Ethylbenzene	0.072		mg/kg	0.059	0.0083	1
p/m-Xylene	ND		mg/kg	0.12	0.033	1
o-Xylene	ND		mg/kg	0.059	0.017	1
Xylenes, Total	ND		mg/kg	0.059	0.017	1
Isopropylbenzene	0.44		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	0.27		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	0.16		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	<b>134</b>	Q	70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-17  
 Client ID: 302-AH04-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 14:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/23/22 22:32  
 Analyst: JIC  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00035	J	mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.017		mg/kg	0.00091	0.00010	1
1,3,5-Trimethylbenzene	0.0060		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0068		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	186	Q	70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-19  
 Client ID: 302-AH04-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 14:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/23/22 22:59  
 Analyst: JIC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	0.00040	J	mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00040	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.015		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0050		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0082		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	<b>320</b>	Q	70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/21/22 09:12  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,09,11 Batch: WG1702953-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/21/22 09:12  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1702955-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/23/22 14:49  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,17,19 Batch: WG1703369-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	101		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/23/22 14:49  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05,15 Batch: WG1703370-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	101		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/24/22 18:05  
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1703783-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	99		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2258472

Project Number: 200.00135.006

Report Date: 10/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,09,11 Batch: WG1702953-3 WG1702953-4								
Methyl tert butyl ether	108		106		66-130	2		30
Benzene	106		104		70-130	2		30
1,2-Dichloroethane	100		99		70-130	1		30
Toluene	97		97		70-130	0		30
1,2-Dibromoethane	98		98		70-130	0		30
Ethylbenzene	96		96		70-130	0		30
p/m-Xylene	98		98		70-130	0		30
o-Xylene	100		99		70-130	1		30
Isopropylbenzene	95		93		70-130	2		30
1,3,5-Trimethylbenzene	95		96		70-130	1		30
1,2,4-Trimethylbenzene	98		97		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	98		100		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	101		101		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1702955-3 WG1702955-4								
Methyl tert butyl ether	108		106		66-130	2		30
Benzene	106		104		70-130	2		30
1,2-Dichloroethane	100		99		70-130	1		30
Toluene	97		97		70-130	0		30
1,2-Dibromoethane	98		98		70-130	0		30
Ethylbenzene	96		96		70-130	0		30
p/m-Xylene	98		98		70-130	0		30
o-Xylene	100		99		70-130	1		30
Isopropylbenzene	95		93		70-130	2		30
1,3,5-Trimethylbenzene	95		96		70-130	1		30
1,2,4-Trimethylbenzene	98		97		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	98		100		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	101		101		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2258472

Project Number: 200.00135.006

Report Date: 10/26/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,17,19 Batch: WG1703369-3 WG1703369-4								
Methyl tert butyl ether	106		106		66-130	0		30
Benzene	107		107		70-130	0		30
1,2-Dichloroethane	96		97		70-130	1		30
Toluene	99		99		70-130	0		30
1,2-Dibromoethane	99		98		70-130	1		30
Ethylbenzene	101		100		70-130	1		30
p/m-Xylene	104		102		70-130	2		30
o-Xylene	103		102		70-130	1		30
Isopropylbenzene	102		102		70-130	0		30
1,3,5-Trimethylbenzene	101		101		70-130	0		30
1,2,4-Trimethylbenzene	100		99		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		95		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		96		70-130
Dibromofluoromethane	100		100		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05,15 Batch: WG1703370-3 WG1703370-4								
Methyl tert butyl ether	106		106		66-130	0		30
Benzene	107		107		70-130	0		30
1,2-Dichloroethane	96		97		70-130	1		30
Toluene	99		99		70-130	0		30
1,2-Dibromoethane	99		98		70-130	1		30
Ethylbenzene	101		100		70-130	1		30
p/m-Xylene	104		102		70-130	2		30
o-Xylene	103		102		70-130	1		30
Isopropylbenzene	102		102		70-130	0		30
1,3,5-Trimethylbenzene	101		101		70-130	0		30
1,2,4-Trimethylbenzene	100		99		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		95		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		96		70-130
Dibromofluoromethane	100		100		70-130



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1703783-3 WG1703783-4								
Methyl tert butyl ether	111		112		66-130	1		30
Benzene	111		109		70-130	2		30
1,2-Dichloroethane	109		109		70-130	0		30
Toluene	107		107		70-130	0		30
1,2-Dibromoethane	113		113		70-130	0		30
Ethylbenzene	110		110		70-130	0		30
p/m-Xylene	110		109		70-130	1		30
o-Xylene	109		110		70-130	1		30
Isopropylbenzene	110		107		70-130	3		30
1,3,5-Trimethylbenzene	111		107		70-130	4		30
1,2,4-Trimethylbenzene	110		106		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		96		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		96		70-130
Dibromofluoromethane	94		96		70-130



# SEMIVOLATILES



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-02  
 Client ID: 302-AF04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 04:45  
 Analyst: MG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-04  
 Client ID: 302-AF04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 05:32  
 Analyst: MG  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-06  
 Client ID: 302-AF04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:30  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 06:19  
 Analyst: MG  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.026	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-08  
 Client ID: 302-AF04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:45  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 02:48  
 Analyst: MG  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.053	J	mg/kg	0.20	0.024	1
Fluorene	0.77		mg/kg	0.20	0.020	1
Phenanthrene	1.7		mg/kg	0.12	0.024	1
Anthracene	0.25		mg/kg	0.12	0.039	1
Pyrene	0.079	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-10  
 Client ID: 302-AF04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 12:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 00:51  
 Analyst: MG  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.14	J	mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.050	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	71		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-12  
 Client ID: 302-AH04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 07:29  
 Analyst: MG  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.20		mg/kg	0.20	0.024	1
Fluorene	0.67		mg/kg	0.20	0.019	1
Phenanthrene	1.0		mg/kg	0.12	0.024	1
Anthracene	0.13		mg/kg	0.12	0.038	1
Pyrene	0.16		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.047	J	mg/kg	0.12	0.022	1
Chrysene	0.044	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.050	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.026	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-14  
 Client ID: 302-AH04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:30  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 03:59  
 Analyst: MG  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.10	J	mg/kg	0.19	0.023	1
Fluorene	0.43		mg/kg	0.19	0.018	1
Phenanthrene	0.89		mg/kg	0.11	0.023	1
Anthracene	0.090	J	mg/kg	0.11	0.036	1
Pyrene	0.054	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-16  
 Client ID: 302-AH04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:45  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/22/22 00:27  
 Analyst: MG  
 Percent Solids: 75%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.22	0.026	1
Fluorene	0.040	J	mg/kg	0.22	0.021	1
Phenanthrene	0.062	J	mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.053	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	57		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-18  
 Client ID: 302-AH04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 14:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/23/22 01:32  
 Analyst: CMM  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.52		mg/kg	0.20	0.020	1
Phenanthrene	0.78		mg/kg	0.12	0.025	1
Anthracene	0.064	J	mg/kg	0.12	0.040	1
Pyrene	0.039	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-20  
 Client ID: 302-AH04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 14:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/23/22 01:08  
 Analyst: CMM  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/21/22 04:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	0.98		mg/kg	0.20	0.020	1
Phenanthrene	1.3		mg/kg	0.12	0.025	1
Anthracene	0.089	J	mg/kg	0.12	0.040	1
Pyrene	0.064	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/21/22 20:56  
Analyst: CMM

Extraction Method: EPA 3546  
Extraction Date: 10/21/22 04:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1702289-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	68		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2258472

Report Date: 10/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1702289-2 WG1702289-3								
Naphthalene	64		61		40-140	5		50
Fluorene	65		63		40-140	3		50
Phenanthrene	64		62		40-140	3		50
Anthracene	66		63		40-140	5		50
Pyrene	66		65		35-142	2		50
Benzo(a)anthracene	65		61		40-140	6		50
Chrysene	65		62		40-140	5		50
Benzo(b)fluoranthene	69		65		40-140	6		50
Benzo(a)pyrene	74		70		40-140	6		50
Benzo(ghi)perylene	66		63		40-140	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	59		58		23-120
2-Fluorobiphenyl	64		60		30-120
4-Terphenyl-d14	61		60		18-120

## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258472

**Project Number:** 200.00135.006

**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-02

Date Collected: 10/19/22 11:00

Client ID: 302-AF04-C1-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	151		mg/kg	2.22	0.119	1	10/21/22 06:15	10/21/22 22:25	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258472

**Project Number:** 200.00135.006

**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-04

Date Collected: 10/19/22 11:15

Client ID: 302-AF04-C2-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	116		mg/kg	2.26	0.121	1	10/21/22 06:15	10/21/22 23:29	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258472

**Project Number:** 200.00135.006

**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-06

Date Collected: 10/19/22 11:30

Client ID: 302-AF04-C3-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	13.6		mg/kg	2.42	0.129	1	10/21/22 06:15	10/21/22 23:33	EPA 3050B	1,6010D	JMF





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258472

**Project Number:** 200.00135.006

**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-08

Date Collected: 10/19/22 11:45

Client ID: 302-AF04-C4-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.15		mg/kg	2.37	0.127	1	10/21/22 06:15	10/21/22 23:38	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-10  
 Client ID: 302-AF04-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 12:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	10.6		mg/kg	2.30	0.123	1	10/21/22 06:15	10/21/22 23:51	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-12  
 Client ID: 302-AH04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	128		mg/kg	2.30	0.124	1	10/21/22 06:15	10/21/22 23:56	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-14  
 Client ID: 302-AH04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:30  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	5.77		mg/kg	2.22	0.119	1	10/21/22 06:15	10/22/22 00:00	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-16  
 Client ID: 302-AH04-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 13:45  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	14.8		mg/kg	2.60	0.139	1	10/21/22 06:15	10/22/22 00:05	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-18  
 Client ID: 302-AH04-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 14:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	8.31		mg/kg	2.36	0.126	1	10/21/22 06:15	10/22/22 00:10	EPA 3050B	1,6010D	JMF



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258472

**Project Number:** 200.00135.006

**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-20

Date Collected: 10/19/22 14:15

Client ID: 302-AH04-C5-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	28.0		mg/kg	2.41	0.129	1	10/21/22 06:15	10/22/22 00:14	EPA 3050B	1,6010D	JMF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258472

Project Number: 200.00135.006

Report Date: 10/26/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1702284-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/21/22 06:15	10/21/22 22:02	1,6010D	JMF

### Prep Information

Digestion Method: EPA 3050B





### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 Batch: WG1702284-2 SRM Lot Number: D113-540								
Lead, Total	106		-		72-128			-



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20    QC Batch ID: WG1702284-3    QC Sample: L2258472-02    Client ID: 302-AF04-C1-COMP												
Lead, Total	151	47.2	162	23	Q	-	-		75-125	-		20



**Lab Duplicate Analysis**  
*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2258472

**Report Date:** 10/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1702284-4 QC Sample: L2258472-02 Client ID: 302-AF04-C1-COMP						
Lead, Total	151	163	mg/kg	8		20



**Lab Serial Dilution  
Analysis  
Batch Quality Control**

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20 QC Batch ID: WG1702284-6 QC Sample: L2258472-02 Client ID: 302-AF04-C1-COMP						
Lead, Total	151	174	mg/kg	15		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-01

Date Collected: 10/19/22 11:00

Client ID: 302-AF04-C1-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-02  
 Client ID: 302-AF04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:00  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-03

Date Collected: 10/19/22 11:15

Client ID: 302-AF04-C2-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.7		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

**SAMPLE RESULTS**

Lab ID: L2258472-04  
 Client ID: 302-AF04-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/19/22 11:15  
 Date Received: 10/19/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.6		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-05

Date Collected: 10/19/22 11:30

Client ID: 302-AF04-C3-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.8		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258472

Project Number: 200.00135.006

Report Date: 10/26/22

## SAMPLE RESULTS

Lab ID: L2258472-06

Date Collected: 10/19/22 11:30

Client ID: 302-AF04-C3-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.8		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-07

Date Collected: 10/19/22 11:45

Client ID: 302-AF04-C4-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-08

Date Collected: 10/19/22 11:45

Client ID: 302-AF04-C4-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-09

Date Collected: 10/19/22 12:00

Client ID: 302-AF04-C5-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.4		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-10

Date Collected: 10/19/22 12:00

Client ID: 302-AF04-C5-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.7		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-11

Date Collected: 10/19/22 13:15

Client ID: 302-AH04-C1-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.0		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-12

Date Collected: 10/19/22 13:15

Client ID: 302-AH04-C1-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.1		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-13

Date Collected: 10/19/22 13:30

Client ID: 302-AH04-C2-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.1		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-14

Date Collected: 10/19/22 13:30

Client ID: 302-AH04-C2-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.3		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-15

Date Collected: 10/19/22 13:45

Client ID: 302-AH04-C3-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.9		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-16

Date Collected: 10/19/22 13:45

Client ID: 302-AH04-C3-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.6		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-17

Date Collected: 10/19/22 14:00

Client ID: 302-AH04-C4-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.1		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258472

Project Number: 200.00135.006

Report Date: 10/26/22

## SAMPLE RESULTS

Lab ID: L2258472-18

Date Collected: 10/19/22 14:00

Client ID: 302-AH04-C4-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.9		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-19

Date Collected: 10/19/22 14:15

Client ID: 302-AH04-C5-VOC

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.7		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**SAMPLE RESULTS**

Lab ID: L2258472-20

Date Collected: 10/19/22 14:15

Client ID: 302-AH04-C5-COMP

Date Received: 10/19/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.5		%	0.100	NA	1	-	10/20/22 13:47	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** PHILADELPHIA REFINERY

**Project Number:** 200.00135.006

**Lab Number:** L2258472

**Report Date:** 10/26/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1702091-1 QC Sample: L2258472-01 Client ID: 302-AF04-C1-VOC						
Solids, Total	84.5	83.0	%	2		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258472-01A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258472-01B	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-01C	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-01D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2258472-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258472-02B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258472-03A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258472-03B	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-03C	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-03D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2258472-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258472-04B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258472-05A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2258472-05B	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260H(14),PA-8260HLW(14)
L2258472-05C	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260H(14),PA-8260HLW(14)
L2258472-05D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2258472-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258472-06B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258472-07A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258472-07B	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-07C	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-07D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258472**Project Number:** 200.00135.006**Report Date:** 10/26/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258472-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258472-08B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258472-09A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258472-09B	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-09C	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-09D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2258472-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258472-10B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)
L2258472-11A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2258472-11B	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-11C	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-11D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2258472-12A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2258472-12B	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2258472-13A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2258472-13B	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-13C	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-13D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2258472-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2258472-14B	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2258472-15A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2258472-15B	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-15C	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-15D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2258472-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2258472-16B	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2258472-17A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2258472-17B	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10262210:50  
**Lab Number:** L2258472  
**Report Date:** 10/26/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258472-17C	Vial water preserved	B	NA		2.7	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-17D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2258472-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2258472-18B	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		TS(7),PA-PAH(14)
L2258472-19A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2258472-19B	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-19C	Vial water preserved	A	NA		3.4	Y	Absent	20-OCT-22 11:53	PA-8260HLW(14)
L2258472-19D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2258472-20A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2258472-20B	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258472  
**Report Date:** 10/26/22

#### **Data Qualifiers**

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258472

**Project Number:** 200.00135.006

**Report Date:** 10/26/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

# CHAIN OF CUSTODY

PAGE 1 OF 2



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-868-0193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/20/22

ALPHA Job #: 22258472

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES				
		Date	Time																				
58472-01	302-AFO4-C1-VoC	10/19	1100	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
-02	302-AFO4-C1-Comp		1100			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-03	302-AFO4-C2-VoC		1115			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-04	302-AFO4-C2-Comp		1115			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-05	302-AFO4-C3-VoC		1130			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-06	302-AFO4-C3-Comp		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-07	302-AFO4-C4-VoC		1145			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-08	302-AFO4-C4-Comp		1145			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-09	302-AFO4-C5-VoC		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-10	302-AFO4-C5-Comp		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
58472-01	302-AFO4-C1-VoC	10/19	1100	S	TS
-02	302-AFO4-C1-Comp		1100		
-03	302-AFO4-C2-VoC		1115		
-04	302-AFO4-C2-Comp		1115		
-05	302-AFO4-C3-VoC		1130		
-06	302-AFO4-C3-Comp		1130		
-07	302-AFO4-C4-VoC		1145		
-08	302-AFO4-C4-Comp		1145		
-09	302-AFO4-C5-VoC		1200		
-10	302-AFO4-C5-Comp		1200		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

ELAN  
 10/20/22  
 0200  
 10/20/22 0200

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/19 1435	<i>[Signature]</i>	10/19/22 1435
<i>[Signature]</i>	10/19/22 1435	<i>[Signature]</i>	10-22 1435
<i>[Signature]</i>	10-17 2:00	<i>[Signature]</i>	10-19 22 2:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 2 OF 2

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1855~~ ~~1853~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/20/22

ALPHA Job #: L2258472

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											TOTAL # BOTTLES			
		Date	Time																			
58472-11	302-A1104-C1-VOC	10/19	1315	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	
12	302-A1104-C1-Comp		1315			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
13	302-A1104-C2-VOC		1330			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
14	302-A1104-C2-Comp		1330			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
15	302-A1104-C3-VOC		1345			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	302-A1104-C3-Comp		1345			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	302-A1104-C4-VOC		1400			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	302-A1104-C4-Comp		1400			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-19	302-A1104-C5-VOC		1415			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-20	302-A1104-C5-Comp		1415			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
58472-11	302-A1104-C1-VOC	10/19	1315	S	TS
12	302-A1104-C1-Comp		1315		
13	302-A1104-C2-VOC		1330		
14	302-A1104-C2-Comp		1330		
15	302-A1104-C3-VOC		1345		
-16	302-A1104-C3-Comp		1345		
-17	302-A1104-C4-VOC		1400		
-18	302-A1104-C4-Comp		1400		
-19	302-A1104-C5-VOC		1415		
-20	302-A1104-C5-Comp		1415		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

SPAL  
10/20/22  
0200

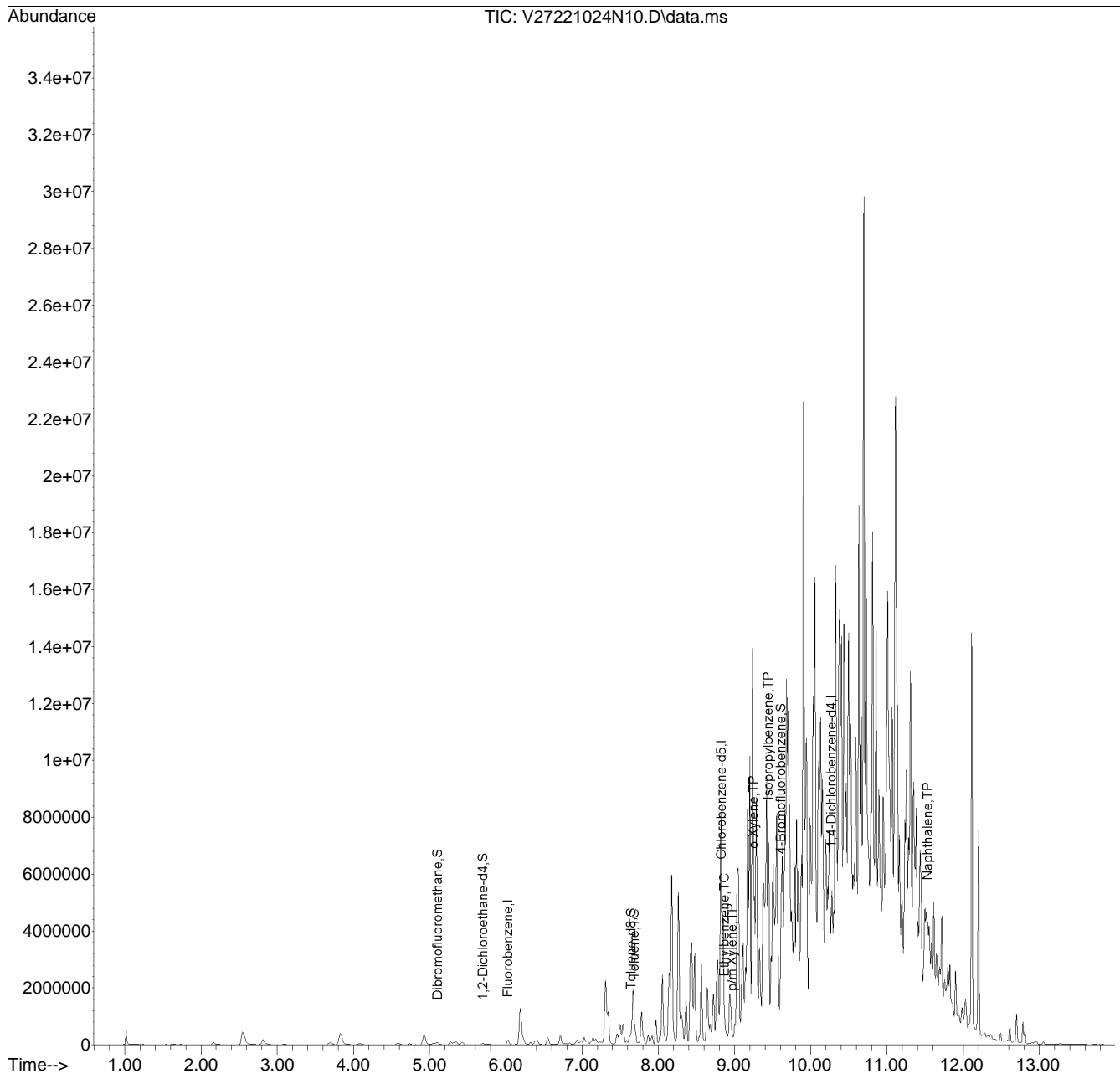
Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/19 1435	<i>[Signature]</i>	10/19/22 1435
<i>[Signature]</i>	10/19/22 1800	<i>[Signature]</i>	10/19/22
<i>[Signature]</i>	10/19 2100	<i>[Signature]</i>	10/19/22 2100

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\221024N\  
 Data File : V27221024N10.D  
 Acq On : 24 Oct 2022 07:44 pm  
 Operator : VOA127:JIC  
 Sample : L2258472-05,31,6.30,5,,B,R2F  
 Misc : WG1703783,ICAL19419  
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 25 12:01:31 2022  
 Quant Method : I:\VOLATILES\VOA127\2022\221024N\V127\_221020N\_8260.m  
 Quant Title : VOLATILES BY GC/MS  
 QLast Update : Fri Oct 21 13:17:54 2022  
 Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list24N\V27221024N01.D•

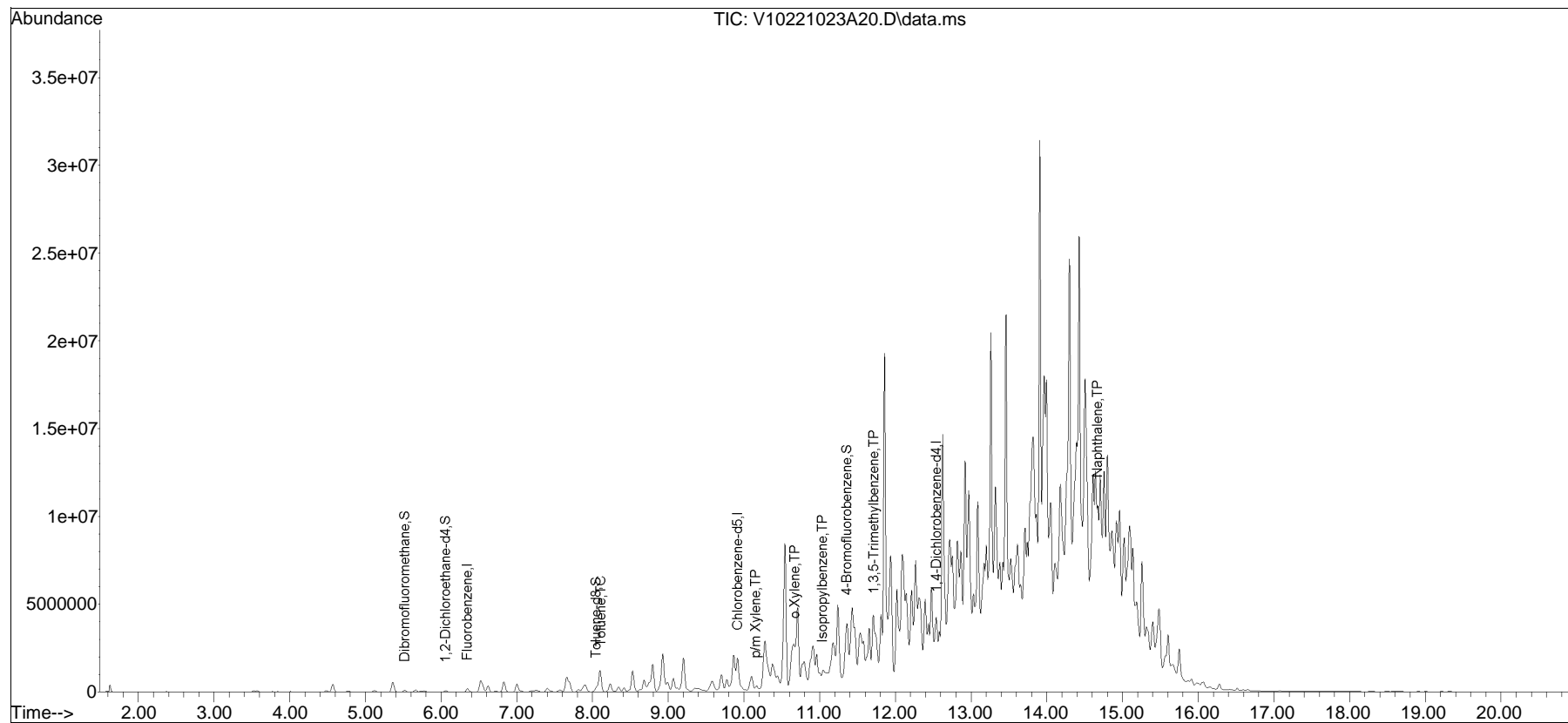


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221023A\  
Data File : V10221023A20.D  
Acq On : 23 Oct 2022 10:05 pm  
Operator : VOA110:JIC  
Sample : L2258472-07,31,6.38,5,,C,R2F  
Misc : WG1703369,ICAL19281  
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Oct 24 07:27:19 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221023A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V10221023A01.D•

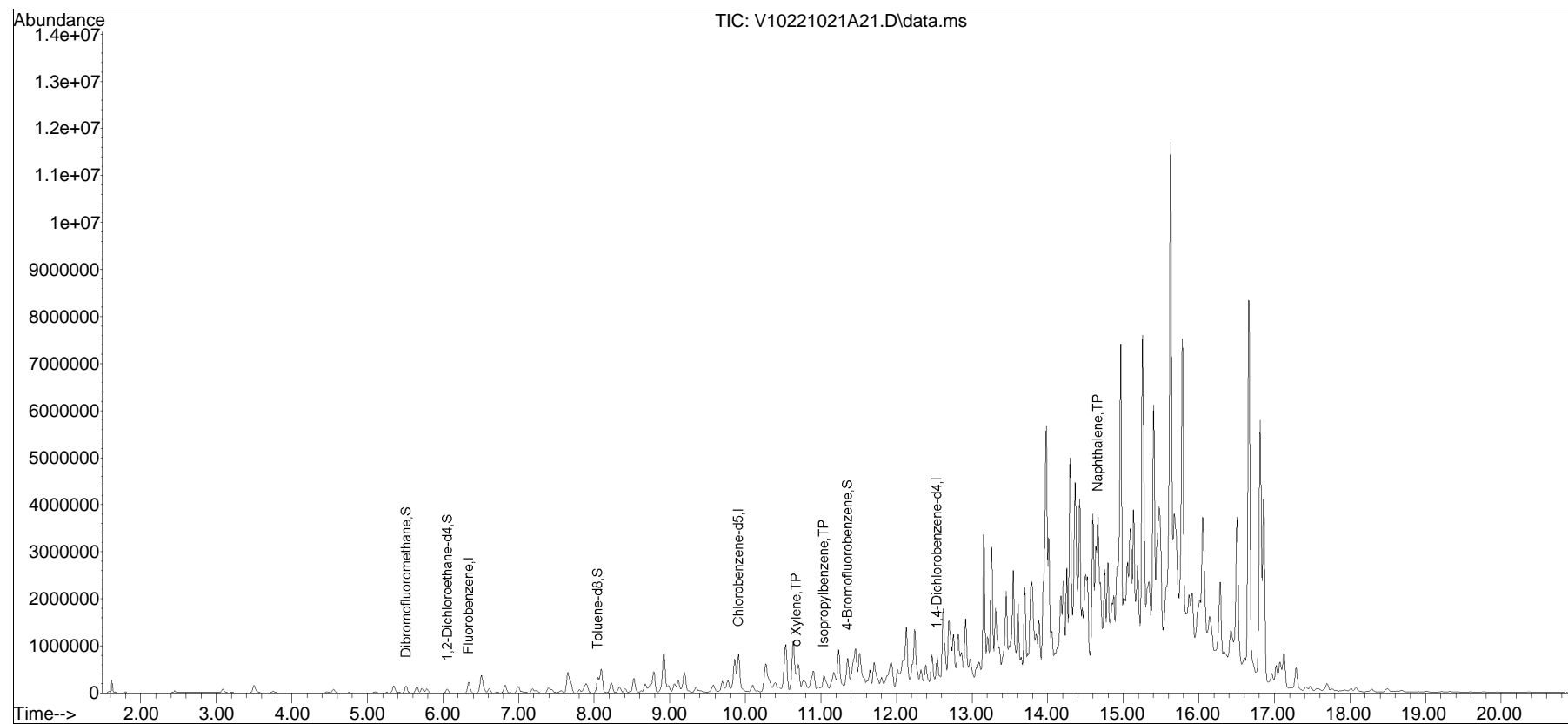


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221021A\  
Data File : V10221021A21.D  
Acq On : 21 Oct 2022 4:29 pm  
Operator : VOA110:NLK  
Sample : L2258472-13,31H,5.13,5,0.100,,A,R2F  
Misc : WG1702955,ICAL19281  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 23 07:21:21 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221021A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list21A\V10221021A02.D•

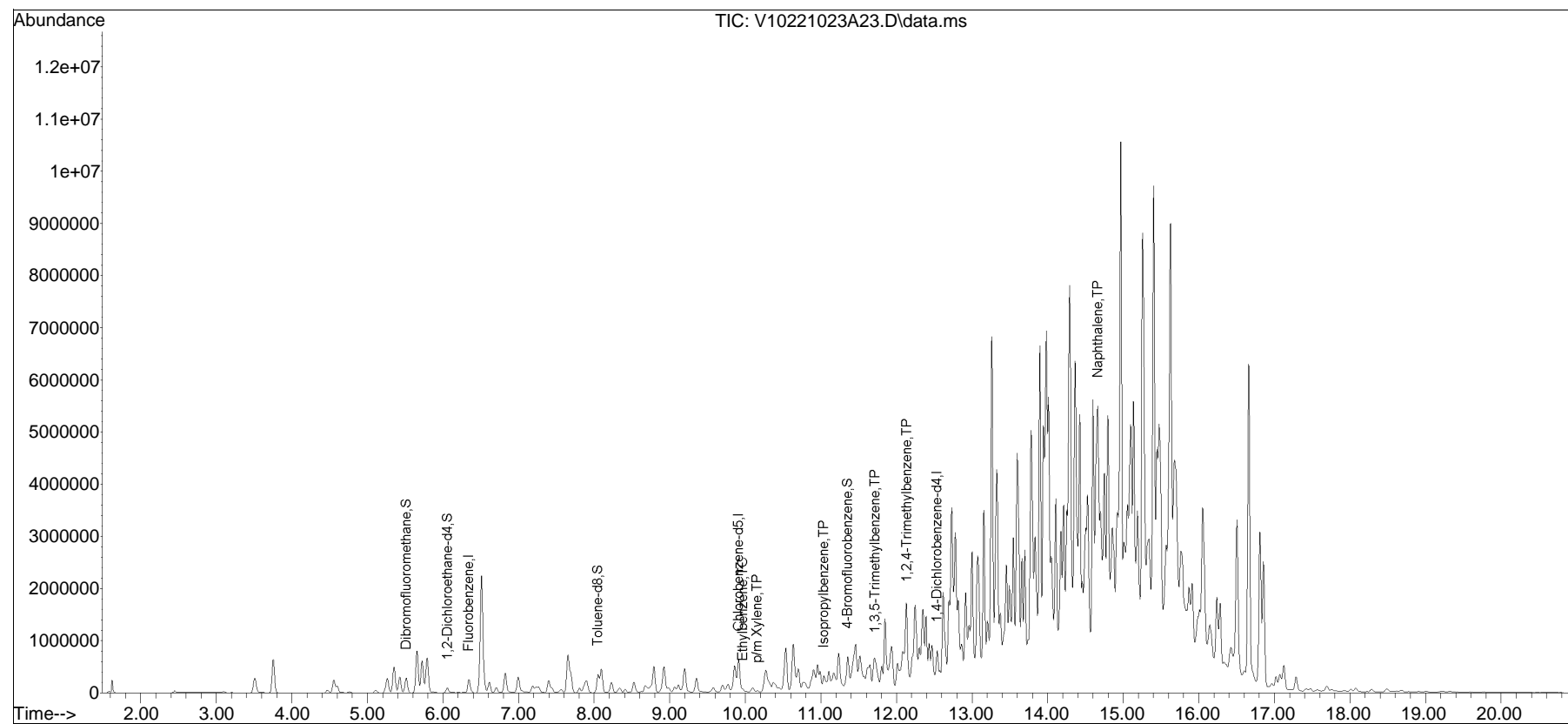


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221023A\  
Data File : V10221023A23.D  
Acq On : 23 Oct 2022 11:26 pm  
Operator : VOA110:JIC  
Sample : L2258472-15,31H,5.86,5,0.100,,A,R2F  
Misc : WG1703370,ICAL19281  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 24 07:20:05 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221023A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V10221023A01.D•



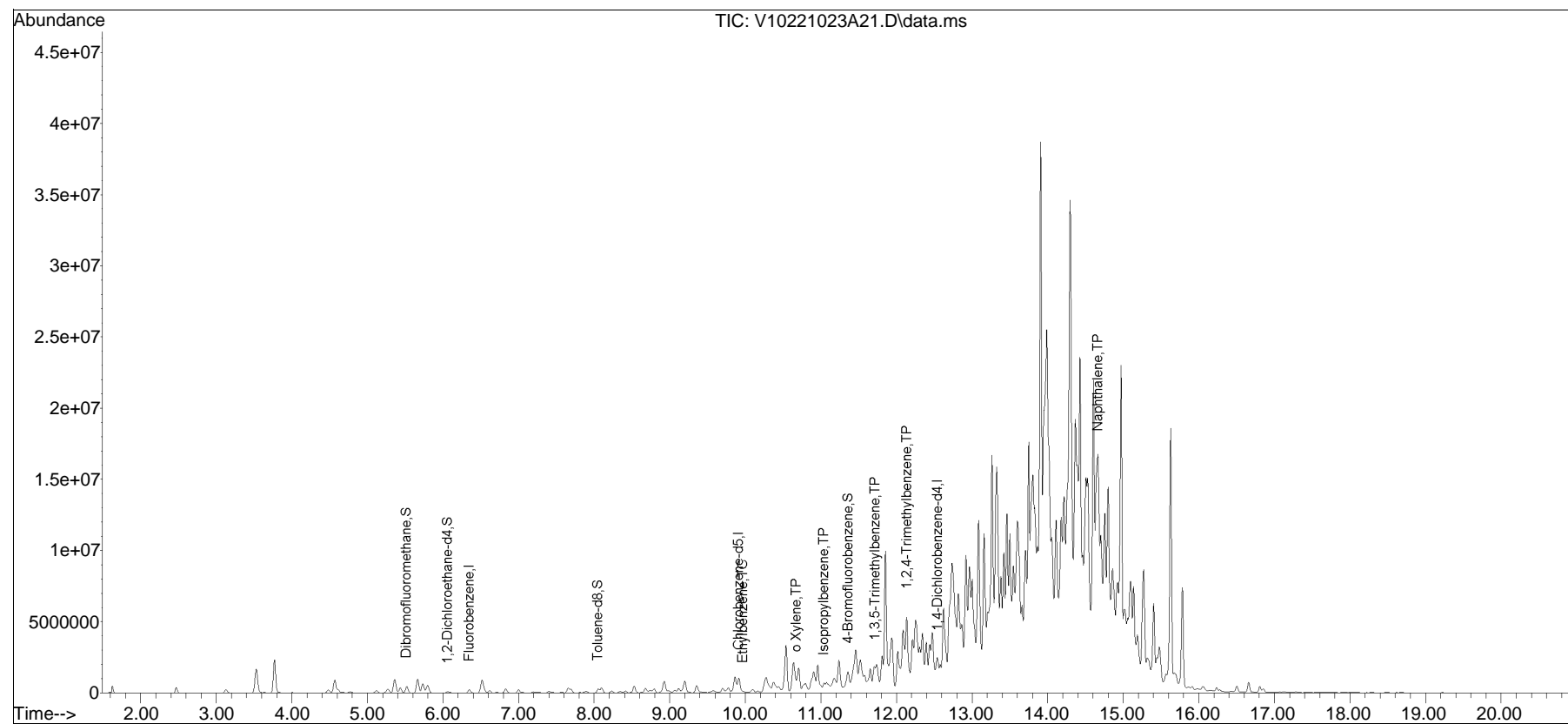


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221023A\  
Data File : V10221023A21.D  
Acq On : 23 Oct 2022 10:32 pm  
Operator : VOA110:JIC  
Sample : L2258472-17,31,6.59,5,,B,R2F  
Misc : WG1703369,ICAL19281  
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 24 07:19:57 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221023A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V10221023A01.D•

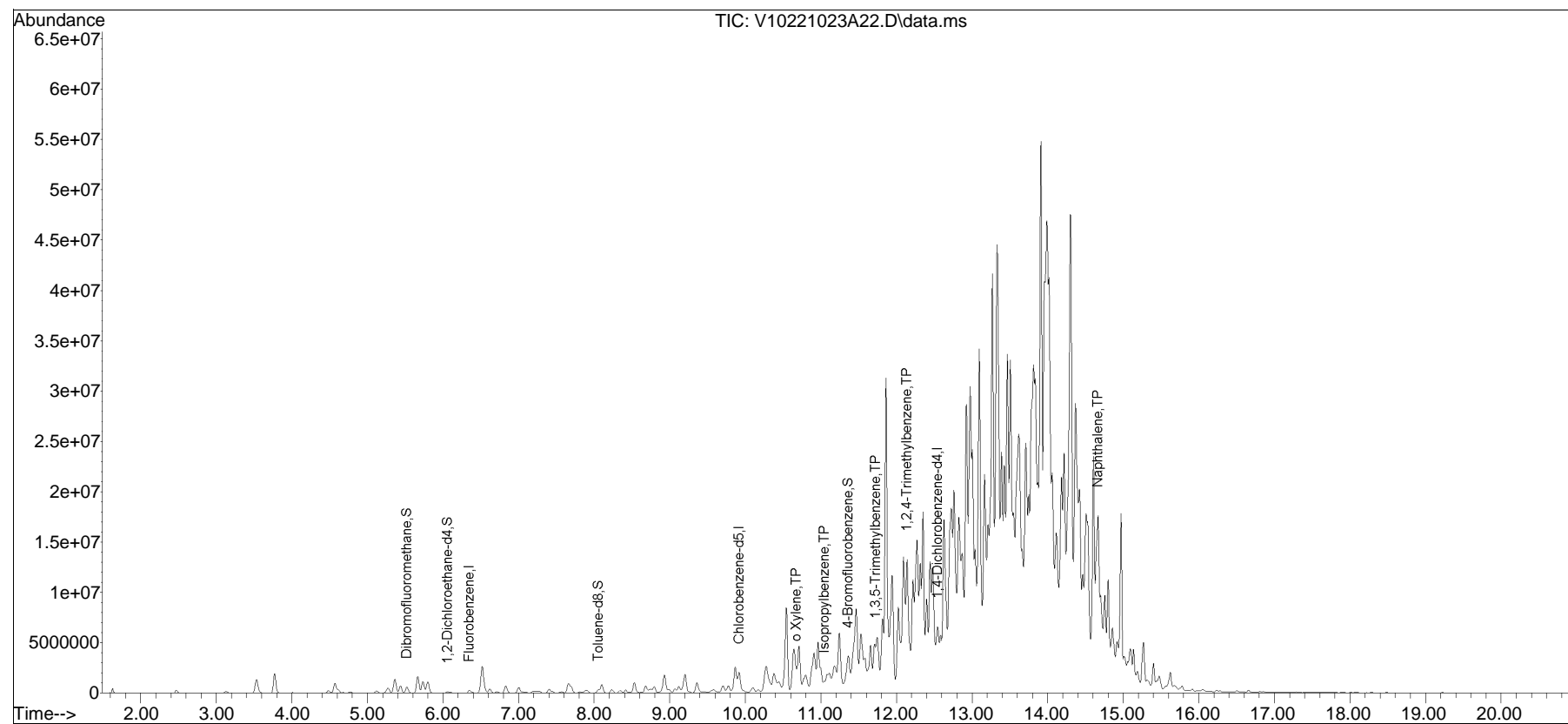


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221023A\  
Data File : V10221023A22.D  
Acq On : 23 Oct 2022 10:59 pm  
Operator : VOA110:JIC  
Sample : L2258472-19,31,6.08,5,,B,R2F  
Misc : WG1703369,ICAL19281  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 24 07:27:58 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221023A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list23A\V10221023A01.D•





## ANALYTICAL REPORT

Lab Number:	L2258773
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	10/27/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2258773

Report Date: 10/27/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2258773-01	302-BC04-C1-VOC	SOIL	PHILADELPHIA, PA	10/20/22 09:30	10/20/22
L2258773-02	302-BC04-C1-COMP	SOIL	PHILADELPHIA, PA	10/20/22 09:30	10/20/22
L2258773-03	302-AT02-C1-VOC	SOIL	PHILADELPHIA, PA	10/20/22 10:30	10/20/22
L2258773-04	302-AT02-C1-COMP	SOIL	PHILADELPHIA, PA	10/20/22 10:30	10/20/22
L2258773-05	302-AT02-C2-VOC	SOIL	PHILADELPHIA, PA	10/20/22 10:45	10/20/22
L2258773-06	302-AT02-C2-COMP	SOIL	PHILADELPHIA, PA	10/20/22 10:45	10/20/22
L2258773-07	302-AT02-C3-VOC	SOIL	PHILADELPHIA, PA	10/20/22 11:00	10/20/22
L2258773-08	302-AT02-C3-COMP	SOIL	PHILADELPHIA, PA	10/20/22 11:00	10/20/22
L2258773-09	302-AT02-C4-VOC	SOIL	PHILADELPHIA, PA	10/20/22 11:15	10/20/22
L2258773-10	302-AT02-C4-COMP	SOIL	PHILADELPHIA, PA	10/20/22 11:15	10/20/22
L2258773-11	302-AT02-C5-VOC	SOIL	PHILADELPHIA, PA	10/20/22 11:30	10/20/22
L2258773-12	302-AT02-C5-COMP	SOIL	PHILADELPHIA, PA	10/20/22 11:30	10/20/22
L2258773-13	301-V03-C1-VOC	SOIL	PHILADELPHIA, PA	10/20/22 12:00	10/20/22
L2258773-14	301-V03-C1-COMP	SOIL	PHILADELPHIA, PA	10/20/22 12:00	10/20/22
L2258773-15	301-V03-C2-VOC	SOIL	PHILADELPHIA, PA	10/20/22 12:15	10/20/22
L2258773-16	301-V03-C2-COMP	SOIL	PHILADELPHIA, PA	10/20/22 12:15	10/20/22
L2258773-17	301-V03-C3-VOC	SOIL	PHILADELPHIA, PA	10/20/22 12:30	10/20/22
L2258773-18	301-V03-C3-COMP	SOIL	PHILADELPHIA, PA	10/20/22 12:30	10/20/22
L2258773-19	301-V03-C4-VOC	SOIL	PHILADELPHIA, PA	10/20/22 12:45	10/20/22
L2258773-20	301-V03-C4-COMP	SOIL	PHILADELPHIA, PA	10/20/22 12:45	10/20/22
L2258773-21	301-V03-C5-VOC	SOIL	PHILADELPHIA, PA	10/20/22 13:00	10/20/22
L2258773-22	301-V03-C5-COMP	SOIL	PHILADELPHIA, PA	10/20/22 13:00	10/20/22
L2258773-23	302-AH05-C1-VOC	SOIL	PHILADELPHIA, PA	10/20/22 13:15	10/20/22
L2258773-24	302-AH05-C1-COMP	SOIL	PHILADELPHIA, PA	10/20/22 13:15	10/20/22

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L2258773-25	302-AH05-C2-VOC	SOIL	PHILADELPHIA, PA	10/20/22 13:30	10/20/22
L2258773-26	302-AH05-C2-COMP	SOIL	PHILADELPHIA, PA	10/20/22 13:30	10/20/22
L2258773-27	302-AH05-C3-VOC	SOIL	PHILADELPHIA, PA	10/20/22 13:40	10/20/22
L2258773-28	302-AH05-C3-COMP	SOIL	PHILADELPHIA, PA	10/20/22 13:40	10/20/22
L2258773-29	302-AH05-C4-VOC	SOIL	PHILADELPHIA, PA	10/20/22 13:50	10/20/22
L2258773-30	302-AH05-C4-COMP	SOIL	PHILADELPHIA, PA	10/20/22 13:50	10/20/22
L2258773-31	302-AH08-C1-VOC	SOIL	PHILADELPHIA, PA	10/20/22 14:00	10/20/22
L2258773-32	302-AH08-C1-COMP	SOIL	PHILADELPHIA, PA	10/20/22 14:00	10/20/22
L2258773-33	302-AH08-C2-VOC	SOIL	PHILADELPHIA, PA	10/20/22 14:15	10/20/22
L2258773-34	302-AH08-C2-COMP	SOIL	PHILADELPHIA, PA	10/20/22 14:15	10/20/22
L2258773-35	302-AH08-C3-VOC	SOIL	PHILADELPHIA, PA	10/20/22 14:30	10/20/22
L2258773-36	302-AH08-C3-COMP	SOIL	PHILADELPHIA, PA	10/20/22 14:30	10/20/22

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L2258773-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (142%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258773-11: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (139%) and 4-bromofluorobenzene (253%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258773-17 and -21: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2258773-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (160%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258773-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (193%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2258773-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (145%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

#### Semivolatile Organics

L2258773-14D: The sample has elevated detection limits due to the dilution required by the sample matrix.

#### Total Metals

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006


**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Case Narrative (continued)**

The WG1702539-3 MS recovery, performed on L2258773-02, is outside the acceptance criteria for lead (70%). A post digestion spike was performed and was within acceptance criteria.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 10/27/22



# ORGANICS

# VOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-01  
 Client ID: 302-BC04-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 09:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 09:37  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.00098		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	0.00071	J	mg/kg	0.0013	0.00019	1
p/m-Xylene	0.0057		mg/kg	0.0026	0.00074	1
o-Xylene	0.00098	J	mg/kg	0.0013	0.00038	1
Xylenes, Total	0.0067	J	mg/kg	0.0013	0.00038	1
Isopropylbenzene	0.0010	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.00073	J	mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	0.0015	J	mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-03  
 Client ID: 302-AT02-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 10:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 10:03  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-05  
 Client ID: 302-AT02-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 10:45  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/26/22 18:41  
 Analyst: LAC  
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00073	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00073	0.00043	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00082	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	105		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-07  
 Client ID: 302-AT02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/26/22 18:14  
 Analyst: LAC  
 Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.18	0.018	1
Benzene	ND		mg/kg	0.044	0.015	1
1,2-Dichloroethane	ND		mg/kg	0.089	0.023	1
Toluene	ND		mg/kg	0.089	0.048	1
1,2-Dibromoethane	ND		mg/kg	0.044	0.026	1
Ethylbenzene	ND		mg/kg	0.089	0.012	1
p/m-Xylene	ND		mg/kg	0.18	0.050	1
o-Xylene	0.040	J	mg/kg	0.089	0.026	1
Xylenes, Total	0.040	J	mg/kg	0.089	0.026	1
Isopropylbenzene	2.4		mg/kg	0.089	0.0097	1
1,3,5-Trimethylbenzene	0.052	J	mg/kg	0.18	0.017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.18	0.030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	142	Q	70-130
Dibromofluoromethane	90		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-09  
 Client ID: 302-AT02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 13:59  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.014		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	0.00092	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	72		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-11  
 Client ID: 302-AT02-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/26/22 17:47  
 Analyst: LAC  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	0.035	J	mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	ND		mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	0.085		mg/kg	0.064	0.019	1
Xylenes, Total	0.085		mg/kg	0.064	0.019	1
Isopropylbenzene	4.5		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	139	Q	70-130
4-Bromofluorobenzene	253	Q	70-130
Dibromofluoromethane	82		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-13  
 Client ID: 301-V03-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 11:48  
 Analyst: NLK  
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00076	1
o-Xylene	ND		mg/kg	0.0014	0.00039	1
Xylenes, Total	ND		mg/kg	0.0014	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-15  
 Client ID: 301-V03-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 12:14  
 Analyst: NLK  
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0014	0.00014	1
Benzene	0.00024	J	mg/kg	0.00035	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.00069	0.00018	1
Toluene	0.00054	J	mg/kg	0.00069	0.00038	1
1,2-Dibromoethane	ND		mg/kg	0.00035	0.00020	1
Ethylbenzene	0.00018	J	mg/kg	0.00069	0.00009	1
p/m-Xylene	ND		mg/kg	0.0014	0.00039	1
o-Xylene	ND		mg/kg	0.00069	0.00020	1
Xylenes, Total	ND		mg/kg	0.00069	0.00020	1
Isopropylbenzene	0.00017	J	mg/kg	0.00069	0.00007	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0014	0.00013	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0014	0.00023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	89		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-17  
 Client ID: 301-V03-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 12:41  
 Analyst: NLK  
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	ND		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	0.15		mg/kg	0.065	0.0091	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.065	0.019	1
Xylenes, Total	ND		mg/kg	0.065	0.019	1
Isopropylbenzene	1.2		mg/kg	0.065	0.0070	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	81		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	160	Q	70-130
Dibromofluoromethane	75		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-19  
 Client ID: 301-V03-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:45  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/26/22 17:20  
 Analyst: LAC  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.11	0.012	1
Benzene	ND		mg/kg	0.029	0.0095	1
1,2-Dichloroethane	ND		mg/kg	0.057	0.015	1
Toluene	ND		mg/kg	0.057	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	0.14		mg/kg	0.057	0.0081	1
p/m-Xylene	ND		mg/kg	0.11	0.032	1
o-Xylene	ND		mg/kg	0.057	0.017	1
Xylenes, Total	ND		mg/kg	0.057	0.017	1
Isopropylbenzene	1.2		mg/kg	0.057	0.0063	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.11	0.019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	193	Q	70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-21  
 Client ID: 301-V03-C5-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 13:33  
 Analyst: NLK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 High - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.18	0.018	1
Benzene	ND		mg/kg	0.045	0.015	1
1,2-Dichloroethane	ND		mg/kg	0.090	0.023	1
Toluene	ND		mg/kg	0.090	0.049	1
1,2-Dibromoethane	ND		mg/kg	0.045	0.026	1
Ethylbenzene	0.027	J	mg/kg	0.090	0.013	1
p/m-Xylene	0.089	J	mg/kg	0.18	0.050	1
o-Xylene	ND		mg/kg	0.090	0.026	1
Xylenes, Total	0.089	J	mg/kg	0.090	0.026	1
Isopropylbenzene	0.042	J	mg/kg	0.090	0.0098	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.18	0.017	1
1,2,4-Trimethylbenzene	0.097	J	mg/kg	0.18	0.030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	145	Q	70-130
Dibromofluoromethane	78		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-23  
 Client ID: 302-AH05-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 14:26  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-25  
 Client ID: 302-AH05-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 14:52  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-27  
 Client ID: 302-AH05-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:40  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 15:18  
 Analyst: NLK  
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-29  
 Client ID: 302-AH05-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:50  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 15:44  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-31  
 Client ID: 302-AH08-C1-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 14:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 16:11  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-33  
 Client ID: 302-AH08-C2-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 14:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 16:37  
 Analyst: NLK  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-35  
 Client ID: 302-AH08-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 14:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8260D  
 Analytical Date: 10/24/22 17:03  
 Analyst: NLK  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by EPA 5035 Low - Westborough Lab</b>						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	93		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/24/22 08:53  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,09,13,15,23,25,27,29,31,33,35 Batch: WG1703919-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/24/22 08:53  
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 17,21 Batch: WG1703922-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	94		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/26/22 09:36  
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1704610-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	109		70-130

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260D  
Analytical Date: 10/26/22 09:36  
Analyst: TMH

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,11,19 Batch: WG1704613-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	109		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,09,13,15,23,25,27,29,31,33,35 Batch: WG1703919-3 WG1703919-4								
Methyl tert butyl ether	122		125		66-130	2		30
Benzene	117		119		70-130	2		30
1,2-Dichloroethane	101		101		70-130	0		30
Toluene	111		113		70-130	2		30
1,2-Dibromoethane	100		101		70-130	1		30
Ethylbenzene	108		108		70-130	0		30
p/m-Xylene	113		114		70-130	1		30
o-Xylene	109		110		70-130	1		30
Isopropylbenzene	116		116		70-130	0		30
1,3,5-Trimethylbenzene	106		107		70-130	1		30
1,2,4-Trimethylbenzene	104		106		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	82		82		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	103		103		70-130
Dibromofluoromethane	82		82		70-130

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 17,21 Batch: WG1703922-3 WG1703922-4								
Methyl tert butyl ether	122		125		66-130	2		30
Benzene	117		119		70-130	2		30
1,2-Dichloroethane	101		101		70-130	0		30
Toluene	111		113		70-130	2		30
1,2-Dibromoethane	100		101		70-130	1		30
Ethylbenzene	108		108		70-130	0		30
p/m-Xylene	113		114		70-130	1		30
o-Xylene	109		110		70-130	1		30
Isopropylbenzene	116		116		70-130	0		30
1,3,5-Trimethylbenzene	106		107		70-130	1		30
1,2,4-Trimethylbenzene	104		106		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	82		82		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	103		103		70-130
Dibromofluoromethane	82		82		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1704610-3 WG1704610-4								
Methyl tert butyl ether	142	Q	102		66-130	33	Q	30
Benzene	117		100		70-130	16		30
1,2-Dichloroethane	112		96		70-130	15		30
Toluene	111		95		70-130	16		30
1,2-Dibromoethane	112		96		70-130	15		30
Ethylbenzene	111		94		70-130	17		30
p/m-Xylene	114		96		70-130	17		30
o-Xylene	111		94		70-130	17		30
Isopropylbenzene	108		92		70-130	16		30
1,3,5-Trimethylbenzene	111		94		70-130	17		30
1,2,4-Trimethylbenzene	110		94		70-130	16		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		102		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	92		93		70-130
Dibromofluoromethane	105		103		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,11,19 Batch: WG1704613-3 WG1704613-4								
Methyl tert butyl ether	142	Q	102		66-130	33	Q	30
Benzene	117		100		70-130	16		30
1,2-Dichloroethane	112		96		70-130	15		30
Toluene	111		95		70-130	16		30
1,2-Dibromoethane	112		96		70-130	15		30
Ethylbenzene	111		94		70-130	17		30
p/m-Xylene	114		96		70-130	17		30
o-Xylene	111		94		70-130	17		30
Isopropylbenzene	108		92		70-130	16		30
1,3,5-Trimethylbenzene	111		94		70-130	17		30
1,2,4-Trimethylbenzene	110		94		70-130	16		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		102		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	92		93		70-130
Dibromofluoromethane	105		103		70-130

# SEMIVOLATILES

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-02  
 Client ID: 302-BC04-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 09:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 08:01  
 Analyst: WR  
 Percent Solids: 74%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.032	J	mg/kg	0.22	0.027	1
Fluorene	0.073	J	mg/kg	0.22	0.021	1
Phenanthrene	0.062	J	mg/kg	0.13	0.027	1
Anthracene	0.082	J	mg/kg	0.13	0.043	1
Pyrene	0.11	J	mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.043	J	mg/kg	0.13	0.025	1
Chrysene	0.057	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.080	J	mg/kg	0.13	0.037	1
Benzo(a)pyrene	0.064	J	mg/kg	0.18	0.054	1
Benzo(ghi)perylene	0.058	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	53		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-04  
 Client ID: 302-AT02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 10:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 01:24  
 Analyst: WR  
 Percent Solids: 94%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	70		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-06  
 Client ID: 302-AT02-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 10:45  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 00:37  
 Analyst: WR  
 Percent Solids: 83%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	86		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-08  
 Client ID: 302-AT02-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 02:57  
 Analyst: WR  
 Percent Solids: 73%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.13	J	mg/kg	0.23	0.028	1
Fluorene	0.32		mg/kg	0.23	0.022	1
Phenanthrene	0.66		mg/kg	0.14	0.028	1
Anthracene	0.12	J	mg/kg	0.14	0.044	1
Pyrene	0.29		mg/kg	0.14	0.023	1
Benzo(a)anthracene	0.088	J	mg/kg	0.14	0.026	1
Chrysene	0.21		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	0.15		mg/kg	0.14	0.038	1
Benzo(a)pyrene	0.13	J	mg/kg	0.18	0.056	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	60		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-10  
 Client ID: 302-AT02-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 06:51  
 Analyst: WR  
 Percent Solids: 73%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.11	J	mg/kg	0.22	0.027	1
Fluorene	0.13	J	mg/kg	0.22	0.022	1
Phenanthrene	0.45		mg/kg	0.13	0.027	1
Anthracene	0.062	J	mg/kg	0.13	0.044	1
Pyrene	0.36		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.15		mg/kg	0.13	0.025	1
Chrysene	0.31		mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.36		mg/kg	0.13	0.038	1
Benzo(a)pyrene	0.23		mg/kg	0.18	0.055	1
Benzo(ghi)perylene	0.18		mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-12  
 Client ID: 302-AT02-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 05:18  
 Analyst: WR  
 Percent Solids: 65%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.038	J	mg/kg	0.25	0.030	1
Fluorene	0.049	J	mg/kg	0.25	0.024	1
Phenanthrene	0.067	J	mg/kg	0.15	0.030	1
Anthracene	ND		mg/kg	0.15	0.049	1
Pyrene	0.13	J	mg/kg	0.15	0.025	1
Benzo(a)anthracene	0.057	J	mg/kg	0.15	0.028	1
Chrysene	0.18		mg/kg	0.15	0.026	1
Benzo(b)fluoranthene	0.083	J	mg/kg	0.15	0.042	1
Benzo(a)pyrene	0.084	J	mg/kg	0.20	0.061	1
Benzo(ghi)perylene	0.085	J	mg/kg	0.20	0.029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	55		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-14 D  
 Client ID: 301-V03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/26/22 15:26  
 Analyst: MG  
 Percent Solids: 90%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.14	J	mg/kg	0.36	0.044	2
Fluorene	0.040	J	mg/kg	0.36	0.035	2
Phenanthrene	0.24		mg/kg	0.22	0.044	2
Anthracene	0.097	J	mg/kg	0.22	0.071	2
Pyrene	0.90		mg/kg	0.22	0.036	2
Benzo(a)anthracene	0.84		mg/kg	0.22	0.041	2
Chrysene	0.82		mg/kg	0.22	0.038	2
Benzo(b)fluoranthene	1.0		mg/kg	0.22	0.061	2
Benzo(a)pyrene	0.90		mg/kg	0.29	0.089	2
Benzo(ghi)perylene	0.50		mg/kg	0.29	0.043	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-16  
 Client ID: 301-V03-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 03:21  
 Analyst: WR  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.044	J	mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.27		mg/kg	0.11	0.022	1
Anthracene	0.068	J	mg/kg	0.11	0.036	1
Pyrene	0.99		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.54		mg/kg	0.11	0.021	1
Chrysene	0.57		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.82		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.69		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.38		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	72		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-18  
 Client ID: 301-V03-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 01:47  
 Analyst: WR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.040	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.031	J	mg/kg	0.12	0.022	1
Chrysene	0.030	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.036	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	93		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-20  
 Client ID: 301-V03-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:45  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/26/22 13:13  
 Analyst: MG  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.58		mg/kg	0.20	0.024	1
Fluorene	2.3		mg/kg	0.20	0.019	1
Phenanthrene	3.8		mg/kg	0.12	0.024	1
Anthracene	0.95		mg/kg	0.12	0.038	1
Pyrene	0.87		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.15		mg/kg	0.12	0.022	1
Chrysene	0.19		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.18		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.087	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.062	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	141	Q	23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	82		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-22  
 Client ID: 301-V03-C5-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 07:15  
 Analyst: WR  
 Percent Solids: 82%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.41		mg/kg	0.20	0.024	1
Fluorene	1.1		mg/kg	0.20	0.019	1
Phenanthrene	1.9		mg/kg	0.12	0.024	1
Anthracene	0.25		mg/kg	0.12	0.039	1
Pyrene	0.36		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.10	J	mg/kg	0.12	0.022	1
Chrysene	0.35		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.11	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.094	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.058	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	63		18-120



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-24  
 Client ID: 302-AH05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 01:01  
 Analyst: WR  
 Percent Solids: 85%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	62		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-26  
 Client ID: 302-AH05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/24/22 23:50  
 Analyst: WR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	56		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-28  
 Client ID: 302-AH05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:40  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 00:14  
 Analyst: WR  
 Percent Solids: 84%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.025	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.021	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.024	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	68		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-30  
 Client ID: 302-AH05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:50  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 07:38  
 Analyst: WR  
 Percent Solids: 88%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.074	J	mg/kg	0.19	0.023	1
Fluorene	0.042	J	mg/kg	0.19	0.018	1
Phenanthrene	0.28		mg/kg	0.11	0.023	1
Anthracene	0.093	J	mg/kg	0.11	0.037	1
Pyrene	0.28		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.25		mg/kg	0.11	0.021	1
Chrysene	0.27		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.41		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.38		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.26		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	35		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	48		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-32  
 Client ID: 302-AH08-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 14:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 06:05  
 Analyst: WR  
 Percent Solids: 87%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.028	J	mg/kg	0.19	0.023	1
Fluorene	0.035	J	mg/kg	0.19	0.018	1
Phenanthrene	0.094	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.040	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.028	J	mg/kg	0.11	0.021	1
Chrysene	0.049	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.065	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.12	J	mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.28		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	58		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-34  
 Client ID: 302-AH08-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 14:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 04:31  
 Analyst: WR  
 Percent Solids: 81%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	0.11	J	mg/kg	0.20	0.024	1
Fluorene	0.56		mg/kg	0.20	0.019	1
Phenanthrene	1.0		mg/kg	0.12	0.024	1
Anthracene	0.13		mg/kg	0.12	0.039	1
Pyrene	0.088	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.033	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.069	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.16		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	65		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-36  
 Client ID: 302-AH08-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 14:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 1,8270E  
 Analytical Date: 10/25/22 07:49  
 Analyst: IM  
 Percent Solids: 89%

Extraction Method: EPA 3546  
 Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.089	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.22		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.18		mg/kg	0.11	0.021	1
Chrysene	0.16		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.20		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.16		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	61		18-120

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270E  
Analytical Date: 10/24/22 21:07  
Analyst: WR

Extraction Method: EPA 3546  
Extraction Date: 10/22/22 23:50

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34,36 Batch: WG1702916-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	64		25-120
Phenol-d6	60		10-120
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	59		30-120
2,4,6-Tribromophenol	51		10-136
4-Terphenyl-d14	59		18-120



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34,36 Batch: WG1702916-2 WG1702916-3								
Naphthalene	71		77		40-140	8		50
Fluorene	70		78		40-140	11		50
Phenanthrene	69		76		40-140	10		50
Anthracene	71		77		40-140	8		50
Pyrene	74		80		35-142	8		50
Benzo(a)anthracene	68		77		40-140	12		50
Chrysene	70		79		40-140	12		50
Benzo(b)fluoranthene	75		85		40-140	13		50
Benzo(a)pyrene	83		93		40-140	11		50
Benzo(ghi)perylene	70		78		40-140	11		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	73		78		25-120
Phenol-d6	68		73		10-120
Nitrobenzene-d5	63		67		23-120
2-Fluorobiphenyl	70		74		30-120
2,4,6-Tribromophenol	66		73		10-136
4-Terphenyl-d14	71		77		18-120



## METALS

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-02

Date Collected: 10/20/22 09:30

Client ID: 302-BC04-C1-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	122		mg/kg	2.53	0.135	1	10/22/22 00:12	10/22/22 10:19	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-04  
 Client ID: 302-AT02-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 10:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	3.06		mg/kg	2.12	0.114	1	10/22/22 00:12	10/22/22 10:05	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-06

Date Collected: 10/20/22 10:45

Client ID: 302-AT02-C2-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	24.5		mg/kg	2.30	0.123	1	10/22/22 00:12	10/22/22 10:10	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-08

Date Collected: 10/20/22 11:00

Client ID: 302-AT02-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	751		mg/kg	2.61	0.140	1	10/22/22 00:12	10/22/22 10:14	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-10

Date Collected: 10/20/22 11:15

Client ID: 302-AT02-C4-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 73%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	859		mg/kg	2.66	0.142	1	10/22/22 00:12	10/22/22 12:10	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-12

Date Collected: 10/20/22 11:30

Client ID: 302-AT02-C5-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 65%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.52		mg/kg	2.93	0.157	1	10/22/22 00:12	10/22/22 12:14	EPA 3050B	1,6010D	DMB





**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-14  
 Client ID: 301-V03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	62.8		mg/kg	2.22	0.119	1	10/22/22 00:12	10/22/22 12:19	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-16

Date Collected: 10/20/22 12:15

Client ID: 301-V03-C2-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	48.0		mg/kg	2.24	0.120	1	10/22/22 00:12	10/22/22 12:24	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-18

Date Collected: 10/20/22 12:30

Client ID: 301-V03-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	147		mg/kg	2.36	0.126	1	10/22/22 00:12	10/22/22 12:28	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-20

Date Collected: 10/20/22 12:45

Client ID: 301-V03-C4-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	490		mg/kg	2.30	0.124	1	10/22/22 00:12	10/22/22 12:33	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-22

Date Collected: 10/20/22 13:00

Client ID: 301-V03-C5-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	6.56		mg/kg	2.32	0.124	1	10/22/22 00:12	10/22/22 12:39	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-24  
 Client ID: 302-AH05-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	29.3		mg/kg	2.22	0.119	1	10/22/22 00:12	10/22/22 12:43	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-26  
 Client ID: 302-AH05-C2-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:30  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	32.2		mg/kg	2.35	0.126	1	10/22/22 00:12	10/22/22 12:49	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-28  
 Client ID: 302-AH05-C3-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:40  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil  
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	7.65		mg/kg	2.33	0.125	1	10/22/22 00:12	10/22/22 12:54	EPA 3050B	1,6010D	DMB





**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-30

Date Collected: 10/20/22 13:50

Client ID: 302-AH05-C4-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	656		mg/kg	2.22	0.119	1	10/22/22 00:12	10/22/22 13:07	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-32

Date Collected: 10/20/22 14:00

Client ID: 302-AH08-C1-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	376		mg/kg	2.26	0.121	1	10/22/22 00:12	10/22/22 13:13	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-34

Date Collected: 10/20/22 14:15

Client ID: 302-AH08-C2-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	37.6		mg/kg	2.43	0.130	1	10/22/22 00:12	10/22/22 13:18	EPA 3050B	1,6010D	DMB



**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-36

Date Collected: 10/20/22 14:30

Client ID: 302-AH08-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Mansfield Lab</b>											
Lead, Total	9.40		mg/kg	2.18	0.117	1	10/22/22 00:12	10/22/22 13:22	EPA 3050B	1,6010D	DMB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34,36 Batch: WG1702539-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/22/22 00:12	10/22/22 09:56	1,6010D	DMB

### Prep Information

Digestion Method: EPA 3050B



### Lab Control Sample Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34,36 Batch: WG1702539-2 SRM Lot Number: D113-540								
Lead, Total	102		-		72-128			



### Matrix Spike Analysis Batch Quality Control

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34,36    QC Batch ID: WG1702539-3    QC Sample: L2258773-02    Client ID: 302-BC04-C1-COMP												
Lead, Total	122	56.1	161	70	Q	-	-		75-125	-		20



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2258773

Report Date: 10/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04,06,08,10,12,14,16,18,20,22,24,26,28,30,32,34,36 QC Batch ID: WG1702539-4 QC Sample: L2258773-02 Client ID: 302-BC04-C1-COMP						
Lead, Total	122	103	mg/kg	17		20



# **INORGANICS & MISCELLANEOUS**

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-01

Date Collected: 10/20/22 09:30

Client ID: 302-BC04-C1-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-02

Date Collected: 10/20/22 09:30

Client ID: 302-BC04-C1-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	74.1		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-03

Date Collected: 10/20/22 10:30

Client ID: 302-AT02-C1-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-04

Date Collected: 10/20/22 10:30

Client ID: 302-AT02-C1-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	93.7		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-05

Date Collected: 10/20/22 10:45

Client ID: 302-AT02-C2-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.0		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-06

Date Collected: 10/20/22 10:45

Client ID: 302-AT02-C2-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.6		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-07  
 Client ID: 302-AT02-C3-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	70.6		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-08

Date Collected: 10/20/22 11:00

Client ID: 302-AT02-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	72.9		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-09  
 Client ID: 302-AT02-C4-VOC  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 11:15  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.7		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-10

Date Collected: 10/20/22 11:15

Client ID: 302-AT02-C4-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	73.4		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-11

Date Collected: 10/20/22 11:30

Client ID: 302-AT02-C5-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.0		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

**Lab ID:** L2258773-12  
**Client ID:** 302-AT02-C5-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/20/22 11:30  
**Date Received:** 10/20/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	65.3		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

**Lab ID:** L2258773-13  
**Client ID:** 301-V03-C1-VOC  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/20/22 12:00  
**Date Received:** 10/20/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	90.8		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-14  
 Client ID: 301-V03-C1-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 12:00  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	89.6		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-15

Date Collected: 10/20/22 12:15

Client ID: 301-V03-C2-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-16

Date Collected: 10/20/22 12:15

Client ID: 301-V03-C2-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.4		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-17

Date Collected: 10/20/22 12:30

Client ID: 301-V03-C3-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.5		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-18

Date Collected: 10/20/22 12:30

Client ID: 301-V03-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.9		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-19

Date Collected: 10/20/22 12:45

Client ID: 301-V03-C4-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.5		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-20

Date Collected: 10/20/22 12:45

Client ID: 301-V03-C4-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	10/21/22 10:13	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-21

Date Collected: 10/20/22 13:00

Client ID: 301-V03-C5-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.5		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-22

Date Collected: 10/20/22 13:00

Client ID: 301-V03-C5-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.0		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-23

Date Collected: 10/20/22 13:15

Client ID: 302-AH05-C1-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	85.0		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-24

Date Collected: 10/20/22 13:15

Client ID: 302-AH05-C1-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.5		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-25

Date Collected: 10/20/22 13:30

Client ID: 302-AH05-C2-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

**Lab ID:** L2258773-26  
**Client ID:** 302-AH05-C2-COMP  
**Sample Location:** PHILADELPHIA, PA

**Date Collected:** 10/20/22 13:30  
**Date Received:** 10/20/22  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	83.8		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-27

Date Collected: 10/20/22 13:40

Client ID: 302-AH05-C3-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.2		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-28

Date Collected: 10/20/22 13:40

Client ID: 302-AH05-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.2		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-29

Date Collected: 10/20/22 13:50

Client ID: 302-AH05-C4-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

**SAMPLE RESULTS**

Lab ID: L2258773-30  
 Client ID: 302-AH05-C4-COMP  
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/20/22 13:50  
 Date Received: 10/20/22  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.8		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-31

Date Collected: 10/20/22 14:00

Client ID: 302-AH08-C1-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI





**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-32

Date Collected: 10/20/22 14:00

Client ID: 302-AH08-C1-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.8		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-33

Date Collected: 10/20/22 14:15

Client ID: 302-AH08-C2-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.8		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-34

Date Collected: 10/20/22 14:15

Client ID: 302-AH08-C2-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.4		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2258773

Project Number: 200.00135.006

Report Date: 10/27/22

## SAMPLE RESULTS

Lab ID: L2258773-35

Date Collected: 10/20/22 14:30

Client ID: 302-AH08-C3-VOC

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**SAMPLE RESULTS**

Lab ID: L2258773-36

Date Collected: 10/20/22 14:30

Client ID: 302-AH08-C3-COMP

Date Received: 10/20/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.7		%	0.100	NA	1	-	10/21/22 10:28	121,2540G	RI



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2258773

Report Date: 10/27/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-20 QC Batch ID: WG1702353-1 QC Sample: L2258773-01 Client ID: 302-BC04-C1-VOC						
Solids, Total	84.2	81.7	%	3		20
General Chemistry - Westborough Lab Associated sample(s): 21-36 QC Batch ID: WG1702354-1 QC Sample: L2258773-21 Client ID: 301-V03-C5-VOC						
Solids, Total	81.5	80.2	%	2		20

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent
B	Absent
C	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258773-01A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-01B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-01C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-01D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2258773-02B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-03B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-03C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-03D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2258773-04B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-05B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-05C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-05D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2258773-06B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-07A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-07B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-07C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Serial\_No:**10272209:55  
**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258773-07D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-08A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2258773-08B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-09A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-09B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-09C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-09D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-10A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2258773-10B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-11A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-11B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-11C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-11D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-12A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2258773-12B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-13A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2258773-13B	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-13C	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-13D	Plastic 120ml unpreserved	B	NA		2.1	Y	Absent		TS(7)
L2258773-14A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2258773-14B	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2258773-15A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2258773-15B	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-15C	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-15D	Plastic 120ml unpreserved	B	NA		2.1	Y	Absent		TS(7)
L2258773-16A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2258773-16B	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2258773-17A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)



**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258773-17B	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-17C	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-17D	Plastic 120ml unpreserved	B	NA		2.1	Y	Absent		TS(7)
L2258773-18A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2258773-18B	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2258773-19A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2258773-19B	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-19C	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-19D	Plastic 120ml unpreserved	B	NA		2.1	Y	Absent		TS(7)
L2258773-20A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2258773-20B	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2258773-21A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2258773-21B	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-21C	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-21D	Plastic 120ml unpreserved	B	NA		2.1	Y	Absent		TS(7)
L2258773-22A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2258773-22B	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2258773-23A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2258773-23B	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-23C	Vial water preserved	B	NA		2.1	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-23D	Plastic 120ml unpreserved	B	NA		2.1	Y	Absent		TS(7)
L2258773-24A	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2258773-24B	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		TS(7),PA-PAH(14)
L2258773-25A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2258773-25B	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-25C	Vial water preserved	A	NA		2.4	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-25D	Plastic 120ml unpreserved	A	NA		2.4	Y	Absent		TS(7)
L2258773-26A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)

**Project Name:** PHILADELPHIA REFINERY**Lab Number:** L2258773**Project Number:** 200.00135.006**Report Date:** 10/27/22**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258773-26B	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		TS(7),PA-PAH(14)
L2258773-27A	Vial MeOH preserved	C	NA		2.0	Y	Absent		PA-8260HLW(14)
L2258773-27B	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-27C	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-27D	Plastic 120ml unpreserved	C	NA		2.0	Y	Absent		TS(7)
L2258773-28A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.0	Y	Absent		PB-TI(180)
L2258773-28B	Glass 120ml/4oz unpreserved	C	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2258773-29A	Vial MeOH preserved	C	NA		2.0	Y	Absent		PA-8260HLW(14)
L2258773-29B	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-29C	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-29D	Plastic 120ml unpreserved	C	NA		2.0	Y	Absent		TS(7)
L2258773-30A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.0	Y	Absent		PB-TI(180)
L2258773-30B	Glass 120ml/4oz unpreserved	C	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2258773-31A	Vial MeOH preserved	C	NA		2.0	Y	Absent		PA-8260HLW(14)
L2258773-31B	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-31C	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-31D	Plastic 120ml unpreserved	C	NA		2.0	Y	Absent		TS(7)
L2258773-32A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.0	Y	Absent		PB-TI(180)
L2258773-32B	Glass 120ml/4oz unpreserved	C	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2258773-33A	Vial MeOH preserved	C	NA		2.0	Y	Absent		PA-8260HLW(14)
L2258773-33B	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-33C	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-33D	Plastic 120ml unpreserved	C	NA		2.0	Y	Absent		TS(7)
L2258773-34A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.0	Y	Absent		PB-TI(180)
L2258773-34B	Glass 120ml/4oz unpreserved	C	NA		2.0	Y	Absent		TS(7),PA-PAH(14)
L2258773-35A	Vial MeOH preserved	C	NA		2.0	Y	Absent		PA-8260HLW(14)
L2258773-35B	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)
L2258773-35C	Vial water preserved	C	NA		2.0	Y	Absent	21-OCT-22 06:43	PA-8260HLW(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

Serial\_No:10272209:55  
**Lab Number:** L2258773  
**Report Date:** 10/27/22

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L2258773-35D	Plastic 120ml unpreserved	C	NA		2.0	Y	Absent		TS(7)
L2258773-36A	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.0	Y	Absent		PB-TI(180)
L2258773-36B	Glass 120ml/4oz unpreserved	C	NA		2.0	Y	Absent		TS(7),PA-PAH(14)

**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Chlordane:** The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Gasoline Range Organics (GRO):** Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PAH Total:** With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



**Project Name:** PHILADELPHIA REFINERY  
**Project Number:** 200.00135.006

**Lab Number:** L2258773  
**Report Date:** 10/27/22

#### Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

**Project Name:** PHILADELPHIA REFINERY

**Lab Number:** L2258773

**Project Number:** 200.00135.006

**Report Date:** 10/27/22

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene, Naphthalene

**EPA 625/625.1:** alpha-Terpeneol

**EPA 8260C/8260D:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D/8270E:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522, EPA 537.1.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.







# CHAIN OF CUSTODY

PAGE 2 OF 4

## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10-21-22

ALPHA Job #: 12258773

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Other Analytes										Sample Specific Comments	TOTAL # BOTTLES			
		Date	Time						1	2	3	4	5	6	7	8	9	10			11	12	
58773-11	302-AT02-C5-VOC	10/20	1130	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-12	302-AT02-C5-COMP		1130			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-13	301-V03-C1-VOC		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-14	301-V03-C1-COMP		1200			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-15	301-V03-C2-VOC		1215			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-16	301-V03-C2-COMP		1215			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-17	301-V03-C3-VOC		1230			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-18	301-V03-C3-COMP		1230			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-19	301-V03-C4-VOC		1245			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-20	301-V03-C4-COMP		1245			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Container Type: G G G - - - - -  
 Preservative: F A A - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/20 15:50	<i>[Signature]</i>	10/20/22 15:50
<i>[Signature]</i>	10/20/21:50	<i>[Signature]</i>	10-20-22
<i>[Signature]</i>	10-20 21:00	<i>[Signature]</i>	10-20-22 21:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 3 OF 4



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~13151~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10-21-22

ALPHA Job #: 12258773

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client Info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead	Other Analytes										Sample Specific Comments	TOTAL # BOTTLES			
		Date	Time						1	2	3	4	5	6	7	8	9	10			11	12	
58773-21	301-V03-C5-Voc	10/20	1300	S	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-22	301-V03-C5-Comp		1300			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-23	302-AH05-C1-Voc		1315			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-24	302-AH05-C1-Comp		1315			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-25	302-AH05-C2-Voc		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-26	302-AH05-C2-Comp		1330			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-27	302-AH05-C3-Voc		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-28	302-AH05-C3-Comp		1340			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-29	302-AH05-C4-Voc		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
-30	302-AH05-C4-Comp		1350			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
58773-21	301-V03-C5-Voc	10/20	1300	S	TS
-22	301-V03-C5-Comp		1300		
-23	302-AH05-C1-Voc		1315		
-24	302-AH05-C1-Comp		1315		
-25	302-AH05-C2-Voc		1330		
-26	302-AH05-C2-Comp		1330		
-27	302-AH05-C3-Voc		1340		
-28	302-AH05-C3-Comp		1340		
-29	302-AH05-C4-Voc		1350		
-30	302-AH05-C4-Comp		1350		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 10/20/22 15:50  
 Received By: *[Signature]* Date/Time: 10/20/22 15:50  
 10/20/22 12:00  
 10-20-22 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

10/21/22 0146

# CHAIN OF CUSTODY

PAGE 4 OF 4



## Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: ~~1701~~ ~~1783~~ 18559

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: \_\_\_\_\_ Time: \_\_\_\_\_

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: \_\_\_\_\_

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

## Other Project Specific Requirements/Comments/Detection Limits:

\*\*\*Report only project-specific analyte list\*\*\* of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 10/21/22

ALPHA Job #: L2258773

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 3562

## Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

## ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	Lead											SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES			
		Date	Time																				
52773-21	302-A108-C1-VOC	10/20	1400	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
32	302-A108-C1-Comp		1400			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-33	302-A108-C2-VOC		1415			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-34	302-A108-C2-Comp		1415			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
-35	302-A108-C3-VOC		1430			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
-36	302-A108-C3-Comp		1430			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
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						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
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Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	10/20/22 15:50	<i>[Signature]</i>	10/20/22 15:51
<i>[Signature]</i>	12/20/16	<i>[Signature]</i>	10-26-18
<i>[Signature]</i>	10-20-20	<i>[Signature]</i>	10-20-22

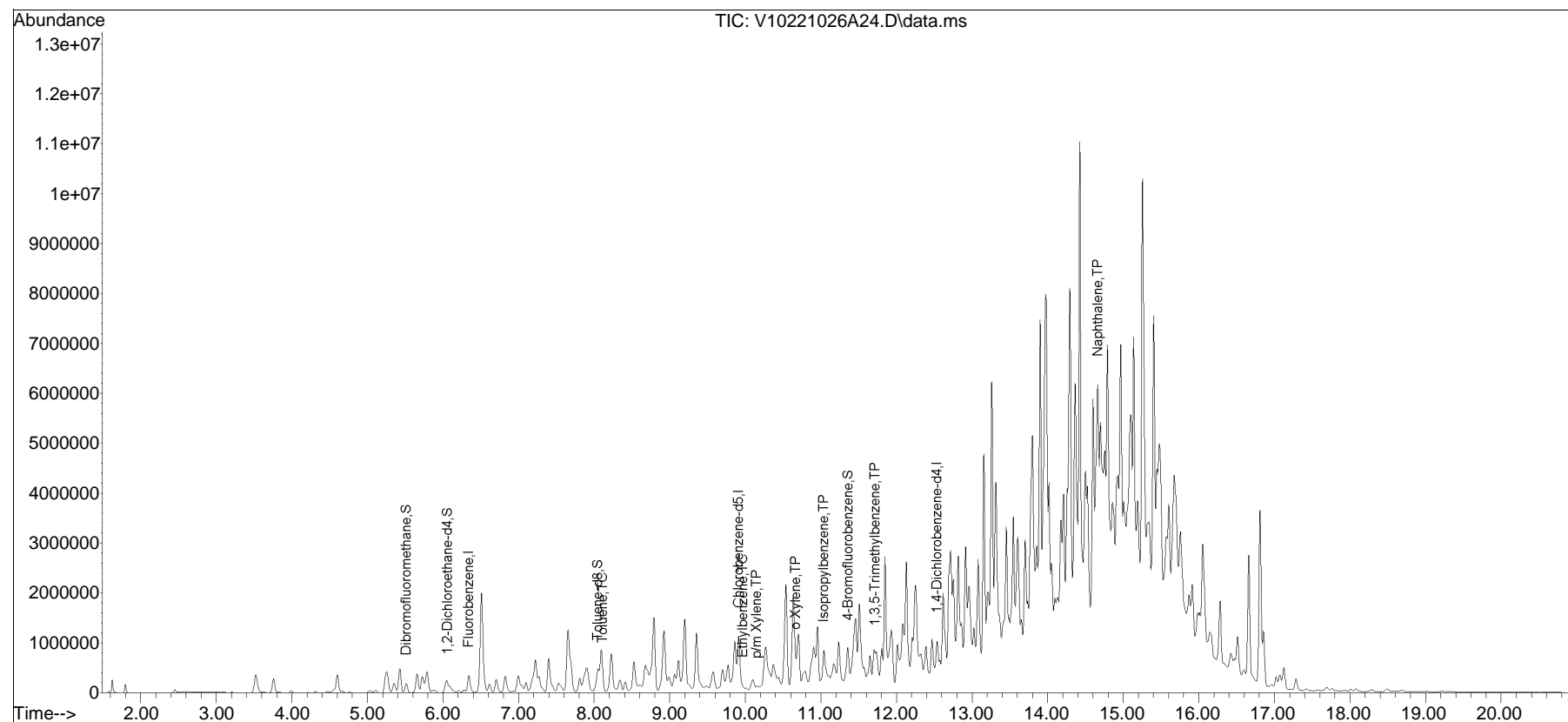
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221026A\  
Data File : V10221026A24.D  
Acq On : 26 Oct 2022 6:14 pm  
Operator : VOA110:LAC  
Sample : 12258773-07,31h,5.19,5,0.100,,a,r2f  
Misc : WG1704613,ICAL19281  
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Oct 26 21:26:10 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221026A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V10221026A01.D•

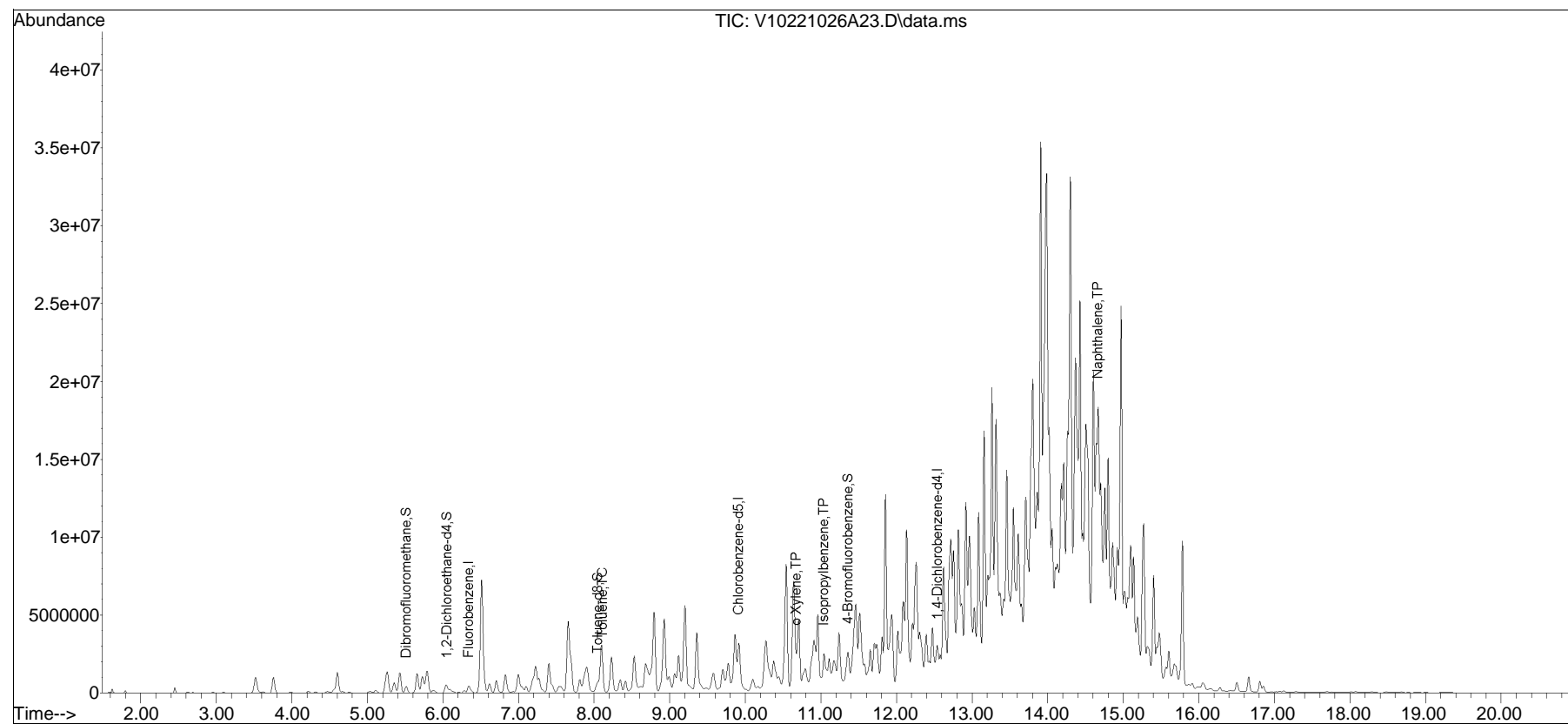


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221026A\  
Data File : V10221026A23.D  
Acq On : 26 Oct 2022 5:47 pm  
Operator : VOA110:LAC  
Sample : 12258773-11,31h,5.88,5,0.100,,a,r2f  
Misc : WG1704613,ICAL19281  
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Oct 26 21:25:25 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221026A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
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Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V10221026A01.D•

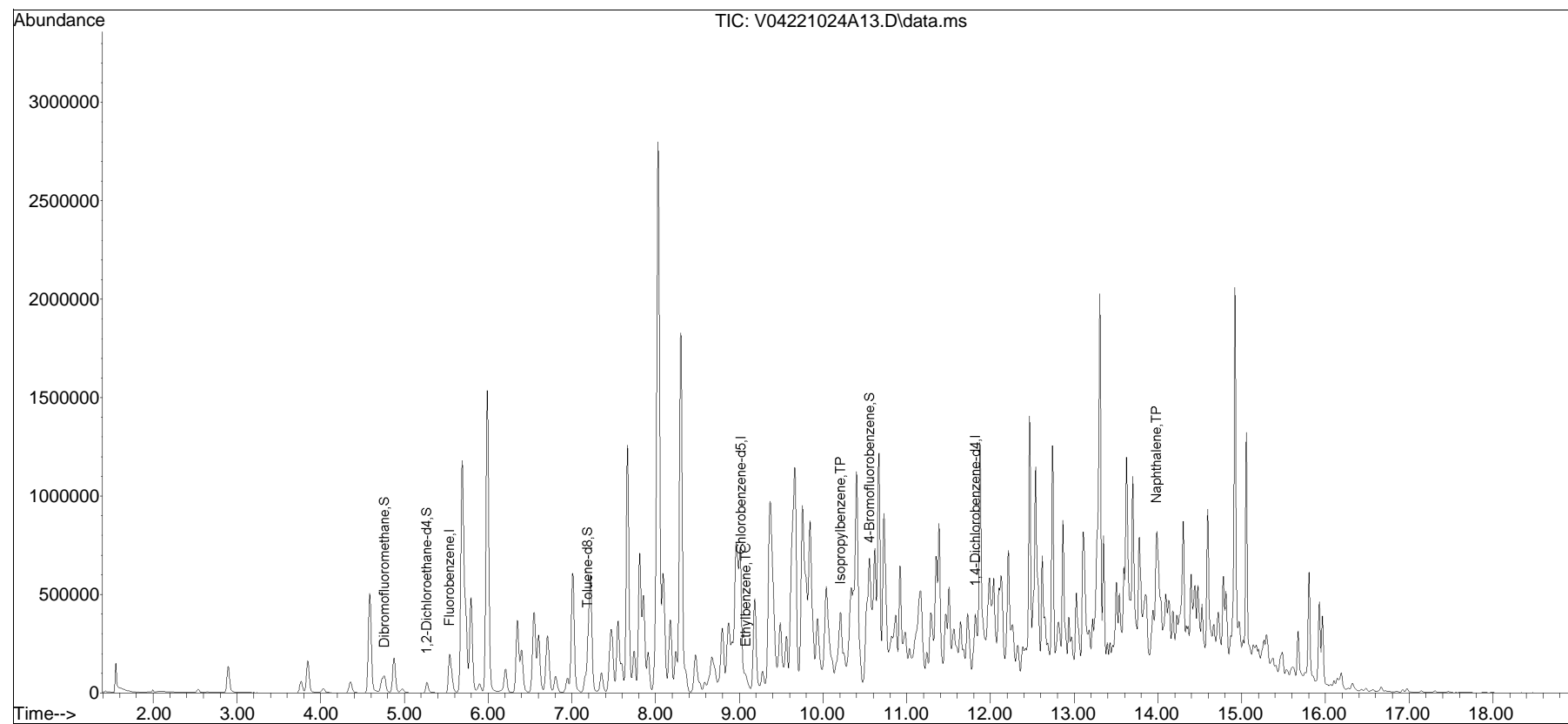


## Quantitation Report (QT Reviewed)

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Data File : V04221024A13.D  
Acq On : 24 Oct 2022 12:41 pm  
Operator : VOA104:NLK  
Sample : L2258773-17,31H,5.61,5,0.100,,A,R2F  
Misc : WG1703922,ICAL19119  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 25 12:08:02 2022  
Quant Method : I:\VOLATILES\VOA104\2022\221024A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Wed Jun 22 06:56:43 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list24A\V04221024A02.D•

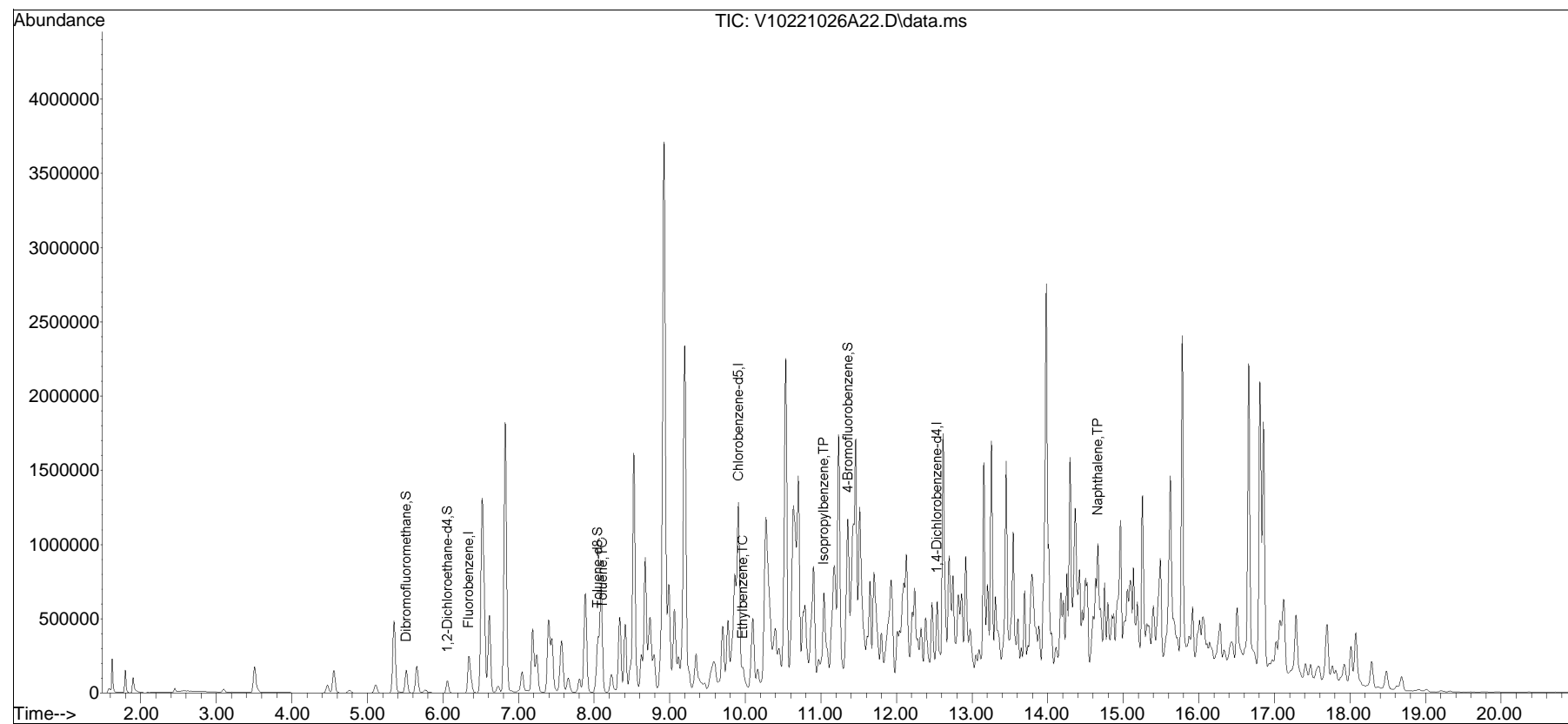


## Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\221026\  
Data File : V10221026A22.D  
Acq On : 26 Oct 2022 5:20 pm  
Operator : VOA110:LAC  
Sample : 12258773-19,31h,5.41,5,0.100,,a,r2f  
Misc : WG1704613,ICAL19281  
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Oct 26 21:24:42 2022  
Quant Method : I:\VOLATILES\VOA110\2022\221026A\V110\_220822N\_8260.m  
Quant Title : VOLATILES BY GC/MS  
QLast Update : Tue Aug 23 09:34:28 2022  
Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list26A\V10221026A01.D•



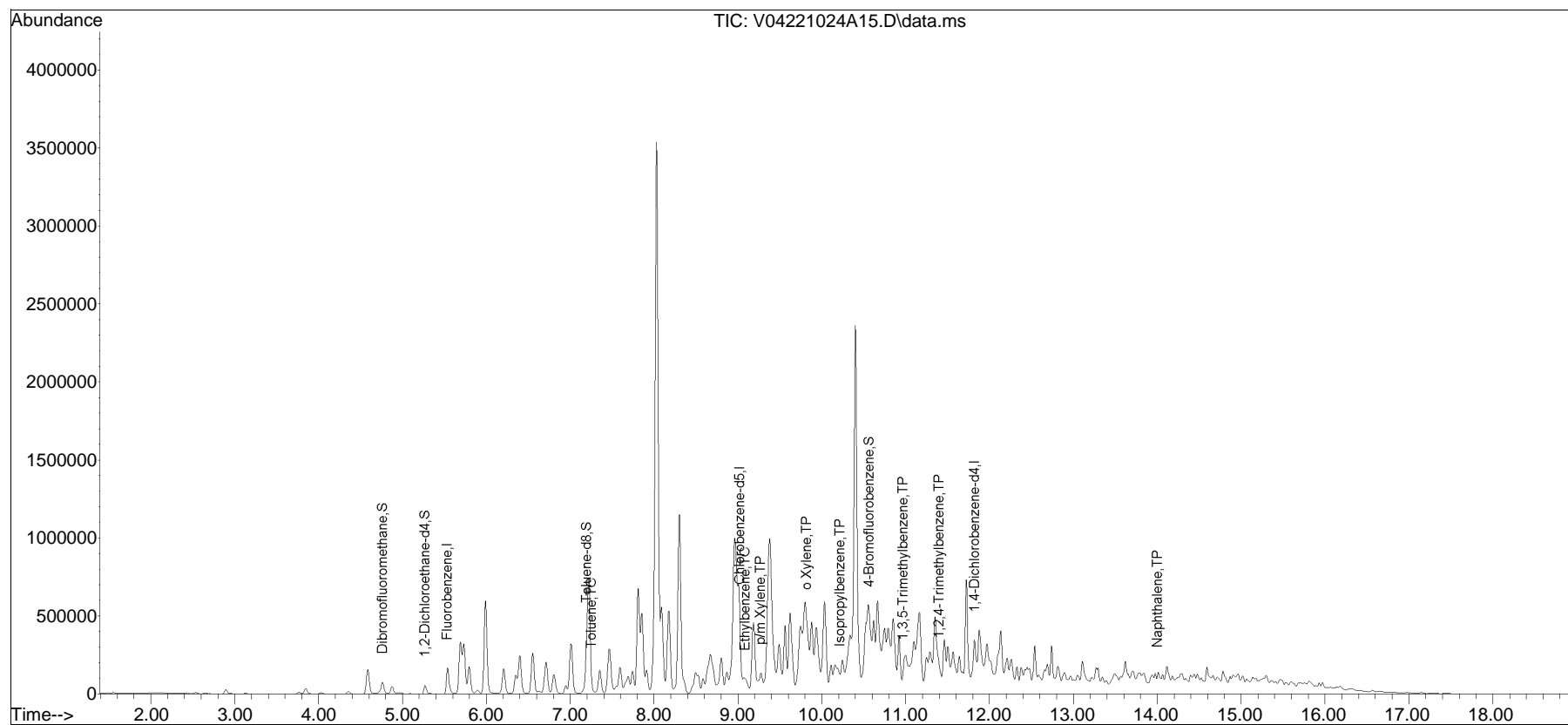


## Quantitation Report (QT Reviewed)

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Data File : V04221024A15.D  
Acq On : 24 Oct 2022 1:33 pm  
Operator : VOA104:NLK  
Sample : L2258773-21,31H,3.89,5,0.100,,A,R2F  
Misc : WG1703922,ICAL19119  
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Oct 25 12:01:30 2022  
Quant Method : I:\VOLATILES\VOA104\2022\221024A\V104\_220621A\_8260.m  
Quant Title : VOLATILES BY GC/MS  
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Response via : Initial Calibration

Sub List : 8260-PA\_ShortList - PA Short list24A\V04221024A02.D•

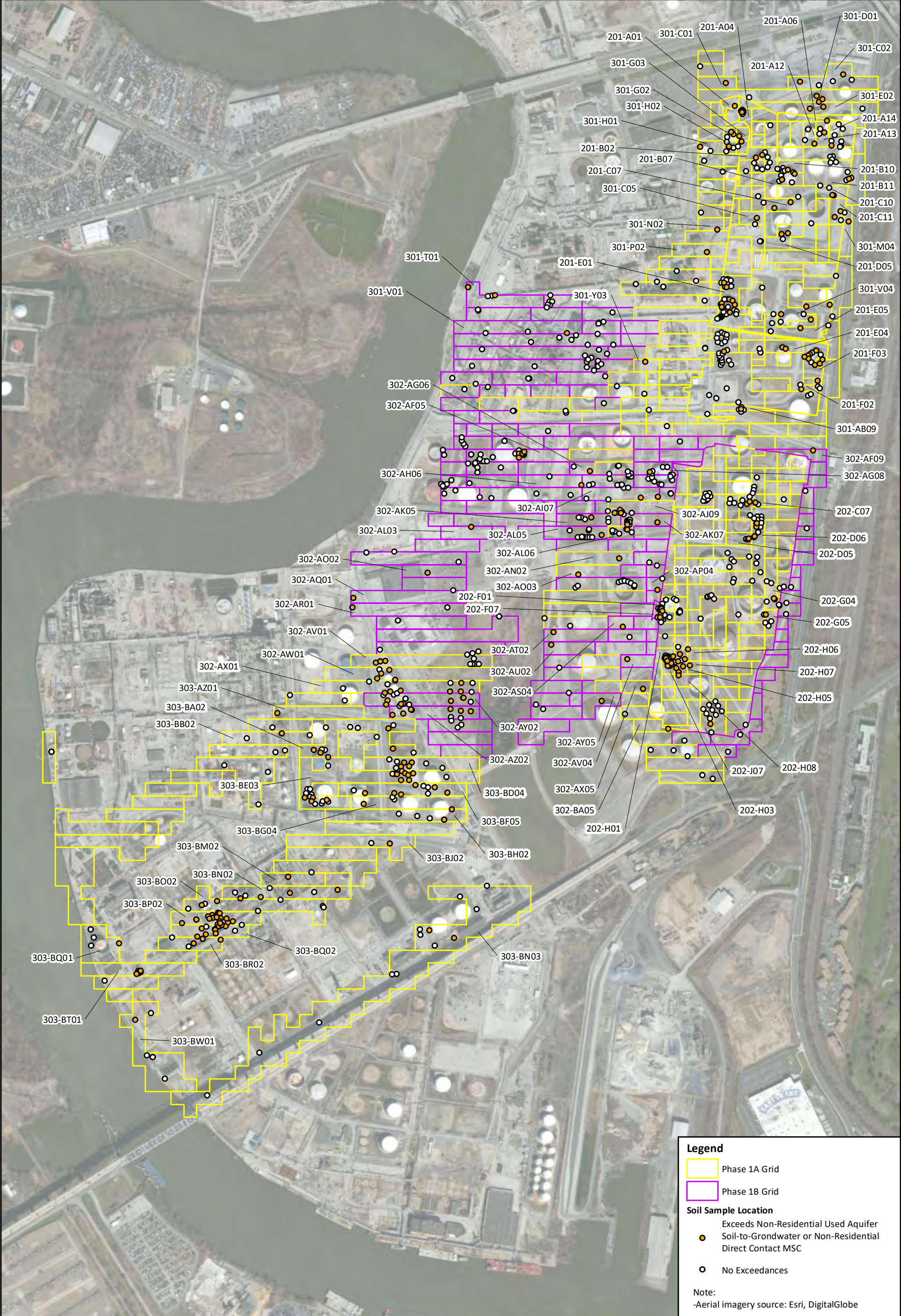


# Appendix B

## Historical Soil Sampling Results



File: N:\GIS\PI\P044.001\_PESRM-PES\WXDS\SWP\Phase 1B\20221.109\Figure 1 - Evergreen with Exceedances.mxd 12/8/2022 Created by: Resource Coordinate System: NAD\_1983 StatePlane Pennsylvania South FIPS 3702 Feet



**Legend**

- Phase 1A Grid
- Phase 1B Grid

**Soil Sample Location**

- Exceeds Non-Residential Used Aquifer  
Soil-to-Grondwater or Non-Residential  
Direct Contact MSC
- No Exceedances

Note:  
-Aerial imagery source: Esri, DigitalGlobe

0      350      700      1,050  
Feet

1 inch = 700 feet

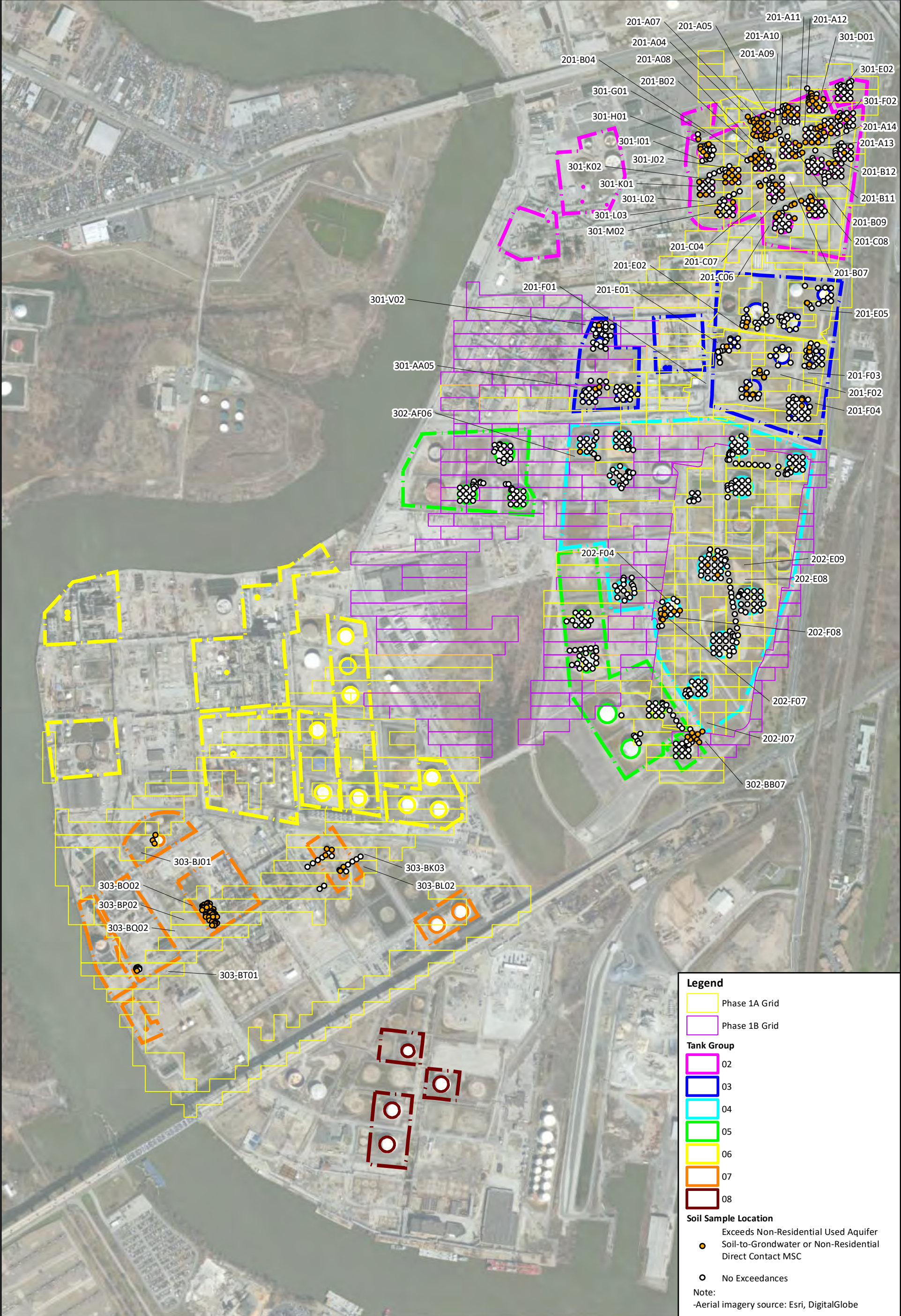
**SAFETY FIRST**

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Soil Management Plan Addendum, Phase 1B
PROJECT NUMBER:	P044.001.001

**Evergreen Locations with Exceedances**

**FIGURE 1**

File: N:\GIS\PI\P044.001\_PESRM-PES\WXDS\SWP\Phase 1B\2021.109\Figure 2 - AST with Exceedances.mxd 12/8/2022 Created by: Resource Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



**Legend**

- Phase 1A Grid
- Phase 1B Grid

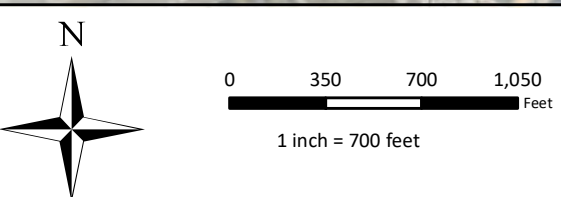
**Tank Group**

- 02
- 03
- 04
- 05
- 06
- 07
- 08

**Soil Sample Location**

- Exceeds Non-Residential Used Aquifer Soil-to-Grndwater or Non-Residential Direct Contact MSC
- No Exceedances

Note:  
-Aerial imagery source: Esri, DigitalGlobe



**SAFETY FIRST**

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC  
 PROJECT: Soil Management Plan Addendum, Phase 1B  
 PROJECT NUMBER: P044.001.001

**Aboveground Storage Tank Locations with Exceedances**

**FIGURE 2**

# Appendix C

## Data Usability Summary



**Table 1**  
**Quality Control Checklist**  
Former Philadelphia Refinery, Philadelphia, PA

SDG	Check Lab Login and Keyfile	Keyfile-Related		EDD-Related										Check for Concerning Qualifiers	Comments
		Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results					Resolved			
							Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other				
L2242048	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2242048-01 (301-T01-C1-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2242049	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2242391	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2242392	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2242392-19 (301-U03-C1-VOC): VOCs reported for three runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The IS response(s) for 1,4-dichlorobenzene-d4 (46%) and the surrogate recovery for 4-bromofluorobenzene (151%) were outside the acceptance criteria; however, re-analysis achieved the following results: 1,4-dichlorobenzene-d4 (44%) and 4-bromofluorobenzene (146%). The run with surrogate recoveries within acceptance criteria is selected as reportable. The low runs are not reportable and the high run is reported.
L2242653	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2242832	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2242832-09 (301-Z02-C5-VOC): VOCs reported for two runs. The surrogate recoveries are outside the acceptance criteria for 1,2-dichloroethane-d4 (60%) and 4-bromofluorobenzene (270%); however, low-level re-analysis was not performed due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2243091	Pass	Pass	Pass	Pass	Pass	Pass								Pass	L2243091-07 (301-Z03-C4-VOC): VOCs reported for two runs. The internal standard (IS) responses for fluorobenzene (35%) and chlorobenzene-d5 (49%) and the surrogate recovery for 1,2 dichloroethane-d4 (142%) were outside the acceptance criteria. A second low-level vial was analyzed, but yielded no internal standard recoveries. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2243425	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2243661	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2243873	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2244180	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2244180-09 (301-AC02-C5-VOC): VOCs reported for two runs. The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (inappropriate plastic) and preserved appropriately. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2244443	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2244797	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2244797-11 (302-AD07-C2-VOC): VOCs reported for two runs. The surrogate recovery was below the acceptance criteria for 1,2-dichloroethane-d4 (69%). A second low-level vial was analyzed, but yielded no internal standard recoveries. A high-level analysis was performed, and those results are also reported. If one run has surrogate recoveries within acceptance criteria but is non-detect and the other run has 1-2 surrogates outside of acceptance criteria but has detections, the run with detections is selected as reportable and the run with non-detects is not reported. The high run is not reportable and the low run is reported.
L2245031	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2245326	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2245659	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2245926	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2246306	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	

**Table 1**  
**Quality Control Checklist**  
Former Philadelphia Refinery, Philadelphia, PA

SDG	Check Lab Login and Keyfile	Keyfile-Related		EDD-Related										Check for Concerning Qualifiers	Comments
		Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results					Resolved			
							Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other				
L2246450	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2246450-03 (302-AE06-C2-VOC): VOCs reported for two runs. The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (65%), toluene-d8 (2830%) and 4-bromofluorobenzene (1080%) due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2246450-15 (302-AE07-C4-VOC): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for 4-bromofluorobenzene (165%) due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.	
L2246771	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2247027	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2247278	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2247598	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2247865	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2249446	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2249766	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2250151	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2250581	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2250829	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2250829-09 (302-BB07-C2-VOC): VOCs reported for three runs. Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies. The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (49%), toluene-d8 (261%), and 4-bromofluorobenzene (234%) due to obvious interferences for the low run. The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (62%), toluene-d8 (156%) and 4-bromofluorobenzene (163%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range for the high run. L2250829-13 (302-BB07-C4-VOC): VOCs reported for two runs. The surrogate recoveries were outside the acceptance criteria for dibromofluoromethane (65%), toluene-d8 (145%) and 4-bromofluorobenzene (140%). The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2250829-15 (302-BB07-C5-VOC): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for dibromofluoromethane (61%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The run with surrogate recoveries within acceptance criteria is selected as reportable. Both runs reported were high. L2250829-19 (302-BC06-C2-VOC): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for dibromofluoromethane (60%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The run with surrogate recoveries within acceptance criteria is selected as reportable. Both runs reported were high. L2250829-21 (302-BC06-C3-VOC): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for dibromofluoromethane (66%); however, re-analysis on a larger dilution was required in order to quantitate the sample within the calibration range. The run with surrogate recoveries within acceptance criteria is selected as reportable. Both runs reported were high.	
L2251260	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2251260-03 (302-AQ03-C2-VOC): VOCs reported for two runs. The internal standard (IS) response(s) for fluorobenzene (825%) and the surrogate recoveries for dibromofluoromethane (15%) and 4-bromofluorobenzene (248%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.	
L2251903	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2252203	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2252788	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2252968	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		

**Table 1**  
**Quality Control Checklist**  
Former Philadelphia Refinery, Philadelphia, PA

SDG	Check Lab Login and Keyfile	Keyfile-Related		EDD-Related										Check for Concerning Qualifiers	Comments
		Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results					Resolved			
							Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other				
L2253221	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2253221-11 (302-AW04-C2-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2253555	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2253555-15 (302-AW02-C4-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference (for te low-level run). The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2253896	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2253896-03 (302-AX02-C2-VOC): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (29%) and the surrogate recoveries for toluene-d8 (158%) and 4-bromofluorobenzene (172%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2254192	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2254452	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2254452-03 (302-AZ03-C2-VOC): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for 4-bromofluorobenzene (145%) due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2254452-09 (302-AZ03-C5-VOC): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for 4-bromofluorobenzene (156%) due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2254721	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2255175	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2255518	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2255518-15 (302-AN01-C3-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
L2255846	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2256226	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2256458	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	
L2256782	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2256782-01 (302-AP04-C1-VOC): VOCs reported for two runs. The IS response for fluorobenzene (319%) and the surrogate recoveries for 1,2-dichloroethane-d4 (29%) and dibromofluoromethane (31%) and 4-bromofluorobenzene (259%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. Both runs were high.
L2257140	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2257140-11 (302-AM04-C2-VOC): VOCs reported for two runs. The IS response for fluorobenzene (252%) and the surrogate recoveries for dibromofluoromethane (38%) and 4-bromofluorobenzene (851%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
L2257557	Pass	Pass	Pass	Pass	Pass	Pass	No							Pass	



**Table 1**  
**Quality Control Checklist**  
Former Philadelphia Refinery, Philadelphia, PA

SDG	Check Lab Login and Keyfile	Keyfile-Related		EDD-Related										Check for Concerning Qualifiers	Comments
		Check COC/Field Notes	Check Sample IDs and Prepping	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results					Resolved			
							Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other				
L2257767	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2257767-03 (302-AE03-C2-VOC): VOCs reported for two runs. The surrogate recoveries were outside the acceptance criteria for 4-bromofluorobenzene (205%) and dibromofluoromethane (136%); however, re-analysis achieved the following results: 4-bromofluorobenzene (767%). The run with surrogate recoveries within acceptance criteria is selected as reportable. Both runs were low. L2257767-05 (302-AE03-C3-VOC): VOCs were reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2257767-09 (302-AE03-C5-VOC): VOCs were reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.	
L2258021	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		
L2258472	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2258472-05 (302-AF04-C3-VOC): VOCs reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The surrogate recoveries are outside the acceptance criteria for toluene-d8 (151%) and 4-bromofluorobenzene (626%); however, the sample was not re-analyzed due to coelution with an obvious interference. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.	
L2258773	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass		

**Table 2**

**Quality Control Methodology**

Former Philadelphia Refinery, Philadelphia, PA

<b>Multiple VOC Runs Data Quality</b>	<b>Solution</b>
If the surrogate recoveries for one run are <b>within acceptance criteria</b> and the other run has <b>3-4 surrogates outside of acceptance criteria</b> :	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If the surrogate recoveries for one run are <b>within acceptance criteria</b> and has some <b>detections</b> and the other run has <b>1-2 surrogates outside of acceptance criteria</b> :	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If one run has surrogate recoveries <b>within acceptance criteria</b> but is <b>non-detect</b> and the other run has <b>1-2 surrogates outside of acceptance criteria</b> but has <b>detections</b> :	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have <b>detections</b> and <b>surrogate recoveries outside of acceptance criteria</b> :	The run with more surrogates recoveries outside acceptance criteria is not reported and the run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable.
If one run has surrogate recoveries <b>outside of acceptance criteria</b> but is <b>non-detect</b> and the other run has <b>1-2 more surrogates outside of acceptance criteria</b> but has <b>detections</b> :	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have the <b>same number of surrogates</b> with recovery outside the acceptance criteria:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
If two VOC runs are reported and there are no QC issues for both runs:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.

# Appendix D

## Waste Material Identification and Notification Procedure



# Waste Material Identification and Notification Procedure

During mass grading activities at the former Philadelphia Refinery, there is the potential for previously unidentified waste materials to be encountered. This document describes the procedures for identifying non-soil waste material and notifying the appropriate parties, so that assessment and remediation activities can be conducted, as needed. These procedures will be applied during earthwork being conducted as part of the redevelopment of the former Philadelphia Refinery located at 3144 W Passyunk Avenue, Philadelphia, Pennsylvania (the Site). An Environmental Professional will be on site to observe soil movement and document that soil is placed in accordance with the results of pre-characterization samples collected under the site-specific Soil Management Plan dated June 15, 2020. The non-soil, waste-like material covered in these procedures includes leaded tank bottoms and containerized waste.

## 1. Waste Material Identification

Non-soil waste will be identified based on visual observation.

### 1.1 Leaded Tank Bottoms

Leaded tank bottoms are the sediment, dirt and petroleum byproducts that accumulated at the bottom of storage tanks used to store leaded gasoline. As this site is a former petroleum refining facility, leaded tank bottoms may be present in soil from historical spillage occurring during the cleaning operations of leaded gasoline tanks.

Leaded tank bottom materials encountered at the site have been described by Evergreen as rust/red to black, metallic, mostly oxidized scale materials, sometimes in a matrix of petroleum wax sludge. If material matching this description is encountered, the Environmental Professional will follow the notification procedures described in Section 2.

The contractor shall leave the materials in place pending further characterization and direction from Ownership.

### 1.2 Containerized Waste

The most common example of a waste container is a 55-gallon steel drum. If drums or containers with unknown contents are identified, on-site personnel will be directed to leave the area, and the general contractor's site safety officer will be notified to determine next steps. Once the site safety officer has confirmed that the drums or containers are not immediately dangerous to life or health, the drums may be further evaluated by the general contractor or earthwork contractor with observation by the Environmental Professional to determine if the drums are empty. Care will be taken during the evaluation to avoid damaging the drums or spilling their (potential) contents. If the drums are determined to be empty, they will be removed and disposed of as construction/demolition debris. If the

drums are not empty, the Environmental Professional will follow the notification procedures described in Section 2.

The contractor shall leave the materials in place pending further characterization and direction from Ownership.

## 2. Notification

The Environmental Professional will notify the Senior Project Manager immediately upon identifying either (1) material matching the description of leaded tank bottoms or (2) drums that are not empty. The Senior Project Manager will then notify Joseph Jeray of HRP via telephone and send email notification to Joseph Jeray and Julianna Connolly of HRP with a map showing the approximate location of the observation, photos showing what was observed, and a brief narrative providing the date, time, location, and depth relative to the original (pre-construction grade) of the observation. Contact information for the HRP representatives is provided below.

- Joseph Jeray, PE  
Vice President, Environmental Remediation  
(978) 729-3209 (c)  
[jjeray@hilcoglobal.com](mailto:jjeray@hilcoglobal.com)
- Julianna Connolly  
Executive Vice President, Environmental Remediation  
[jconnolly@hilcoglobal.com](mailto:jconnolly@hilcoglobal.com)  
617-240-8695 (c)

After reviewing the information, HRP will notify Evergreen Resources Management Operations, a series of Evergreen Resources Group, LLC (Evergreen) of the observation.