FINAL

Remedial Investigation Report and Cleanup Plan No. 3 Separator Area – Girard Point (eFACTS Primary Facility No. 856439)

Former Philadelphia Energy Solutions Refinery Facility ID No. 51-36624
3144 West Passyunk Avenue, Philadelphia, Pennsylvania

Prepared for

Bellwether District Holdings, LLC
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August 2025

Project Number P044.001.003

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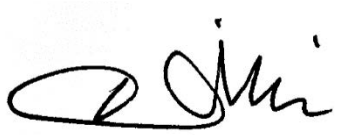
Pursuant to the requirements of the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2), adopted May 19, 1995, which states:

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

I hereby attest that, as a Professional Geologist licensed in the Commonwealth of Pennsylvania, I am familiar with, and have reviewed and/or prepared the interpretation of the geology and hydrogeology presented in the attached report entitled:

> *Remedial Investigation Report and Cleanup Plan, Number 3 Separator Area – Girard Point, Former Philadelphia Energy Solutions Refinery Facility ID No. 51-33620 3144 Passyunk Avenue, Philadelphia, Pennsylvania*, dated August 2025.

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



August 8, 2025

Christopher J. Voci, PG
PA PG003892
Expires September 30, 2025

Date



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Acronyms and Abbreviations

12DCA	1,2-dichloroethane
124TMB	1,2,4-trimethylbenzene
135TMB	1,3,5-trimethylbenzene
25 Pa. Code	Title 25 Pennsylvania Code
Act 2	Pennsylvania Land Recycling and Environmental Remediation Standards Act
AOI	Area of Interest
API	American Petroleum Institute
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BDH	Bellwether District Holdings, LLC
bgs	below ground surface
CCR	Current Conditions Report
CFR	Code of Federal Regulations
CO&A	Consent Order and Agreement
COC	constituent of concern
CP	Cleanup Plan
CSM	conceptual site model
cy	cubic yard or yards
EC	engineering control
EDB	1,2-dibromoethane or ethylene dibromide
Evergreen	Evergreen Resources Group, LLC; includes Sunoco, Inc. n/k/a ETC Sunoco Holdings LLC, Sunoco, Inc. (R&M) n/k/a Sunoco (R&M), LLC n/k/a Energy Transfer (R&M), LLC and Evergreen collectively referred to as “Evergreen”
F&T	fate and transport
IC	institutional control
ITRC	Interstate Technology & Regulatory Council
the Facility	former Philadelphia Energy Solutions refinery
ft	feet or foot
JDM	James D. Morrissey, Inc.
LNAPL	light non-aqueous phase liquid
MDVP	Mobile Dredge and Video Piping, Inc.
MEP	maximum extent practical
mg/L	milligrams per liter
MTBE	methyl tert-butyl ether

MSC	medium-specific concentration
NAPL	non-aqueous phase liquid
NIR	Notice of Intent to Remediate
No. 3 Separator	Number 3 Separator
Non-Res	non-residential
NSZD	natural source zone depletion
PADEP	Pennsylvania Department of Environmental Protection
PES	Philadelphia Energy Solutions
PESRM	Philadelphia Energy Solutions Refining and Marketing LLC
PNDI	Pennsylvania Natural Diversity Inventory
PRCP	post-remediation care plan
PWS	Potable Water Supply
RI	remedial investigation
RIR/CP	Remedial Investigation Report and Cleanup Plan
RL	reporting limit
RPD	relative percent difference
the Site	Girard Point Number 3 Separator
SERO	Southeast Regional Office
SHS	Statewide Health Standard
SIM	selected ion monitoring
SMP	Soil Management Plan
SSHP	Site Safety and Health Plan
SSSP	Site-Specific Safety Plan
SSS	Site-Specific Standard
SVOC	semi-volatile organic compound
TDS	total dissolved solids
Terraphase	Terraphase Engineering Inc.
TMS	PADEP Toxics Management Spreadsheet
TGM	Technical Guidance Manual
UA	used aquifer
µm	micron
UECA	Uniform Environmental Covenants Act
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
VMS	vapor mitigation system

Executive Summary

Terraphase Engineering Inc. (Terraphase) has prepared this Remedial Investigation Report and Cleanup Plan (RIR/CP), on behalf of Bellwether District Holdings, LLC (BDH), formerly known as Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), to detail the results of a remedial investigation (RI) completed for a release in the area of the Girard Point Number 3 Separator (No. 3 Separator, the "Site"). The Site is located within the former Philadelphia Energy Solutions (PES) Refinery (the "Facility"), an approximately 1,300-acre property situated in a highly developed area of Philadelphia.

Remediation activities are being conducted at the Facility under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) by both BDH and Evergreen Resources Group, LLC (Evergreen)[1] in accordance with the Consent Order and Agreement (CO&A) among Pennsylvania Department of Environmental Protection (PADEP), Sunoco, Inc. (R&M) n/k/a Sunoco (R&M), LLC, and PESRM, now BDH, dated August 14, 2012 and the 2020 First Amendment to that Agreement (2020 Amendment). In accordance with the CO&A, Sunoco/Evergreen is responsible for addressing contamination at the Facility resulting from release(s) which occurred before September 8, 2012, i.e., "Pre-Existing Contamination", and BDH is responsible for addressing contamination at the Facility resulting from release(s) which occurred after September 8, 2012, i.e., "Post-September 2012 Contamination."

On July 12, 2011, Evergreen observed a hydrocarbon sheen on the Schuylkill River, immediately adjacent to the Site. Immediate activities to investigate the hydrocarbon sheen were initiated, including placing absorbent booms in the River, exploratory excavations to inspect the integrity of the process sewer system piping, initial closure efforts of the process sewer junction box and the associated outfall, and the installation of monitoring wells around the No. 3 Separator process sewer piping. Sampling of the monitoring wells indicated measurable light non-aqueous phase liquid (LNAPL) associated with the release. A total fluids recovery system was installed on August 23, 2012. PESRM took over operation of the recovery system from Evergreen in 2013 after additional LNAPL was found to be impacting the area. The recovery system operated until it was decommissioned in November 2021 due to a lack of recoverable LNAPL. In January 2025, BDH performed additional activities to close the remaining process sewer piping which has been identified as the source of the July 12, 2011, release and subsequent releases.

Following the closure of the process sewer piping in January and February 2025, Terraphase conducted site characterization activities (i.e., groundwater sampling) in the No. 3 Separator area in March and April 2025.

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

During the March site characterization event, Terraphase observed measurable LNAPL in two wells at the Site: C-152 (0.59 ft) and C-161 (0.4 ft). In accordance with American Petroleum Institute (API) LNAPL Transmissivity Guidance (API Publication 4760, 2009) and the ASTM Standard Guide for Estimation of LNAPL Transmissivity (Designation: E2856-13 [Reapproved 2021]), baildown tests were performed on both wells to assess LNAPL transmissivity. The resulting transmissivity values were negligible, indicating that traditional recovery methods and the mobility of LNAPL at the Site is limited. Based on the historical recovery efforts, the current extent of LNAPL around the No. 3 Separator, and the results of the LNAPL transmissivity testing, it has been determined that continued LNAPL recovery is not practicable and that conditions at the Site meet the regulatory criteria for demonstrating recovery of LNAPL to the maximum extent practical (MEP).

Benzene was detected in groundwater samples from two wells (i.e., C-148 and C-150) at concentrations above the PADEP Non-Residential (Non-Res) Groundwater Used Aquifer Medium-Specific Concentrations (MSCs) (Total Dissolved Solids [TDS] ≤ 2500). No exceedances of the PADEP Non-Res Groundwater Vapor Intrusion Screening Values were identified. Results of the two groundwater sampling events demonstrate that the extent of release-related contamination is limited to groundwater in C-148 and C-150 around the No. 3 Separator. The extent of release-related constituents in groundwater has been delineated to the applicable Non-Res MSC based on surrounding well results.

The RI was completed to define the nature and extent of LNAPL and benzene in groundwater around the No. 3 Separator. Based on concentrations of benzene in groundwater above applicable MSCs and the aerial extent of LNAPL at the Site, delineation of the release-related contamination is defined by the Schuylkill River to the north, monitoring well C-146 to the east, monitoring well C-97 and C-152 to the south and monitoring well C-169 to the west. Modeling was performed to estimate impacts to surface water due to groundwater migration from the Site to the River. The calculated maximum average concentration of benzene is less than the chronic aquatic life criterion (CCC). Based on the model, groundwater migration from the Site is not impacting the River, which is considered the northern point of compliance for the release.

A Notice of Intent to Remediate (NIR) was originally submitted for the Site on March 1, 2022, indicating BDH's intent to remediate groundwater and soil to the non-residential Statewide Health Standard (SHS). An updated NIR for the Site was submitted to PADEP on April 17, 2025 (eFacts PF No. 856439). As indicated in this updated NIR, BDH has elected to remediate groundwater contamination at the Site to the Site-Specific Standard (SSS) for constituents of concern (COC). More specifically, LNAPL and release-related contamination (benzene) not meeting applicable MSC in the area will be remediated via pathway elimination.

As presented in the Cleanup Plan (CP), current and reasonably anticipated future exposure pathways to release-related groundwater contamination, not meeting the applicable MSCs, will be managed via pathway elimination as follows:

- Groundwater contaminated with the release-related COC (benzene) shall be restricted via institutional control (IC) such that it may not be used for any purpose other than to conduct environmental investigations and/or remediation.

- As the Site, and the associated contamination, is located within 50 feet of the Schuylkill River, future construction of occupied buildings in this area is not possible. Given this restriction, the vapor intrusion exposure pathway is eliminated, and no additional ICs or engineering controls (EC) will be needed to maintain attainment of the SSS.

Because all current and reasonably anticipated future exposure pathways to release-related contamination are being eliminated, a quantitative risk assessment is unnecessary (PADEP 2021).

As presented in the CP, the selected remedy for the Site includes the implementation of an IC in the form of an environmental covenant. The environmental covenant will eliminate current and future exposure pathways by restricting land use and activities that could result in exposure to release-related groundwater contamination. BDH will document the attainment of the SSS via pathway elimination in a Final Report. The Final Report will include a pathway elimination analysis as required by 25 Pa. Code § 250.702(b)(3)(i) and Post-Remediation Care Plan (PRCP). The PRCP will outline the inspection, maintenance, and reporting obligations required to ensure that the IC continues to maintain attainment of the SSS in the future. Within 30 days of the approval of the Final Report, the environmental covenant will be submitted to the PADEP. Once submitted, the environmental covenant will follow the procedures outlined by The Uniform Environmental Covenants Act (UECA).

1 Introduction

Terraphase Engineering Inc. (Terraphase) has prepared this Remedial Investigation Report and Cleanup Plan (RIR/CP), on behalf of Bellwether District Holdings, LLC (BDH), formerly known as Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), to detail the results of a remedial investigation (RI) completed for a release in the area of the Girard Point Number 3 Separator (No. 3 Separator, the "Site"). The Site is located within the former Philadelphia Energy Solutions (PES) Refinery (the "Facility", **Figure 1**), an approximately 1,300-acre property situated in a highly developed area of Philadelphia. The refinery ceased operations in 2019 and has been undergoing demolition and redevelopment activities since 2020. The Act 2 Site location is depicted on **Figure 2**.[2] The environmental activities described in this RIR/CP were performed in accordance with the applicable provisions of Act 2, Title 25 Pennsylvania Code (25 Pa. Code) § 250, administered by the Pennsylvania Department of Environmental Protection (PADEP), to obtain the associated release of environmental cleanup liability.

Remediation activities are being conducted at the Facility under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) by both BDH and Evergreen Resources Group, LLC (Evergreen)[3] in accordance with the Consent Order and Agreement (CO&A) among Pennsylvania Department of Environmental Protection (PADEP), Sunoco, Inc. (R&M) n/k/a Sunoco (R&M), LLC, and PESRM, now BDH, dated August 14, 2012 and the 2020 First Amendment to that Agreement (2020 Amendment). In accordance with the CO&A, Sunoco/Evergreen is responsible for addressing contamination at the Facility resulting from release(s) which occurred before September 8, 2012, i.e., "Pre-Existing Contamination", and BDH is responsible for addressing contamination at the Facility resulting from release(s) which occurred after September 8, 2012, i.e., "Post-September 2012 Contamination." The Site (**Figure 2**) is located within an area of the Facility near the former Girard Point No. 3 Separator. Evergreen is currently engaged in characterization and remediation work at the Facility under the Pennsylvania One Cleanup Program under the oversight of the PADEP and the United States Environmental Protection Agency (USEPA) (eFACTS PF No. 780190). In its associated documentation, Evergreen has identified this portion of Girard Point as Area of Interest (AOI) 7 (eFACTS PF No. 750870).

On July 12, 2011, refinery personnel reported a hydrocarbon sheen on the Schuylkill River adjacent to the No. 3 Separator. The presence of the hydrocarbon sheen was reported to the United States Coast Guard National Response Center. As part of immediate response actions, absorbent booms were deployed in the river adjacent to the No. 3 Separator and the source of the observed release was investigated through the installation of monitoring wells and exploration excavations around the No. 3 Separator. Certain monitoring wells demonstrated measurable light non-aqueous phase liquid (LNAPL) on the water table in the vicinity of No. 3 Separator and exploratory excavations revealed a broken

[2] As discussed further in Section 6.1, characterization data in the area were evaluated to determine the extent of the Act 2 site boundary.

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

process sewer junction box associated with the nearby 137 Crude Unit and No. 4 Separator (i.e., Manhole #5, **Figure 2**)**.** Following the immediate response and investigation, the penetration/outfall in the sheet pile bulkhead from the sewer junction box (i.e., Manhole #5**, Figure 2**) was sealed with concrete. The junction box was also filled with concrete. A total fluids recovery system was then installed at the Site on August 23, 2012. The system included ten recovery wells (RW-801 through RW-810). LNAPL and groundwater were extracted using pneumatic submersible pumps and total fluids passed through an oil/water separator prior to discharge to the on-site process sewer. LNAPL recovered was stored in a 1,100-gallon holding tank and subsequently recycled by the refinery.

The No. 3 Separator release area was initially investigated as a part of the larger AOI 7 investigation being conducted by Evergreen. In 2013, PES (and ultimately BDH) assumed primary responsibility for the No. 3 Separator system due to newer releases suspected from the associated underground process sewer piping. The following sections detail the closure and site characterization efforts conducted by Terraphase on behalf of BDH for the regulatory closure of the No. 3 Separator release area.

An NIR was originally submitted for the Site on March 1, 2022, indicating BDH's intent to remediate groundwater and soil to the Statewide Health Standard (SHS). An updated NIR for the Site was submitted to PADEP on April 17, 2025 (eFacts PF No. 856439) which indicated that BDH had elected to instead remediate groundwater contamination at the Site to the Site-Specific Standard (SSS) for constituents of concern (COC). More specifically, their intent was to remediate LNAPL and release-related contamination (benzene) not meeting applicable MSC in the area to SSS via pathway elimination. Because the site characterization confirmed that the release occurred from the underground process sewer piping, which is below the water table, soil was determined not to be an exposure medium for this release.

A notification and a copy of the updated NIR was submitted to the City of Philadelphia and a legal notification was published in the *Philadelphia Inquirer* with service to the area. Copies of the public notification documents are included in **Appendix A**.

This RIR/CP demonstrates that sufficient physical data has been collected to:

- Characterize the sources of contamination identified in the area and the extent of regulated substances in groundwater associated with releases to the environment;
- Allow for a selection of a Standard for attainment under Act 2; and
- Determine the need for remedial action and select a remedial alternative.

The RIR/CP is organized as follows:

- Section 2 details the site setting
- Section 3 summarizes the historical investigations and release at the Site
- Section 4 discusses the RI
- Section 5 presents the selection of the standard
- Section 6 presents the Conceptual Site Model
- Section 7 presents the attainment summary

- Section 8 details the CP and chosen remedy
- Section 9 summarizes the public notifications completed in support of the RIR/CP
- Section 10 summarizes the RIR/CP
- Section 11 provides the references cited in the RIR/CP

2 Site Setting

This section presents the site setting and includes a description of the Site and its place within the Facility, its operational history, topography, geology, and hydrology. It also discusses the current and reasonably anticipated land and groundwater use at the Site and provides an overview of the institutional controls (IC) which will be established to attain the SSS via pathway elimination.

2.1 Site Description

The Facility, a former 1,300-acre refinery, is situated in a highly developed area of the City of Philadelphia, Philadelphia County, Pennsylvania (**Figure 1**). The Facility was historically developed with large tanks, buildings, pipelines, roads, and was formerly used as a petroleum refinery. The Site is approximately 0.18 acres in size and located in the northwest portion of the former Girard Point portion of the Facility, adjacent to the Schuylkill River. The Site is within the area of previous refinery operations and is more specifically referred to as the No. 3 Separator area. The No. 3 Separator area includes underground process sewer piping connected to the former 137 Crude Unit on the upstream side and a large open-air basin, referred to as the No. 4 Separator, on the downstream side. The process sewer that was the source of this release runs adjacent to but is not connected to the No. 3 Separator. The release area is referred to as the No. 3 Separator area because the area of impact is near the No. 3 Separator.

In response to the identification of LNAPL in monitoring wells installed in the area, a total fluids recovery system was installed by Evergreen on August 23, 2012. PESRM took over operation of the recovery system in 2013 to address suspected newer releases from the process sewer. It operated until it was decommissioned[4] in November 2021 due to a lack of recoverable LNAPL. A total of 30,933,578 gallons of water and 117,306 gallons of product were recovered by the system.

The Site is within the bounds of Evergreen's AOI 7, also known as Girard Point Fuels Processing Area, at the northeastern portion of Girard Point, just south of the Schuylkill River and north of former M Street (39.909722, -75.212778).

The Site is currently without above grade structures but includes a sheet pile bulkhead along the Schuylkill River, monitoring wells, recovery wells, underground process sewer piping, and a catch basin associated with the No 3 Separator. It can be accessed by workers and Facility personnel via a series of roads between the Site and Lanier Avenue (0.54 miles southeast of the Site). The Facility, which is fenced and secure, renders the Site inaccessible to individuals other than Facility personnel and

[4] While the recovery system was decommissioned its 10 recovery wells remained in place.

contractors. The Schuylkill River borders the Site to the north. Site features are depicted in detail on **Figure 2**.

2.2 Operational History

The Facility operated as a petroleum refinery between 1860 and 2019. The refinery ceased operations in 2019 and has been undergoing demolition and redevelopment since 2020. There are currently no above ground structures or piping associated with previous Facility operations in proximity to the Site.

2.3 Topography

Topography at the Facility is generally flat. Regional topography slopes gently to the west towards the Schuylkill River. The ground surface around the Site is approximately 2 ft above mean sea level,[5] though ground surface elevations vary across the Facility.

2.4 Regional Geology and Hydrogeology

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

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

The sedimentary record near the Facility consists of a complex series of water-bearing sand units which can comprise one or more hydrostatic units. Previous investigations conducted at the Facility have identified two saturated zones, including an unconfined shallow groundwater unit (occurring within the Holocene and Trenton Gravel deposits) and a deep groundwater unit known as the Farrington Sand, which is part of the Potomac-Raritan-Magothy aquifer system. The deeper groundwater unit is

[5] Philadelphia City Datum.

separated by a clay unit; as such, the deeper groundwater has been classified as a semi-confined aquifer.

2.5 Local Geology and Hydrogeology

Local geology is generally consistent with the regional geology described above. Investigations in the vicinity of the Site (AOI 7 and No. 4 Separator [approximately 550 ft to the east]) indicated the presence of anthropogenic fill[6] up to 15 ft thick. During soil sampling conducted at the adjacent No. 4 Separator area, soil beneath the fill layer generally consisted of dark gray to black gravelly and sandy clays. Soil observed during recent nearby investigations from the surface to depths ranging from 3 to 15 ft bgs were reported to consist of sandy and clayey fill material with gravel, brick, wood, glass, and coal.

Groundwater at the refinery has historically been interpreted to flow to the west and south toward the convergence of the Delaware and Schuylkill Rivers. Based on the Site Characterization, groundwater in the unconfined aquifer at the Site has been interpreted to generally flow to the southeast. Beneath the Site, the unconfined aquifer is primarily composed of saturated portions of the fill, alluvium, and the Trenton Gravel. Based on gauging data collected during the RI, groundwater at the Site is first encountered at depths ranging from 0.7 to 5.7 ft bgs.

2.6 Surface Water

The Schuylkill River near its confluence with the Delaware River is adjacent to the Site on the northern side. Unconfined aquifer groundwater flow at the Facility has historically been interpreted to flow to the south/southeast toward the convergence of the Delaware and Schuylkill Rivers. The unconfined aquifer groundwater flow in the vicinity of the Site appears to flow to the southeast.

As discussed in Section 6.2, modeling was performed to estimate impacts to surface water due to groundwater migration from the Site to the River. The calculated maximum average concentration of benzene is less than the CCC. Based on the model, groundwater migration from the Site is not impacting the River and considered the northern point of compliance.

2.7 Land and Groundwater Use

Currently, the Facility (which includes the Site) is undergoing redevelopment activities. The land is zoned for Industrial Use.[7] The Site is currently uncovered and lightly vegetated. The Site can be accessed by workers and Facility personnel via a series of roads between the Site and Lanier Avenue (0.54 miles southeast of the Site).

[6] As has been recognized by PADEP (2018), the historic use of fill in and around the Facility has resulted in the identification of certain constituents (e.g., polycyclic aromatic hydrocarbons [PAHs], lead) in soil in various locations at elevated concentrations which may not be associated with releases to the environment from Facility-related activities.

[7] https://openmaps.phila.gov/.

The area encompassing the Site (as shown in **Figure 2**) is currently being redeveloped. Because there is no current vapor intrusion exposure in the area, the vapor intrusion pathway is incomplete. Prior to their construction and occupancy, on-facility buildings which could be occupied in the future will be subject to vapor intrusion investigation and evaluation to determine if conditions (i.e., volatilization of COCs from soil, groundwater, and/or LNAPL) could pose an unacceptable risk to occupants. Vapor mitigation systems (VMS) will be incorporated into the design and construction of such buildings where potentially unacceptable vapor intrusion risks are identified.

Restrictions will also be placed on the performance of subsurface intrusive work at the Site by construction and maintenance workers should such work be performed in a manner that could result in direct contact with groundwater or LNAPL. If so, workers will be required to follow task-specific health and safety plans to prevent unacceptable exposure to COCs in groundwater or LNAPL.

Evergreen has documented that no confirmed drinking water supply wells are located within one mile of the Facility. Evergreen's efforts included several well searches, field verification, and a review of the City of Philadelphia's ordinances. In 2021, Evergreen supplemented these efforts by reviewing the City of Philadelphia's publicly available information concerning potable drinking water intakes, contacting PADEP's Safe Drinking Water Program, contacting the City of Philadelphia's Health Department, contacting the City of Philadelphia Water Department, contacting the City of Philadelphia Department of Parks and Recreation, conducting updated database searches (paGWIS and eMapPA), coordinating with the PADEP to obtain information from the New Jersey Department of Environmental Protection, and providing additional documentation concerning the ICs at the Facility which prohibit groundwater use (Evergreen 2021). Additionally, as discussed in Section 8, groundwater at the Site will be restricted such that it may not be used in the future for any purposes other than to conduct environmental investigations and/or remediation. As a result, groundwater at the Site, or on-Facility and off-Facility is not a current or reasonably anticipated future source of potable or non-potable water.

3 Prior Investigations

Prior investigations have occurred in the vicinity of the Site for AOI 7 (eFACTS PF No. 750870), and No. 4 Separator (eFACTS PF No. 874442). As described previously, Evergreen initiated investigation and remediation of the No. 3 Separator area in response to a July 12, 2011, release from the process sewer. PESRM took over operation of the remediation system in response to newer suspected releases that occurred from the sewer after September 8, 2012. These post-2012 releases from the process sewer near the No. 3 Separator are the subject of this report. The scope of this report includes an investigation of groundwater conditions. As discussed in Section 3.4, unsaturated soil is not included in the current investigation as the release(s) occurred from the underground process sewer piping below the water table. The following sections provide a summary of the initial release(s) and the initial remediation activities completed.

3.1 Initial Evidence of Release

On July 12, 2011, Evergreen observed a hydrocarbon sheen on the Schuylkill River, immediately adjacent to the Site. The presence of the sheen was reported to the National Response Center. At the time of the release, it was assumed that the sheen was associated with the former 137 Crude Unit, located to the south of the Site. Immediately following the release, interim activities to respond to the observed sheen and investigations were initiated as follows:

- Absorbent booms were placed in the Schuylkill River adjacent to the No. 3 Separator;
- Exploratory excavations were performed in the vicinity of an adjacent process sewer junction box to inspect integrity;
- The junction box and the associated outfall location were filled with concrete to prevent further release to the river; and
- 21 monitoring wells were installed around the footprint of No. 3 Separator to investigate subsurface conditions.

Following their installation, wells were periodically monitored for the presence of LNAPL. Gauging data was collected as a part of semi-annual monitoring reports prepared by Evergreen. Gauging data was used to determine if additional efforts were needed to address the July 12, 2011, release. The gauging data is provided in **Appendix B**.

On August 23, 2012, Evergreen installed a total fluids recovery system at the Site. The system included ten recovery wells (RW-801 through RW-810) and used pneumatic submersible pumps to recover LNAPL and groundwater in the area. Total fluids removed were first passed through an oil water separator where the recovered oil was stored in a 1,100-gallon aboveground storage tank (AST). The recovered water was discharged to the process sewer and treated in the Facility's wastewater treatment plant. Once the LNAPL holding tank was full, its contents were recycled by the Facility. The recovery system operated from August 2012 to November 2021. PESRM took over operation of the recovery system from Evergreen in 2013 after additional LNAPL was found to be impacting the area. A total of 30,933,578 gallons of water and 117,306 gallons of product were recovered by the system. Due to diminishing recovery, PESRM shut down the system in November 2021.

Periodic gauging of wells at the Site continued following the shutdown of the recovery system and as needed, manual removal of measured LNAPL was performed. The Site and relevant infrastructure are shown on **Figure 2**.

3.2 Prior LNAPL Investigation and Remediation (Evergreen)

As noted in Section 3.1, Evergreen installed monitoring wells in 2011 following the identification of the release associated with the Site. Evergreen's gauging of wells in the area showed LNAPL thickness ranging from a sheen (<0.1 ft) to 5.4 ft. The approximate extent of LNAPL identified in the area at this time is shown in **Figure 3A**.

Evergreen collected additional LNAPL samples in 2012. LNAPL was sampled from the following wells: C-65, C-107, C-143, C-147, C-148, C-150, C-151, C-152, C-153, C-154, C-161, C-162, C-166, C-167, and C-

168. These samples were submitted to Torkelson for characterization. Based on Torkelson's assessment, four different types of LNAPL were identified including residual oil, lube oil, middle distillate, and light crude oil. A figure detailing the location and extent of each LNAPL type is provided on Figure 10 of the AOI 7 RIR (Langan 2012). A copy of this figure is included in **Appendix B**.

Following investigation efforts in 2012, Evergreen installed the total fluids recovery system on August 23, 2012.

3.3 LNAPL Monitoring and Remediation Conducted by PESRM

PESRM took over operation of the recovery system in 2013 to address suspected newer releases from the sewer system that occurred after September 8, 2012. PESRM operated the recovery system until November 2021. After the system shutdown, PESRM monitored wells in the vicinity of Site for measurable LNAPL. Gauging was performed in 2021 indicating the approximate aerial extent of LNAPL in the area at the time of the system shutdown and decommissioning (see **Figure 3C**).

LNAPL identified at the Site after September 8, 2012, was investigated as a part of this RI. The RI activities are further described in Section 4.3.

4 Remedial Investigation

In 2025, an RI was performed to investigate the current nature and extent of COCs in groundwater (and LNAPL) at the Site as a result subsequent of releases that occurred after September 8, 2012. The following sections describe the additional work conducted as part of this RI. The RI included:

1. Activities performed during the abandonment of the process sewer piping associated with No. 3 Separator including video inspection, dye testing, and limited exploratory excavations, which provide additional information on the conditions of the sewer and mechanisms of potential release to the environment;
2. Groundwater sampling and analysis from the permanent monitoring well network in the area;
3. Gauging of current LNAPL thickness in the permanent monitoring well network in the area; and
4. Sampling and analysis to determine current LNAPL mobility and recoverability.

4.1 Process Sewer Abandonment

In January 2025, James D. Morrissey, Inc. (JDM), initiated the abandonment of the underground process sewer piping adjacent to the No. 3 Separator. Based on prior reporting and details surrounding the suspected releases that occurred after September 8, 2012, it was determined that the underground process sewer piping adjacent to the No. 3 Separator was the source of the specific release which resulted in the identification of sheen on the River. The process sewer piping extending from Manhole #1 to Manhole #5 (**Figure 2**) was abandoned in-place between January 27 and February 26, 2025.

Prior to implementing the abandonment, JDM conducted a dye test to better understand the underground layout and connections between manholes. Dye was introduced at the most upgradient access point (i.e., Manhole #1; **Figure 2**), while a pump was introduced at the downgradient end (i.e., Manhole #6; **Figure 2**) to evaluate system flow. The dye test and pumping revealed that water was unable to travel beyond Manhole #3 and indicated sediment accumulation or blockages within the sewer system. As such, a contractor was retained by BDH to jet clean, and video inspect the integrity of the process sewer prior to abandonment.

From February 10 to February 17, 2025, Mobile Dredge and Video Piping, Inc. (MDVP) cleaned and video inspected the entire process sewer network in the area. Material removed from the sewer was stored within a holding tank or within a 4,000-gallon vacuum tank operated by Environmental Maintenance Co. (EMC). Material removed during cleaning was transferred to a temporary containment area at the Facility for future processing and/or removal. More than 100,000-gallons of material including liquid, sediment, and sludge was removed during cleaning. Once cleaned a video inspection was performed which confirmed that the sewer piping was in good condition without holes or major integrity issues. During the inspection it was also determined that the concrete previously added to junction box at Manhole #5, following the initial release identification, remained intact. This eliminated the need to close the sewer piping beyond Manhole #5. MDVP's deliverables, including the sewer piping integrity assessments, are included in **Appendix C**.

Once the sewer piping was confirmed to be clean and in good condition, JDM introduced flowable concrete fill to abandon the sewer in-place. On February 25 and 26, 2025, flowable fill was pumped into Manholes #1, #2, and #3. To confirm proper flowable fill placement, ensuring no voids or bridging, multiple locations were monitored including certain areas where test pits were installed to open longer sections of pipe between Manholes #3 and #5. In total, approximately 65 cubic yards (cy) of flowable fill were placed into the sewer system. JDM returned to the Site later to abandon the process sewer in-place from Manhole #5 to #6 (**Figure 2**) despite this portion of the process sewer piping determined to no longer be associated with the potential contamination.

4.2 Groundwater Investigation

Following the abandonment of the process sewer piping, the existing monitoring wells at the Site were gauged and sampled. The monitoring wells gauged and sampled are shown in **Figure 4**. Monitoring well construction logs are provided in **Appendix D**.[8] In accordance with 25 Pa. Code § 250.204(e), two rounds of groundwater sampling were performed in March and April 2025 - separated by 30 days.

[8] Records for the complete list of monitoring wells within the No. 3 Separator Area were not available in previous reports or documentation. As a result, construction information for the following wells could not be obtained and is therefore not included in this report: C-107. C-150, C-151, C-152, C-153, C-154. C-155, C-162, C-166, C-167, C-168, RW-801, RW-802, RW-803, RW-805, RW-806, RW-807, RW-808, RW-809, and RW-810.

4.2.1 Groundwater Flow Direction

Groundwater was encountered at depths ranging from 1.5 to 8.3 feet bgs. The unconfined aquifer groundwater flow in the vicinity of the Site appears to flow to the southeast. Measurable LNAPL was identified in two wells during the 2025 sampling events:

- C-152 – 0.59 ft (March 2025) and 0.19 ft (April 2025)
- C-161 – 0.4 ft (March 2025) and 0.03 ft (April 2025)

The groundwater elevations in these wells were corrected for each event to reflect an assumed density (0.8 g/cm^3) and measurable thickness. The depth-to-groundwater measurements and corresponding groundwater elevation data are provided in **Table 1**.

4.2.2 Groundwater Sampling

On March 13 through 15, 2025, and April 14 and 15, 2025, groundwater samples were collected from the following on-site monitoring wells: C-64, C-65, C-97, C-142, C-146, C-148, C-150, C-152, C-153, C-155, C-161, C-166, and C-169. The locations of these wells are shown on **Figure 4**.

The monitoring wells were sampled using a Geotech bladder pump and Teflon-lined tubing, following the low-flow sampling techniques outlined in the *Land Recycling Program Technical Guidance Manual* (PADEP 2021). Purging continued until indicator parameters (i.e., water temperature, pH, conductivity, turbidity, and oxygen reductive potential) stabilized. Indicator parameters were collected using a properly calibrated Horiba U-52 water quality meter equipped with a flow through cell.

Due to the presence of LNAPL in monitoring wells C-152 and C-161, a modified sampling technique was used to sample the groundwater below the LNAPL layer to facilitate estimation of the dissolved phase groundwater concentrations. After gauging each well to determine the depth to product and depth to water, a 2-inch PVC pipe was inserted 2 feet below the bottom of the measured LNAPL layer. A removable cap was placed on the bottom of the PVC pipe to prevent water or product from contacting the inner diameter of the PVC pipe while entering the well. Once the PVC pipe reached the target depth, the cap was removed from the bottom of the PVC pipe to allow groundwater below the LNAPL to flow into the PVC pipe. Depth to LNAPL and depth to water were then measured inside the PVC pipe to confirm that LNAPL did not flow into the PVC pipe. Tubing was inserted into the PVC pipe and extended two feet below its bottom end. The well was sampled using low-flow procedures using a peristaltic pump at the lowest sustainable flow rate at 200 mL/min. Samples were collected via the peristaltic pump and a bailer once stabilization was reached. Dedicated tubing and PVC piping was used for each well – both of which were disposed of following the sampling. Copies of the field sampling sheets summarizing groundwater parameters are included in **Appendix E**.

Laboratory analytical services were provided by SGS North America Inc. of Dayton, NJ, a PADEP-certified laboratory (PADEP Lab ID 68-00408). Samples were analyzed for PADEP's Short List of Petroleum Products inventory (Table III-5 of the *Land Recycling Program Technical Guidance Manual* [PADEP 2021]). Analytes included a combination of the following short lists via USEPA Method 8260D and 8011 volatile organic compound (VOC), USEPA Method 8270E selected ion monitoring (SIM) semi volatile organic compounds (SVOCs), and USEPA Method 6020B dissolved lead:

- **Short List 1**. *Leaded Gasoline, Aviation Gasoline and Jet Fuel*: benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene (124TMB), 1,3,5-trimethylbenzene (135TMB), 1,2-dichloroethane (12DCA), 1,2-dibromoethane (EDB), and lead.
- **Short List 2**. *Unleaded Gasoline*: benzene, toluene, ethyl benzene, xylenes (total), cumene, MTBE, naphthalene, 124TMB, and 135TMB.
- **Short List 3**. *Kerosene, Fuel Oil No. 1*: benzene, toluene, MTBE, naphthalene, 124TMB, and 135TMB.
- **Short List 4**. *Diesel Fuel and Fuel Oil No. 2*: benzene, toluene, ethyl benzene, cumene, MTBE, naphthalene, 124TMB, and 135TMB.
- **Short List 5**. *Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids*: benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(g,h,i) perylene.

Groundwater samples were placed directly into the laboratory provided glassware and stored on ice in a cooler under an appropriate chain of custody protocol. Samples submitted to the laboratory for dissolved lead analysis were filtered in the field using a 0.45-micron (µm) filter. Laboratory analytical reports are included in **Appendix F**.

4.2.3 Groundwater Analytical Results

Except for two monitoring wells, the March 2025 and April 2025 groundwater analytical results did not identify any of the targeted constituents at concentrations greater than the Non-Residential (Non-Res) Groundwater Used Aquifer Medium-Specific Concentrations (MSCs) (Total Dissolved Solids [TDS] ≤ 2500) or Non-Res Groundwater Vapor Intrusion Screening Values. Benzene was detected in groundwater at C-148 and C-150 at concentrations greater than the Non-Res Used Aquifer MSC.

Analytical results associated with groundwater sampling performed at the Site are summarized in **Table 2**. This table provides information regarding the detection frequency, range of chemical concentrations detected in groundwater, and provides a comparison of the maximum detected concentrations in groundwater at the Site to applicable MSCs. **Table 2** reflects groundwater analytical results from sampling performed during this RI.

Figure 5 presents the spatial distribution of concentrations in groundwater greater than the applicable MSCs. As shown, the horizontal and vertical extent of COC concentrations greater than the applicable MSCs has been delineated.

As described in Section 5, BDH has elected to remediate the Site to the SSS via pathway elimination.

4.3 LNAPL Source Characterization

Measurable LNAPL was identified in two monitoring wells at the Site:

- C-152 – 0.59 ft (March 2025) and 0.19 ft (April 2025)
- C-161 – 0.4 ft (March 2025) and 0.03 ft (April 2025)

To further evaluate the LNAPL identified in these two wells, a baildown test was performed to estimate LNAPL transmissivity. In accordance with the API (2009) *LNAPL Transmissivity Guidance* and the ASTM (2021) *Standard Guide for Estimation of LNAPL Transmissivity*, the test involves rapidly removing LNAPL from a well and then monitoring the recovery of the LNAPL level in the well over time. On March 13, 2025, Terraphase performed a baildown test in accordance with this procedure and each well was tested individually to ensure accurate and timely data collection. Measurements collected during the test were used to estimate transmissivity via the Bouwer & Rice Method. The estimated LNAPL transmissivity in each well was as follows:

- C-152 = 0.03 ft^2/d (± 0.01 ft^2/d)
- C-161 = 0.05 ft^2/d (± 0.01 ft^2/d)

These transmissivity values are less than 0.1 ft^2/day, the value used by PADEP (2021) to determine whether hydraulic recovery of LNAPL is feasible and whether LNAPL mobility is possible. These observations and results demonstrate that LNAPL in the area is residual, and no longer mobile or recoverable. The low transmissivity values are characteristic of the LNAPL and site-specific subsurface conditions and are not dependent on the presence of any controls such as the adjacent sheet pile bulkhead.

A copy of the API LNAPL Transmissivity Workbook for each well is provided in **Appendix G**.

4.4 Data Quality Assurance, Quality Control, and Usability

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

4.4.1 General Quality Control Checks

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

4.4.2 Quality Assurance/Quality Control Samples

During field activities, approximately one trip blank sample per shipment and one field blank per day was submitted to the analytical laboratory to evaluate potential cross-contamination during sample container shipment and storage. Results of the quality assurance and quality control sample analyses

are provided in **Appendix H**. VOC, SVOC, or lead were not detected in blank samples at concentrations greater than the laboratory reporting limits. As such, there is no concern associated with laboratory cross-contamination and/or sampling-related cross-contamination related to the samples collected from the Site.

Approximately one field duplicate sample per every 20 groundwater samples was also collected to evaluate the variance in the sampling/analysis. Relative percent differences (RPD) for duplicate pairs were calculated. The average RPD was 13.4 percent. An RPD less than or equal to 20 percent for aqueous samples is typically considered acceptable precision.

4.4.3 Analytical Limits Evaluation

For non-detect chemical sample results, laboratory reporting limits (RLs) were compared to the MSC to determine the degree to which possible elevated RL could impact the site characterization. No chemicals were detected in groundwater and exhibited maximum RL greater than their respective MSC.

5 Selection of Standard

BDH has selected to achieve the Site-Specific Standard (in accordance with 25 Pa. Code § 250.2) to attain liability protection under Act 2 for contamination associated with the release. For COCs found in groundwater (including LNAPL), attainment of the SSS will be demonstrated via pathway elimination in accordance with 25 Pa. Code § 250.404 and LNAPL will be recovered to the MEP in accordance with 25 Pa. Code § 250.408 and Section III of the PADEP Technical Guidance Manual.

6 Conceptual Site Model

The following sections detail the Conceptual Site Model (CSM) for the Site.

6.1 Defining the Act 2 Site Boundary

The site boundary is defined by the footprint of the process sewer piping associated with No. 3 Separator that was associated with the release, the location of viable permanent monitoring wells in proximity to the No. 3 Separator, and the Schuylkill River.

The process sewer piping associated this release was connected to the former 137 Crude Process Unit, approximately 475 feet southwest of the Site, and the No. 4 Separator approximately 550 feet east of the No. 3 Separator, The footprint of the sewer indicates that it extended underground from piping at Manhole #1 (**Figure 2**)**,** continued north to Manhole #3 near the Schuylkill River, and then ran east along the steel bulkhead. The sewer connected to the process sewer junction box at Manhole #5 (**Figure 2**) before discharging into the eastern No. 4 Separator.

In January 2025, monitoring wells were inspected to determine their suitability for groundwater sampling during the RI. A subset of the existing monitoring wells was determined to be intact and in good condition. Site characterization sampling conducted in March and April 2025 used these wells and the results of the sampling and analysis define the horizontal extent of contamination that is associated with the release – specifically, benzene which was detected in two wells, C-148 and C-150, at concentrations greater than applicable MSCs. These two wells are location to the east of Manhole #5 adjacent to the sheet pile bulkhead to the north. In addition, LNAPL was detected in two wells, C-161 and C-152. Although groundwater in these wells was found not to have dissolved phase concentrations greater than applicable MSCs they are included in defining the site boundary given the presence of LNAPL.

Finally, the Schuylkill River, monitoring well C-146 to the east, monitoring well C-97 and C-152 to the south, and monitoring well C-169 to the west have been used to define the site boundary.

6.2 Fate and Transport Analysis

As presented in Section 4.2.3, based upon the results of site characterization groundwater sampling, a release to the environment has resulted in one site-related COC (i.e., benzene) in groundwater at concentrations greater than applicable MSCs.

On January 2, 2025, Stantec submitted to PADEP, on behalf of Philadelphia Refinery Operations, a Sitewide Fate and Transport (F&T) Remedial Investigation Report (RIR).[9] The report discussed the fate and transport of various COCs found in groundwater at the Facility. This report was approved by the PADEP on April 2, 2025. Stantec's (2025) F&T RIR evaluated the fate and transport of petroleum related compounds in groundwater at the Facility (including benzene). The modeling performed demonstrated that benzene concentrations in groundwater and the aerial extent of those concentrations will continue to decline at the Facility over time. In addition, it included groundwater-to-surface water fate and transport modeling to estimate possible impacts to the Schuylkill River. The results of this modeling demonstrated that groundwater migration to surface water will not result in adverse surface water quality in the River. A copy of the models and associated figures prepared by Stantec (2025) are provided in **Appendix B**.

Because the modeling performed by Stantec was for the broader Facility and was not calibrated specifically to localized area associated with the No. 3 separator release, additional modeling was performed to evaluate the fate and transport of contamination associated with this release. In accordance with 25 Pa. Code § 250.309 and 250.406, modeling was performed to estimate impacts to surface water due to groundwater migration from the Site to the River absent any specific controls.[10] The maximum average concentration of benzene was calculated using PADEP's spreadsheet model, SWLOAD5B.[11] **Table 3** provides the inputs used and their bases. The result was compared to the CCC of

[9] Stantec Consulting Services Inc. (2025). *Volume 2: Sitewide Fate and Transport Remedial Investigation Report*.

[10] The inputs used are not dependent on the presence of engineering controls such as the sheet pile bulkhead along the River.

[11] SWLoad5B.xls

71 ug/L for benzene established under Chapter 93 (Water Quality Standards). This value was used as the edge criterion because the segment of the River at the Site is tidal and not designated under Chapter 93 as a Potable Water Supply (PWS). This segment of the River is designated under 25 Pa. Code § 93.9f for protective use for Warm Water Fishes (WWF) and for migratory fishes (MF). The highest modeled benzene concentration (63 ug/L) is less than the CCC. As a result, more detailed analysis using PADEP's Toxics Management Spreadsheet (TMS) is not warranted. The results of this modeling demonstrated that groundwater migration to surface water will not result in adverse surface water quality in the River.

A copy of the SWLOAD5B spreadsheet calculation is provided in **Appendix I**.

6.3 LNAPL Conceptual Site Model

Prior to the release in July 2011, LNAPL in the larger area of AOI 7 was identified and included in investigation activities being performed by Evergreen. The LNAPL within the larger area of AOI 7 is considered Pre-Existing Contamination. Following the release in July 2011, additional monitoring wells were installed and measurable LNAPL was found in several wells including C-65, C-107, C-143, C-147, C-148, C-150, C-151, C-152, C-153, C-154, C-161, C-162, C-166, C-167, and C-168. Figure 10 from the Langan (2012) RIR shows the distribution of LNAPL at these wells. A copy of this Figure is provided in **Appendix B**.

The estimated extent of LNAPL following the release in July 2011, which is also considered Pre-Existing Contamination, is shown on **Figure 3A**. As a result of remedial activities performed since 2011, including the installation and operation of a total fluids recovery system and in-place sewer abandonment, the extent of measurable LNAPL in the area has declined significantly. **Figure 3B** shows the aerial extent of LNAPL following the shutdown of the recovery system in November 2021. **Figure 3C** shows the aerial extent of LNAPL after September 8, 2012, when PESRM took over operation of the remediation system in response to newer suspected releases. Finally, **Figure 3D** shows the current aerial extent of LNAPL at the Site. Also, transmissivity testing performed in 2025 demonstrates that the LNAPL is no longer mobile or recoverable in the area. The low transmissivity values are characteristic of the LNAPL and site-specific subsurface conditions. It is not dependent on the presence of engineering controls such as the sheet pile bulkhead along the River. In accordance with PADEP's (2021) *Land Recycling Program Technical Guidance*, LNAPL has been remediated to the MEP.

6.4 Scenarios for Potential Human Exposure

Per the requirements specified in 25 Pa. Code § 250.603, this section identifies potentially exposed populations (receptors) and describes the exposure pathways for each receptor to site-related COCs. As documented in this Report, the extent of release-related contamination is limited to benzene in groundwater and to the presence of LNAPL in a small area which has been remediated to the MEP. As a result, the scenarios for potential human exposure are limited to potential exposure to benzene in groundwater, to COC in LNAPL and vapor.

As discussed in Section 8, BDH plans to manage exposures to groundwater contamination (including LNAPL) via pathway elimination. This will include the establishment of ICs, eliminating any potential for future groundwater use at the Site, as a potable water source. Potential exposure via vapor intrusion is

also not a current or reasonably anticipated future exposure pathway as BDH plans to establish an IC to investigate, evaluate, and eliminate (as needed via VMS) potentially unacceptable vapor intrusion exposures.

6.5 Ecological Exposures/Ecological Screening Evaluation

The following describes the ecological screening evaluation that was performed for the Site. This evaluation was conducted following USEPA ecological risk assessment guidance as specified in 25 Pa. § 250.402(d). The regulatory framework for conducting an ecological screening evaluation under the SSS is outlined in Section III.I and summarized in the Ecological Screening Flow Chart provided on Figure III-11 of PADEP's *Land Recycling Program Technical Guidance Manual* (PADEP 2021). Under the SSS, PADEP generally follows the USEPA's (1997) *Ecological Risk Assessment Guidance for Superfund*. The USEPA ecological risk assessment process is comprised of eight steps.

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

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

As indicated on Figure III-11 of the *Land Recycling Program Technical Guidance Manual* (PADEP 2021), after completion of the Initial Screen (Steps 1 and 2), the qualified investigator decides whether there exists substantial risk of ecological harm to species or habitats of concern. If not, then no further ecological evaluation would be warranted.

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

- A search of PADEP's Pennsylvania Natural Diversity Inventory (PNDI) database;
- Review of United States Fish & Wildlife Service National Wetlands Inventory Wetlands Mapper;[12] and
- Site reconnaissance.

In accordance with 25 Pa. Code § 250.311(a), a PNDI search was performed which included a conservative study area consisting of the Site and areas within a 2,500-ft radius of the Site. The results of the PNDI search indicated no known impacts by the PA Game Commission, and the U.S. Fish and Wildlife Service. The PNDI search did identify potential impacts by the PA Fish and Boat Commission and the PA Department of Conservation and Natural Resources, due to the potential presence of threatened and endangered species and/or special concern species. The results of the PNDI search for the study area indicated that further review by the PA Fish and Boat Commission and the PA Department of

[12] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

Conservation and Natural Resources was warranted. Accordingly, Terraphase submitted a request for further review by both agencies. Based on further review by the PA Fish and Boat Commission and the PA Department of Conservation and Natural Resources, no potential impacts to species or habitats of concern were identified within the study area.

The results of the PNDI searches and subsequent correspondence with the PA Fish and Boat Commission are provided in **Appendix J**.

Terraphase has also conducted a review of the available United States Fish & Wildlife Service National Wetlands Inventory Wetlands Mapper[13] data in and adjacent to the Site. The Schuylkill River was identified as a Riverine habitat adjoining the Site to the north. A riverine habitat is classified as a R1UBV: riverine tidal (R1), unconsolidated bottom (UB), permanently flooded-tidal (V). The riverine classification (R) encompasses freshwater wetlands and deepwater habitats within channels. The tidal classification (1) represents the portion of the riverine influenced by tides, where the riverine bottom is mainly mud with some sand and slow water velocity. The unconsolidated bottom (UB) classification defines areas at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%. The permanently flooded-tidal classification indicates constant freshwater covers the area throughout the year. A copy of the Wetlands Inventory Wetlands Mapper[14] figure is included in **Appendix J**.

Following Step 1 of the Initial Screen, it was determined that no species or habitats of concern are present at the Site. The completion of Step 2 and any subsequent steps in the ecological risk assessment process are not warranted.

7 Attainment Summary

BDH has elected to remediate the Site to the SSS, via pathway elimination, for COC not meeting applicable MSC. As presented in the CP (Section 8), current and reasonably anticipated future exposure pathways to release-related groundwater contamination not meeting MSC, will be managed via pathway elimination as follows:

- Groundwater contaminated with the release-related COC (benzene) shall be restricted via ICs such that it may not be used for any purposes other than to conduct environmental investigations and/or remediation.
- Prior to their construction and occupancy, on-facility buildings which could be occupied in the future will be subject to vapor intrusion investigation and evaluation to determine if conditions could pose an unacceptable risk to occupants. VMS will be incorporated into the design and construction of such buildings where potentially unacceptable vapor intrusion risks are identified. Given this restriction, the vapor intrusion exposure pathway is eliminated and no additional ICs or engineering controls (EC) will be needed to maintain attainment of the SSS.

[13] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

[14] https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

- Restrictions will be placed on the performance of subsurface intrusive work. Construction and maintenance workers performing subsurface work at the Facility in a manner that could result in direct contact with groundwater or LNAPL will be required to follow task-specific health and safety plans to prevent unacceptable exposure to COCs in groundwater or LNAPL.

Because all current and reasonably anticipated future exposure pathways to release-related contamination are being eliminated via the establishment of ICs at the Site, a quantitative risk assessment is unnecessary (PADEP 2021).

As presented in the CP (Section 8), the selected remedy for the Site includes the implementation of an IC in the form of an environmental covenant. The environmental covenant will serve to eliminate current and future exposure pathways by restricting land use and activities that could result in exposure to release-related groundwater contamination. BDH will document attainment of the SSS via pathway elimination in a Final Report. The Final Report will include a pathway elimination analysis as required by 25 Pa. Code § 250.702(b)(3)(i) and a Post-Remediation Care Plan (PRCP). The PRCP will outline the inspection, maintenance, and reporting obligations required to ensure that the IC continues to maintain attainment of the SSS in the future. Within 30 days of the approval of the Final Report, the environmental covenant will be submitted to the PADEP. Once submitted, the environmental covenant will follow the procedures outlined by The Uniform Environmental Covenants Act (UECA).

BDH has demonstrated attainment of the SSS (via pathway elimination). The following constituents in groundwater attain the SSS (via pathway elimination):

Volatile Organic Compounds	Semi-Volatile Organic Compounds
• Benzene	• Anthracene
• Cumene	• BaA
• Ethyl Benzene	• BaP
• 124-TMB	• BbF
• 135-TMB	• BghiP
• Toluene	• Chrysene
• Xylenes (total)	• Fluorene
	• Naphthalene
	• Phenanthrene
	• Pyrene

In accordance with 25 Pa. Code § 250.410, a CP has been developed for the Site. This section discusses the proposed CP for the Site which will address the presence of COC in groundwater at concentrations greater than applicable MSC under the SSS via pathway elimination. Pathway elimination will be achieved using ICs.

7.1 Institutional Controls

As part of redevelopment activities, BDH will establish an IC in the form of an environmental covenant for the Site. The specific land and groundwater use restrictions are provided in Section 2.7.

7.2 Selected Remedy

An environmental covenant will serve as the IC for the Site in accordance with 25 Pa. Code § 250. The IC will be used to eliminate the potential for exposure to LNAPL and benzene in groundwater. The implementation of the IC support the intended future land use, while minimizing risks to receptors.

Based on the nature of the chosen remedy, a PRCP will be required to ensure that IC remains protective of human health and the environment in the future. It will also ensure that the attainment of the SSS is maintained.

The environmental covenant will be written in accordance with the *Pennsylvania Uniform Environmental Covenant Act.* A Final Report and PRCP in accordance with 25 Pa. Code § 250.204(g) will be prepared for the Site and submitted to the PADEP. Within 30 days of the approval of the Final Report, the environmental covenant will be submitted to the PADEP. Once submitted the environmental covenant will follow the procedures outlined by the UECA.

8 Cleanup Plan

In accordance with 25 Pa. Code § 250.410, a CP has been developed for the Site. This section discusses the proposed CP for the Site which will address the presence of vapor intrusion, LNAPL and COCs in groundwater at concentrations greater than applicable MSCs under the SSS via pathway elimination. Pathway elimination will be achieved through the establishment of an IC.

Land and groundwater use restrictions will be established for the Site in an environmental covenant. The environmental covenant will result in the following land and groundwater use restrictions:

- Groundwater at the Facility shall be restricted such that it may not be used for any purposes other than to conduct environmental investigations and/or remediation.
- Restrictions will be placed on the performance of subsurface intrusive work. Construction or maintenance workers performing subsurface work at the Facility in a manner that could result in direct contact with groundwater or LNAPL will be required to follow task-specific health and safety plans to prevent unacceptable exposure to COCs in groundwater or LNAPL.

These land and groundwater use restrictions at the Site will result in pathway elimination of potential unacceptable human exposures to COCs in groundwater and LNAPL at the Site.

Prior to their construction and occupancy, on-facility buildings which could be occupied in the future will be subject to vapor intrusion investigation and evaluation to determine if conditions (i.e., volatilization of COCs from soil, groundwater, and/or LNAPL) could pose an unacceptable risk to occupants. VMS will

be incorporated into the design and construction of such buildings where potentially unacceptable vapor intrusion risks are identified.

9 Public Notifications

An NIR was originally submitted for the Site on March 1, 2022, indicating BDH's intent to remediate groundwater and soil to the non-residential Statewide Health Standards. An updated NIR was submitted to PADEP on April 17, 2025 (eFACTS PF No. 856439). A copy of the NIR was sent to the local municipality (City of Philadelphia) and a legal notification was published in *The Philadelphia Inquirer* with service to the area. The updated NIR indicated that BDH intended to remediate groundwater and LNAPL at the Site to attain the SSS, via pathway elimination.

In addition, notification of this RIR/CP submittal to PADEP was sent to the City of Philadelphia and a legal notification regarding this submittal was published in the *Philadelphia Inquirer* with service to the area. Copies of the NIR and notification documents are included in **Appendix A**.

Act 2 affords the municipality of any site being remediated to the SSS the opportunity to request a Public Involvement Plan.

10 Summary and Conclusions

Terraphase prepared this RIR/CP on behalf of BDH to document the investigation and remediation of a July 2011 hydrocarbon release and subsequent releases in the area of the Girard Point No. 3 Separator at the former PES Refinery. Initial response actions were conducted by Evergreen in 2011 and 2012, when PESRM took over operation of the remediation system in 2013 in response to newer suspected releases that occurred from the sewer after September 8, 2012. PESRM operated the recovery system from 2012 to 2021. Also, in 2025, the remaining process sewer piping was closed in-place and site characterization confirmed the presence of benzene in groundwater above applicable Non-Residential MSCs and measurable LNAPL, which has been remediated to MEP, over a very limited area.

A revised NIR for the Site was submitted to PADEP on April 17, 2025 (eFacts PF No. 856439).

The extent of contamination has been delineated, and BDH has elected to remediate groundwater to the SSS via pathway elimination. IC will restrict groundwater use and land use to commercial/industrial purposes. Prior to their construction and occupancy, on-facility buildings which could be occupied in the future will be subject to vapor intrusion investigation and evaluation to determine if conditions (i.e., volatilization of COCs from soil, groundwater, and/or LNAPL) could pose an unacceptable risk to occupants. VMS will be incorporated into the design and construction of such buildings where potentially unacceptable vapor intrusion risks are identified.

Because all current and reasonably anticipated future exposure pathways to release-related contamination are being eliminated via the establishment of ICs at the Site, a quantitative risk assessment is unnecessary (PADEP 2021).

As presented in the CP (Section 8), the selected remedy for the Site includes the implementation of an IC in the form of an environmental covenant. The environmental covenant will serve to eliminate current and future exposure pathways by restricting land use and activities that could result in exposure to release-related groundwater contamination. BDH will document attainment of the SSS via pathway elimination in a Final Report. The Final Report will include a pathway elimination analysis as required by 25 Pa. Code § 250.702(b)(3)(i) and a PRCP in accordance with 25 Pa. Code § 250.204(g). The PRCP will outline the inspection, maintenance, and reporting obligations required to ensure that the IC continues to maintain attainment of the SSS in the future. Within 30 days of the approval of the Final Report, the environmental covenant will be submitted to the PADEP. Once submitted the environmental covenant will follow the procedures outlined by the UECA.

11 References

American Society for Testing and Materials (ASTM*).* Reapproved 2021.*Standard Guide for Estimation of LNAPL Transmissivity, Designation: E2856 – 13.* April 1.

Dames & Moore. 1990. *RCRA Facility Investigation Work Plan – Chevron Refinery.* April 16.

GHD. 2017. *Remedial Investigation Report AOI-7*. June 9.

HRP Philadelphia Holdings, LLC (HRP). 2020. *Soil Management Plan.* June 15.

Interstate Technology and Regulatory Council (ITRC). 2009. *Light Non-Aqueous Phase Liquid Site Management : LCSM Evolution, Decision Process, and Remedial Technologies* (LNAPL-3).

Langan. 2004. *Current Conditions Report and Comprehensive Remedial Plan – Sunoco, Inc., Philadelphia Refinery and Belmont Terminal.* June 30.

Langan Engineering & Environmental Services, Inc. 2010. *Site Characterization Report/Remedial Investigation Report Area of Interest 7*. September 28.

____. 2011*. Site Characterization Report/Remedial Investigation Report Area of Interest 7*. February 29.

____. 2012*. Site Characterization Report/Remedial Investigation Report Area of Interest 7 Response to Comments*. July 17.

____. 2013*. Addendum to Site Characterization Report/Remedial Investigation Report Area of Interest 7.* September 19.

Stantec Consulting Services, Inc. 2024. *Former PES Refinery Oil/Water Separator #3 – Act 2 Closure Strategy.* July 31.

Stantec Consulting Services, Inc. 2025. *Volume 2: Sitewide Fate and Transport Remedial Investigation Report.* January 2.

Pennsylvania Department of Environmental Protection (PADEP). 2021. *Land Recycling Program Technical Guidance Manual*. March 27.

Terraphase Engineering Inc. (Terraphase). 2022b. *Soil Management Plan Addendum No. 2 – Industrial Phase IA Area*. August. Amended February 2023.

____. 2022c. *Soil Management Plan Addendum No. 3 – Industrial Phase IB Area*. December.

United States Environmental Protection Agency (USEPA). 1997. *Ecological Risk Assessment Guidance for Superfund*. June.

Weaver Consultants Group (Weaver Consultants). 2020. *Technical Memorandum - PES Remedial Obligations.* May 28.

Tables

1 Gauging Summary

2 Summary of Groundwater Analytical Results

3 Groundwater to Surface Water Discharge Modeling

Table 1
Gauging Summary
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Dataset	Location ID	TOIC (ft AMSL)	Depth to Botom of Well (ft below TOIC)	Date	PID	Depth to Product (ft below TOIC)	Depth to Water (ft below TOIC)	LNAPL Density	Depth to Water (Corrected) (ft below TOIC)	Groundwater Elevation (ft AMSL)	Total LNAPL Thickness (ft)
Evergreen	C-127	9.80	16.65	3/10/2025	0.0		7.35		7.35	2.45	--
Evergreen	C-127	9.80	16.65	4/14/2025	0.0		5.65		5.65	4.15	--
Evergreen	C-142	11.35	16.19	3/10/2025	0.0		8.23		8.23	3.12	--
Evergreen	C-142	11.35	16.19	4/14/2025	0.0		4.72		4.72	6.63	--
Evergreen	C-146	6.74	12.89	3/10/2025	0.0		3.26		3.26	3.48	--
Evergreen	C-146	6.74	12.89	4/14/2025	0.0		1.50		1.50	5.24	--
Evergreen	C-148	9.34	20.10	3/10/2025	0.0		5.23		5.23	4.11	--
Evergreen	C-148	9.34	20.10	4/14/2025	0.0		4.06		4.06	5.28	--
Evergreen	C-150	8.19	24.50	3/10/2025	8.9		4.35		4.35	3.84	--
Evergreen	C-150	8.19	24.50	4/14/2025	0.3		3.02		3.02	5.17	--
Evergreen	C-152	9.38	22.51	3/10/2025	59.0	3.74	4.33	0.800	3.86	5.52	0.59
Evergreen	C-152	9.38	22.51	4/14/2025	203.0	2.14	2.33	0.800	2.18	7.20	0.19
Evergreen	C-153	8.27	20.00	3/10/2025	0.0		5.00		5.00	3.27	--
Evergreen	C-153	8.27	20.00	4/14/2025	0.0		3.24		3.24	5.03	--
Evergreen	C-154	7.89	21.71	3/10/2025	0.3		4.49		4.49	3.40	--
Evergreen	C-154	7.89	21.71	4/14/2025	0.0		2.76		2.76	5.13	--
Evergreen	C-155	9.17	24.21	3/10/2025	0.0		5.50		5.50	3.67	--
Evergreen	C-155	9.17	24.21	4/14/2025	0.0		4.13		4.13	5.04	--
Evergreen	C-160	6.87	9.91	3/10/2025	3.4		3.92		3.92	2.95	--
Evergreen	C-160	6.87	9.91	4/14/2025	2.9		1.97		1.97	4.90	--
Evergreen	C-161	9.07	13.30	3/10/2025	242.7	4.35	4.75	0.800	4.43	4.64	0.4
Evergreen	C-161	9.07	13.30	4/14/2025	534.5	2.53	2.56	0.800	2.54	6.53	0.03
Evergreen	C-162	8.50	11.80	3/10/2025	20.7		5.45		5.45	3.05	--
Evergreen	C-162	8.50	11.80	4/14/2025	51.2		3.37		3.37	5.13	--
Evergreen	C-166	6.99	5.14	3/10/2025	0.0		4.03		4.03	2.96	--
Evergreen	C-166	6.99	5.14	4/14/2025	0.0		1.98		1.98	5.01	--
Evergreen	C-168	10.08	9.87	3/10/2025	0.00		2.95		2.95	7.13	--
Evergreen	C-168	10.08	9.87	4/14/2025	Water visible to TOIC, data not included.				0.00	10.08	--
Evergreen	C-169	6.97	24.68	3/10/2025	0.1		3.85		3.85	3.12	--
Evergreen	C-169	6.97	24.68	4/14/2025	5.7		2.10		2.10	4.87	--
Evergreen	C-64	8.14	13.99	3/10/2025	0.0		5.06		5.06	3.08	--
Evergreen	C-64	8.14	13.99	4/14/2025	0.0		3.17		3.17	4.97	--
Evergreen	C-65	10.84	16.33	3/10/2025	1.9		6.79		6.79	4.05	--
Evergreen	C-65	10.84	16.33	4/14/2025	0.0		3.90		3.90	6.94	--
Evergreen	C-65D	9.62	7.54	3/10/2025	0.0		5.11		5.11	4.51	--
Evergreen	C-65D	9.62	7.54	4/14/2025	0.0		4.83		4.83	4.79	--
Evergreen	C-97	10.52	17.97	3/10/2025	0.0		6.91		6.91	3.61	--
Evergreen	C-97	10.52	17.97	4/14/2025	0.9		5.36		5.36	5.16	--

Table 1
Gauging Summary
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Dataset	Location ID	TOIC (ft AMSL)	Depth to Botom of Well (ft below TOIC)	Date	PID	Depth to Product (ft below TOIC)	Depth to Water (ft below TOIC)	LNAPL Density	Depth to Water (Corrected) (ft below TOIC)	Groundwater Elevation (ft AMSL)	Total LNAPL Thickness (ft)
Evergreen	RIVER4	--	--	3/10/2025	--		8.02		8.02	--	--
Evergreen	RIVER4	--	--	4/14/2025	0.0		11.1		11.10	--	--
Evergreen	RW-804	5.78	23.25	3/10/2025	0.5		2.03		2.03	3.75	--
Evergreen	RW-804	5.78	23.25	4/14/2025	0.0		1.2		1.20	4.58	--
Evergreen	RW-807	6.84	23.03	3/10/2025	0.5		2.73		2.73	4.11	--
Evergreen	RW-807	6.84	23.03	4/14/2025	0.0		0.87		0.87	5.97	--
Evergreen	RW-808	6.08	21.82	3/10/2025	1.2		3.11		3.11	2.97	--
Evergreen	RW-808	6.08	21.82	4/14/2025	0.0		1.33		1.33	4.75	--
Evergreen	RW-810	6.44	20.32	3/10/2025	1.6		3.38		3.38	3.06	--
Evergreen	RW-810	6.44	20.32	4/14/2025	0.0		1.30		1.30	5.14	--
Evergreen	RW-801	6.27	20.43	3/13/2025	0.0		3.25		3.25	3.02	--
Evergreen	RW-801	6.27	20.43	4/14/2025	0.0		0.85		3.25	3.02	--
Evergreen	RW-802	5.70	21.85	3/13/2025	0.0		2.76		2.76	2.94	--
Evergreen	RW-802	5.70	21.85	4/14/2025	0.0		0.80		2.76	2.94	--
Evergreen	RW-805	5.75	23.05	3/13/2025	0.0		2.82		2.82	2.93	--
Evergreen	RW-805	5.75	23.05	4/14/2025	0.0		0.74		2.82	2.93	--

Notes:
Assumed 0.8 density.
Vertical Datum is NAVD 1988.

Table 2
Summary of Groundwater Analytical Results
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Location	Non-Res	Non-Res	C-142	C-142	C-146	C-146	C-148	C-148	C-148	C-148	C-150	C-150
Field Sample ID	Groundwater MSC	Groundwater	C-142-250312	C-142-250414	C-146-250312	C-146-250415	C-148-250312	C-148-250312D	C-148-250414	C-148-250414D	C-150-250312	C-150-250415
Sample Date	Used Aquifer	Vapor Intrusion	3/12/2025	4/14/2025	3/12/2025	4/15/2025	3/12/2025	3/12/2025	4/14/2025	4/14/2025	3/12/2025	4/15/2025
Comments	(TDS ≤ 2500)	Screening Value						Field Duplicate		Field Duplicate		
Volatile Organic Compounds												
Benzene	0.005	0.35	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	0.117 (0.002)	0.113 (0.002)	0.0454 (0.0005)	0.0432 (0.0005)	0.0606 (0.0013)	0.0085 (0.0005)
Cumene	3.5	24	ND (0.001)	ND (0.001)	0.0012 (0.001)	0.0026 (0.001)	0.0201 (0.004)	0.0187 (0.004)	0.0292 (0.001)	0.0271 (0.001)	0.008 (0.0025)	0.0066 (0.001)
1,2-Dibromoethane	0.00005	0.044	ND (0.000019)	ND (0.000019)	ND (0.00002)	ND (0.000019)	ND (0.000019)	ND (0.000019)	ND (0.000018)	ND (0.000019)	ND (0.00002)	ND (0.000019)
1,2-Dichloroethane	0.005	0.51	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.004)	ND (0.001)	ND (0.001)	ND (0.0025)	ND (0.001)
Ethyl Benzene	0.7	0.86	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.004)	0.00082 J (0.001)	0.00075 J (0.001)	ND (0.0025)	ND (0.001)
Methyl tert-butyl ether	0.02	96	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.004)	0.00053 J (0.001)	ND (0.001)	ND (0.0025)	ND (0.001)
Toluene	1	430	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0148 (0.004)	0.014 (0.004)	0.0043 (0.001)	0.0041 (0.001)	0.0022 J (0.0025)	0.00096 J (0.001)
1,2,4-Trimethylbenzene	0.53	6.4	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.008)	ND (0.008)	ND (0.002)	ND (0.002)	ND (0.005)	ND (0.002)
1,3,5-Trimethylbenzene	0.53	4.5	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.008)	ND (0.008)	ND (0.002)	ND (0.002)	ND (0.005)	ND (0.002)
Xylenes (total)	10	12	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0177 (0.004)	0.0162 (0.004)	0.0053 (0.001)	0.0048 (0.001)	ND (0.0025)	ND (0.001)
Semivolatile Organic Compounds												
Anthracene	0.066	--	0.0000625 J (0.00008)	0.0000421 J (0.00008)	0.0000489 J (0.00008)	0.000106 (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.000201 (0.00008)	0.000169 (0.00008)
Benzo(a)anthracene	0.0039	--	0.0000244 J (0.00004)	ND (0.00004)	0.0000308 J (0.00004)	0.000061 (0.00004)	0.000155 (0.00004)	ND (0.00004)	0.0000318 J (0.00004)	0.0000281 J (0.00004)	0.0000838 (0.00004)	0.0000331 J (0.00004)
Benzo(a)pyrene	0.0002	--	0.0000681 (0.00004)	ND (0.00004)	0.000107 (0.00004)	0.000107 (0.00004)	0.00003 J (0.00004)	ND (0.00004)	0.0000286 J (0.00004)	ND (0.00004)	0.0000962 (0.00004)	0.0000306 J (0.00004)
Benzo(b)fluoranthene	0.0012	--	0.0000446 (0.00004)	ND (0.00004)	0.000117 (0.00004)	0.000122 (0.00004)	0.0000432 (0.00004)	0.0000242 J (0.00004)	0.0000414 (0.00004)	0.0000268 J (0.00004)	0.000113 (0.00004)	0.0000363 J (0.00004)
Benzo(g,h,i)perylene	0.00026	--	0.000194 (0.00008)	ND (0.00008)	0.0000744 J (0.00008)	0.0000635 J (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.0000494 J (0.00008)	ND (0.00008)
Chrysene	0.0019	--	0.0000448 J (0.00008)	ND (0.00008)	0.000102 (0.00008)	0.000172 (0.00008)	0.0000501 J (0.00008)	ND (0.00008)	0.000102 (0.00008)	0.0000837 (0.00008)	0.00016 (0.00008)	0.0000626 J (0.00008)
Fluorene	1.9	--	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.0000452 J (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.00118 (0.00008)
Naphthalene	0.1	1.3	ND (0.00008)	ND (0.00008)	0.000086 (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)
Phenanthrene	1.1	--	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.0000634 J (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.00014 (0.00008)	0.000351 (0.00008)
Pyrene	0.13	--	ND (0.00008)	ND (0.00008)	0.00022 (0.00008)	0.00078 (0.00008)	0.000329 (0.00008)	0.000175 (0.00008)	0.000266 (0.00008)	0.000221 (0.00008)	0.000525 (0.00008)	0.000278 (0.00008)
Metals												
Lead (dissolved)	--	--	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)

Notes:
1 All concentrations reported in mg/L (ppm); detection limits in parentheses.
2 Underlined concentrations exceed the Non-Res Groundwater MSC Used Aquifer (TDS ≤ 2500).
3 No concentrations exceed the Non-Res Groundwater Vapor Intrusion Screening Value.

Abbreviations:
ND - Not Detected
J - Estimated Concentration

Table 2
Summary of Groundwater Analytical Results
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Location	Non-Res	Non-Res	C-152	C-152	C-153	C-153	C-155	C-155	C-161	C-161	C-166	C-166
Field Sample ID	Groundwater MSC	Groundwater	C-152-250314	C-152-250415	C-153-250312	C-153-250414	C-155-250312	C-155-250414	C-161-250314	C-161-250415	C-166-250313	C-166-250414
Sample Date	Used Aquifer	Vapor Intrusion	3/14/2025	4/15/2025	3/12/2025	4/14/2025	3/12/2025	4/14/2025	3/14/2025	4/15/2025	3/13/2025	4/14/2025
Comments	(TDS ≤ 2500)	Screening Value										
Volatile Organic Compounds												
Benzene	0.005	0.35	0.0043 (0.0025)	0.00094 (0.0005)	ND (0.0025)	0.001 (0.0005)	ND (0.0005)	ND (0.0005)	0.0021 (0.0013)	ND (0.0005)	ND (0.0005)	ND (0.0005)
Cumene	3.5	24	0.0921 (0.005)	0.0463 (0.001)	ND (0.005)	0.0029 (0.001)	ND (0.001)	ND (0.001)	0.092 (0.0025)	0.0421 (0.001)	ND (0.001)	ND (0.001)
1,2-Dibromoethane	0.00005	0.044	ND (0.000019)	ND (0.00002)	ND (0.00002)	ND (0.000019)	ND (0.000018)	ND (0.000019)	ND (0.000019)	ND (0.00002)	ND (0.000019)	ND (0.000019)
1,2-Dichloroethane	0.005	0.51	ND (0.005)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0025)	ND (0.001)	ND (0.001)	ND (0.001)
Ethyl Benzene	0.7	0.86	ND (0.005)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	0.013 (0.0025)	0.0048 (0.001)	ND (0.001)	ND (0.001)
Methyl tert-butyl ether	0.02	96	ND (0.005)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0025)	ND (0.001)	ND (0.001)	ND (0.001)
Toluene	1	430	ND (0.005)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0025)	ND (0.001)	ND (0.001)	ND (0.001)
1,2,4-Trimethylbenzene	0.53	6.4	0.0106 (0.01)	0.0138 (0.002)	ND (0.01)	ND (0.002)	ND (0.002)	ND (0.002)	0.0971 (0.005)	0.0466 (0.002)	ND (0.002)	ND (0.002)
1,3,5-Trimethylbenzene	0.53	4.5	ND (0.01)	0.0055 (0.002)	ND (0.01)	ND (0.002)	ND (0.002)	ND (0.002)	0.0245 (0.005)	0.0166 (0.002)	ND (0.002)	ND (0.002)
Xylenes (total)	10	12	ND (0.005)	0.0037 (0.001)	ND (0.005)	0.0011 (0.001)	ND (0.001)	ND (0.001)	0.0253 (0.0025)	0.0105 (0.001)	ND (0.001)	ND (0.001)
Semivolatile Organic Compounds												
Anthracene	0.066	--	0.000392 (0.00008)	0.000126 (0.00008)	ND (0.00008)	0.000188 (0.00016)	ND (0.00008)	ND (0.00008)	0.000414 (0.00008)	0.000161 (0.00008)	ND (0.00008)	0.000129 (0.00008)
Benzo(a)anthracene	0.0039	--	0.0000725 (0.00004)	0.0000975 (0.00004)	ND (0.00004)	0.0000599 J (0.00008)	ND (0.00004)	ND (0.00004)	0.000138 (0.00004)	0.000126 (0.00004)	ND (0.00004)	0.0000322 J (0.00004)
Benzo(a)pyrene	0.0002	--	0.0000254 J (0.00004)	0.000047 (0.00004)	0.000048 (0.00004)	0.000106 (0.00008)	ND (0.00004)	ND (0.00004)	0.0000475 (0.00004)	0.000109 (0.00004)	0.0000397 J (0.00004)	0.000045 (0.00004)
Benzo(b)fluoranthene	0.0012	--	ND (0.00004)	0.0000573 (0.00004)	0.0000497 (0.00004)	0.00011 (0.00008)	0.0000325 J (0.00004)	ND (0.00004)	0.0000674 (0.00004)	0.000142 (0.00004)	0.0000459 (0.00004)	0.0000852 (0.00004)
Benzo(g,h,i)perylene	0.00026	--	ND (0.00008)	ND (0.00008)	0.00018 (0.00008)	0.000247 (0.00016)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.0000555 J (0.00008)	0.0000422 J (0.00008)	0.0000782 J (0.00008)
Chrysene	0.0019	--	0.000104 (0.00008)	0.000112 (0.00008)	ND (0.00008)	0.0000922 J (0.00016)	ND (0.00008)	ND (0.00008)	0.000183 (0.00008)	0.000195 (0.00008)	ND (0.00008)	0.000121 (0.00008)
Fluorene	1.9	--	0.000605 (0.00008)	0.000104 (0.00008)	ND (0.00008)	0.000122 J (0.00016)	ND (0.00008)	ND (0.00008)	0.000565 (0.00008)	ND (0.00008)	ND (0.00008)	0.000131 (0.00008)
Naphthalene	0.1	1.3	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00016)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.0000976 (0.00008)	ND (0.00008)	0.0000931 (0.00008)
Phenanthrene	1.1	--	0.000281 (0.00008)	ND (0.00008)	ND (0.00008)	0.000277 (0.00016)	ND (0.00008)	ND (0.00008)	0.000469 (0.00008)	0.0000447 J (0.00008)	ND (0.00008)	0.000164 (0.00008)
Pyrene	0.13	--	0.000372 (0.00008)	0.00048 (0.00008)	0.000222 (0.00008)	0.000309 (0.00016)	ND (0.00008)	ND (0.00008)	0.000329 (0.00008)	0.000526 (0.00008)	0.000166 (0.00008)	0.000214 (0.00008)
Metals												
Lead (dissolved)	--	--	ND (0.001)	0.0026 (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0025 (0.001)	0.0021 (0.001)

Notes:
1 All concentrations reported in mg/L (ppm); detection limits in parentheses.
2 Underlined concentrations exceed the Non-Res Groundwater MSC Used Aquifer (TDS ≤ 2500).
3 No concentrations exceed the Non-Res Groundwater Vapor Intrusion Screening Value.

Abbreviations:
ND - Not Detected
J - Estimated Concentration

Table 2
Summary of Groundwater Analytical Results
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Location	Non-Res	Non-Res	C-169	C-169	C-64	C-64	C-65	C-65	C-97	C-97
Field Sample ID	Groundwater MSC	Groundwater	C-169-250313	C-169-250415	C-64-250313	C-64-250414	C-65-250313	C-65-250414	C-97-250312	C-97-250414
Sample Date	Used Aquifer	Vapor Intrusion	3/13/2025	4/15/2025	3/13/2025	4/14/2025	3/13/2025	4/14/2025	3/12/2025	4/14/2025
Comments	(TDS ≤ 2500)	Screening Value								
Volatile Organic Compounds										
Benzene	0.005	0.35	0.0019 (0.0005)	0.0016 (0.0005)	ND (0.0025)	ND (0.0025)	ND (0.0005)	ND (0.0005)	0.00083 (0.0005)	ND (0.0005)
Cumene	3.5	24	0.0295 (0.001)	0.0304 (0.001)	0.0059 (0.005)	0.0051 (0.005)	ND (0.001)	ND (0.001)	0.0088 (0.001)	0.0035 (0.001)
1,2-Dibromoethane	0.00005	0.044	ND (0.000019)	ND (0.000019)	ND (0.000019)	ND (0.000019)	ND (0.000019)	ND (0.000019)	ND (0.000019)	ND (0.000019)
1,2-Dichloroethane	0.005	0.51	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Ethyl Benzene	0.7	0.86	0.0021 (0.001)	0.0048 (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Methyl tert-butyl ether	0.02	96	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Toluene	1	430	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,2,4-Trimethylbenzene	0.53	6.4	0.0026 (0.002)	0.0033 (0.002)	ND (0.01)	ND (0.01)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)
1,3,5-Trimethylbenzene	0.53	4.5	ND (0.002)	ND (0.002)	ND (0.01)	ND (0.01)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)
Xylenes (total)	10	12	0.0018 (0.001)	0.0071 (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	0.001 (0.001)	ND (0.001)
Semivolatile Organic Compounds										
Anthracene	0.066	--	0.0000633 J (0.00008)	0.0000908 J (0.00016)	0.000198 (0.00008)	0.0000912 (0.00008)	0.0000586 J (0.00008)	0.0000529 J (0.00008)	0.000185 (0.00008)	0.000131 (0.00008)
Benzo(a)anthracene	0.0039	--	ND (0.00004)	ND (0.00008)	0.000119 (0.00004)	0.0000866 (0.00004)	ND (0.00004)	ND (0.00004)	0.00018 (0.00004)	0.0000715 (0.00004)
Benzo(a)pyrene	0.0002	--	ND (0.00004)	ND (0.00008)	0.000116 (0.00004)	0.000135 (0.00004)	ND (0.00004)	ND (0.00004)	0.000167 (0.00004)	0.000086 (0.00004)
Benzo(b)fluoranthene	0.0012	--	ND (0.00004)	ND (0.00008)	0.000115 (0.00004)	0.000136 (0.00004)	ND (0.00004)	ND (0.00004)	0.000202 (0.00004)	0.000115 (0.00004)
Benzo(g,h,i)perylene	0.00026	--	ND (0.00008)	ND (0.00016)	0.000181 (0.00008)	0.000166 (0.00008)	ND (0.00008)	ND (0.00008)	0.0000981 (0.00008)	0.0000482 J (0.00008)
Chrysene	0.0019	--	ND (0.00008)	ND (0.00016)	0.000275 (0.00008)	0.000219 (0.00008)	ND (0.00008)	ND (0.00008)	0.000222 (0.00008)	0.000098 (0.00008)
Fluorene	1.9	--	ND (0.00008)	ND (0.00016)	0.000526 (0.00008)	0.000257 (0.00008)	ND (0.00008)	ND (0.00008)	0.000349 (0.00008)	0.000283 (0.00008)
Naphthalene	0.1	1.3	ND (0.00008)	0.000165 (0.00016)	ND (0.00008)	ND (0.00008)	ND (0.00008)	ND (0.00008)	0.000186 (0.00008)	ND (0.00008)
Phenanthrene	1.1	--	ND (0.00008)	ND (0.00016)	0.000204 (0.00008)	ND (0.00008)	0.0000453 J (0.00008)	ND (0.00008)	0.000282 (0.00008)	0.000147 (0.00008)
Pyrene	0.13	--	0.0000904 (0.00008)	ND (0.00016)	0.000588 (0.00008)	0.000529 (0.00008)	ND (0.00008)	0.0000558 J (0.00008)	0.00129 (0.00008)	0.000818 (0.00008)
Metals										
Lead (dissolved)	--	--	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)

Notes:
1 All concentrations reported in mg/L (ppm); detection limits in parentheses.
2 Underlined concentrations exceed the Non-Res Groundwater MSC Used Aquifer (TDS ≤ 2500).
3 No concentrations exceed the Non-Res Groundwater Vapor Intrusion Screening Value.

Abbreviations:
ND - Not Detected
J - Estimated Concentration

Table 2
Summary of QAQC Analytical Results
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	FB-250312-1	TB-250312-1	FB-250313-2	TB-250313-2	FB-250314-3	TB-250314-3	FB-250414-1	TB-250414-1	FB-250415-2
Sample Date	3/12/2025	3/12/2025	3/13/2025	3/13/2025	3/14/2025	3/14/2025	4/14/2025	4/14/2025	4/15/2025
Comments	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organic Compounds									
Naphthalene	ND (0.08)	NA	ND (0.08)	NA	0.0474 J (0.08)	NA	ND (0.08)	NA	ND (0.08)
Metals	ND	NA	ND	NA	ND	NA	ND	NA	ND

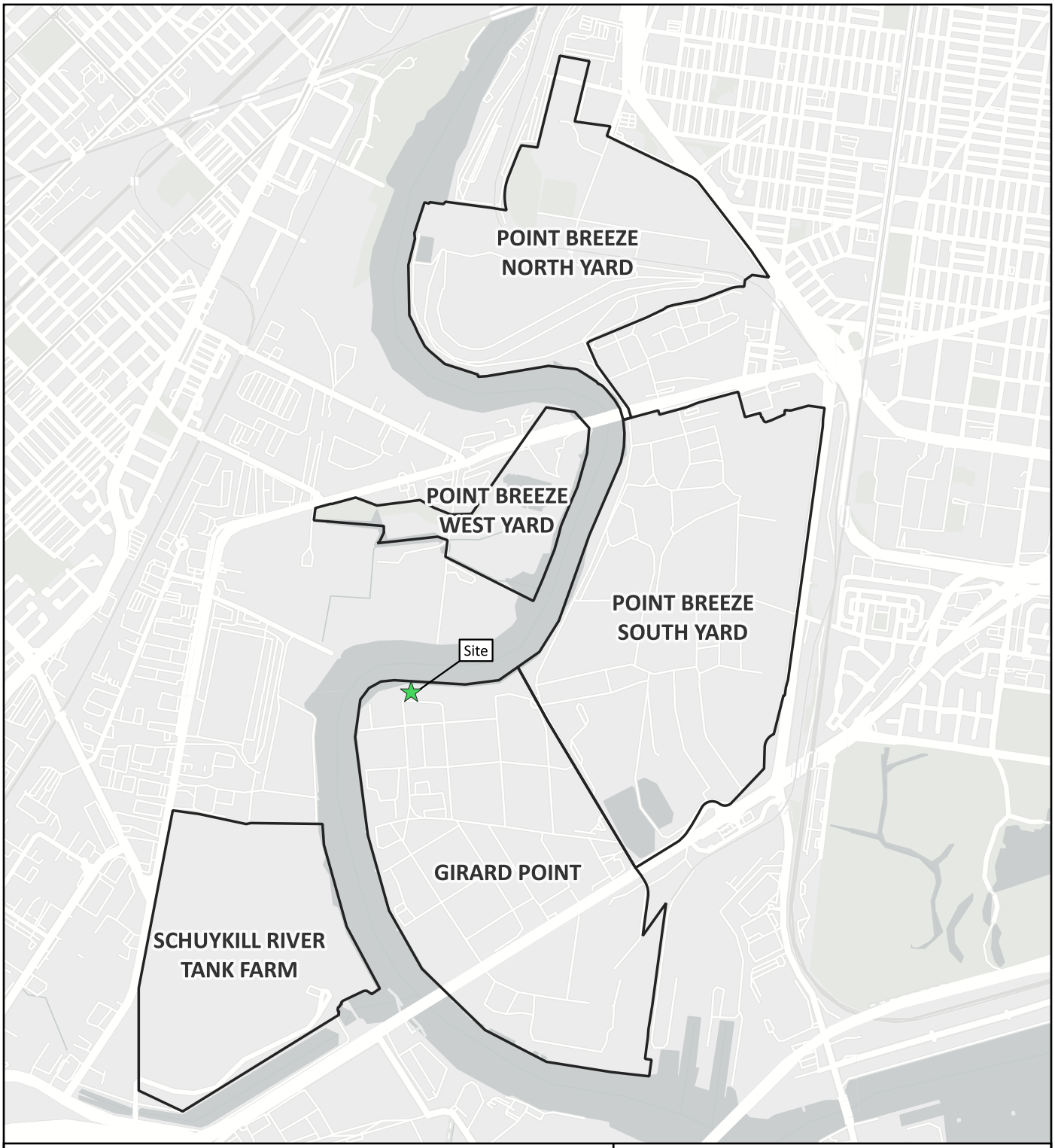
Notes:
1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table 3
Groundwater to Surface Water Discharge Modeling
No 3. Separator Area Remediation
Bellwether District Holdings, LLC, Philadelphia, PA

Parameter	Symbol	Value	Units	Basis
Source Concentration	C_0	0.095	mg/L	Average concentration from well with highest concentrations (i.e., C-148; March & April 2025)
Longitudinal Dispersivity	α_x	1.5	ft	= X/10
Transverse Dispersivity	α_y	0.15	ft	= α_x/10
Vertical Dispersivity	α_z	0.001	ft	Conservative default
Decay Constant	λ	0.00096	$days^{-1}$	25 Pa. Chapter 250, Appendix A, Table 5
Source Width	W	160	ft	Distance between monitoring wells C-152 and C-146
Source Thickness	Z	5	ft	Estimated; conservative assumption
Time Since Release Began	T	5,079	days	Release occurred on July 12, 2011
Hydraulic Conductivity	K_h	25	ft/day	Stantec (2025); Appendix 2-M SW Load Calculations for Non-Indicator COCs
Hydraulic Gradient	i	0.001	ft/ft	Stantec (2025); Appendix 2-M SW Load Calculations for Non-Indicator COCs
Effective Porosity	n_e	0.225	unitless	Stantec (2025); chosen to represent unconsolidated deposits at Facility; porosity tend to be lower in the poorly sorted alluvial sediments and fill
Soil Bulk Density	ρ_b	1.8	g/cm^3	Assumed
Organic Carbon Partition Coefficient	K_{oc}	58	L/kg	25 Pa. Chapter 250, Appendix A, Table 5
Fraction Organic Carbon	f_{oc}	0.005	unitless	Stantec (2025); expected higher organic content in tidal/alluvial setting
Distance to River	X	15	ft	Distance from source area to River
Plume View Width	P_w	200	ft	Wider than source area to capture lateral dispersion in grid
Plume View Depth	P_d	10	ft	Vertical extent set to 2x source thickness
Surface Water Criterion	SWC	0.071	mg/L	PADEP Chapter 93 Chronic Aquatic Life Criterion for benzene; tidal Schuylkill River is not designated for potable water supply (PWS)

Figures

1 Facility Location
2 Site Layout
3A Estimated Extent of LNAPL Post July 11, 2011 Release
3B Estimated Extent of LNAPL Post BDH Acquisition on September 8, 2012
3C Estimated Extent of LNAPL Post Remediation System Shut-Off August 2021
3D Estimated Extent of LNAPL – April 2025
4 Terraphase (TEI) Sampled Monitoring Wells
5 Groundwater Analytical Results



0 2,000 4,000 Feet

1 Inch = 2000 Feet

N

Legend

Property Boundary

SAFETY FIRST	CLIENT: Bellwether District Holdings, LLC	**Facility Location**
terraphase engineering	PROJECT: No. 3 Separator Area Remediation	
	PROJECT NUMBER: P044.001.003	**FIGURE 1**

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 202505-RIR-Figure1-FacilityLocation 2023-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl



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terraphase engineering

CLIENT: Bellwether District Holdings, LLC

PROJECT: No. 3 Separator Area Remediation

PROJECT NUMBER: P044.001.003

Act 2 Site Location Map

FIGURE 2

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 2023-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl 202505-RIR-Figure2-Act 2 Site Location Map



Notes:
The current estimated extent of LNAPL is based on the maximum LNAPL thickness identified at each well during July 11, 2011 to August 23, 2012 gauging events.
Aerial imagery source: Nearmap (September 2022)

Label Notation Key:
Location Code
LNAPL Thickness (ft)
Year Gauged

0 35 70 105 140 ft

1 Inch = 70 Feet

N

SAFETY FIRST

terraphase engineering

CLIENT:	Bellwether District Holdings, LLC
PROJECT:	No. 3 Separator Area Remediation
PROJECT NUMBER:	P044.001.003

Estimated Extent of LNAPL Post July 11, 2011 Release

FIGURE 3a

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 2025-05-RIR-Figure3a-Estimated Extent of LNAPL – Post July 11, 2011 Release 2023-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl



Notes:
The current estimated extent of LNAPL is based on the maximum LNAPL thickness observed at each well after BDH acquired the Site on September 8, 2012. Data used was collected between the acquisition date and the remediation system shutdown in November 2021.
Aerial imagery source: Nearmap (September 2022)
Label Notation Key:
Location Code
LNAPL Thickness (ft)
Year Gauged

0 35 70 105 140 ft

1 Inch = 70 Feet

N

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CLIENT: Bellwether District Holdings, LLC

PROJECT: No. 3 Separator Area Remediation

PROJECT NUMBER: P044.001.003

Estimated Extent of LNAPL Post BDH Acquisition on September 8, 2012

FIGURE 3b

N:\GIS\Prj\P044.001_PES\RM-PES\GIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 2025-05-RIR-Figure3b-Estimated Extent of LNAPL – Estimated Extent of LNAPL Post BDH Acquisition on September 8, 2012 2023-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl



Notes:
The current estimated extent of LNAPL is based on the maximum LNAPL thickness identified at each well following the shut down of the remediation system in November 2021.
Aerial imagery source: Nearmap (September 2022)

Label Notation Key:
Location Code
LNAPL Thickness (ft)
Year Gauged

0 35 70 105 140 ft

1 Inch = 70 Feet

N

SAFETY FIRST

terraphase engineering

CLIENT:	Bellwether District Holdings, LLC
PROJECT:	No. 3 Separator Area Remediation
PROJECT NUMBER:	P044.001.003

Estimated Extent of LNAPL Post Remediation System Shut-Off November 2021

FIGURE 3c

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 202505-RIR-Figure3c-Estimated Extent of LNAPL - Post Remediation System Shut Off November 2021 2023-10-17T10:19:57.000 Created by: A.Spiers
Checked by: K. Long



Notes:
The current estimated extent of LNAPL is based on the LNAPL thickness identified at each well during April 2025 Terraphase gauging event.
Aerial imagery source: Nearmap (September 2022)

Label Notation Key:
Location Code
LNAPL Thickness (ft)
Year Gauged

0 35 70 105 140 ft

1 Inch = 70 Feet

N

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CLIENT:	Bellwether District Holdings, LLC
PROJECT:	No. 3 Separator Area Remediation
PROJECT NUMBER:	P044.001.003

Estimated Extent of LNAPL April 2025

FIGURE 3d

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 20250505-RIR-Figure3d-Estimated Extent of LNAPL – April 2025 2023-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl



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terraphase engineering

CLIENT: Bellwether District Holdings, LLC

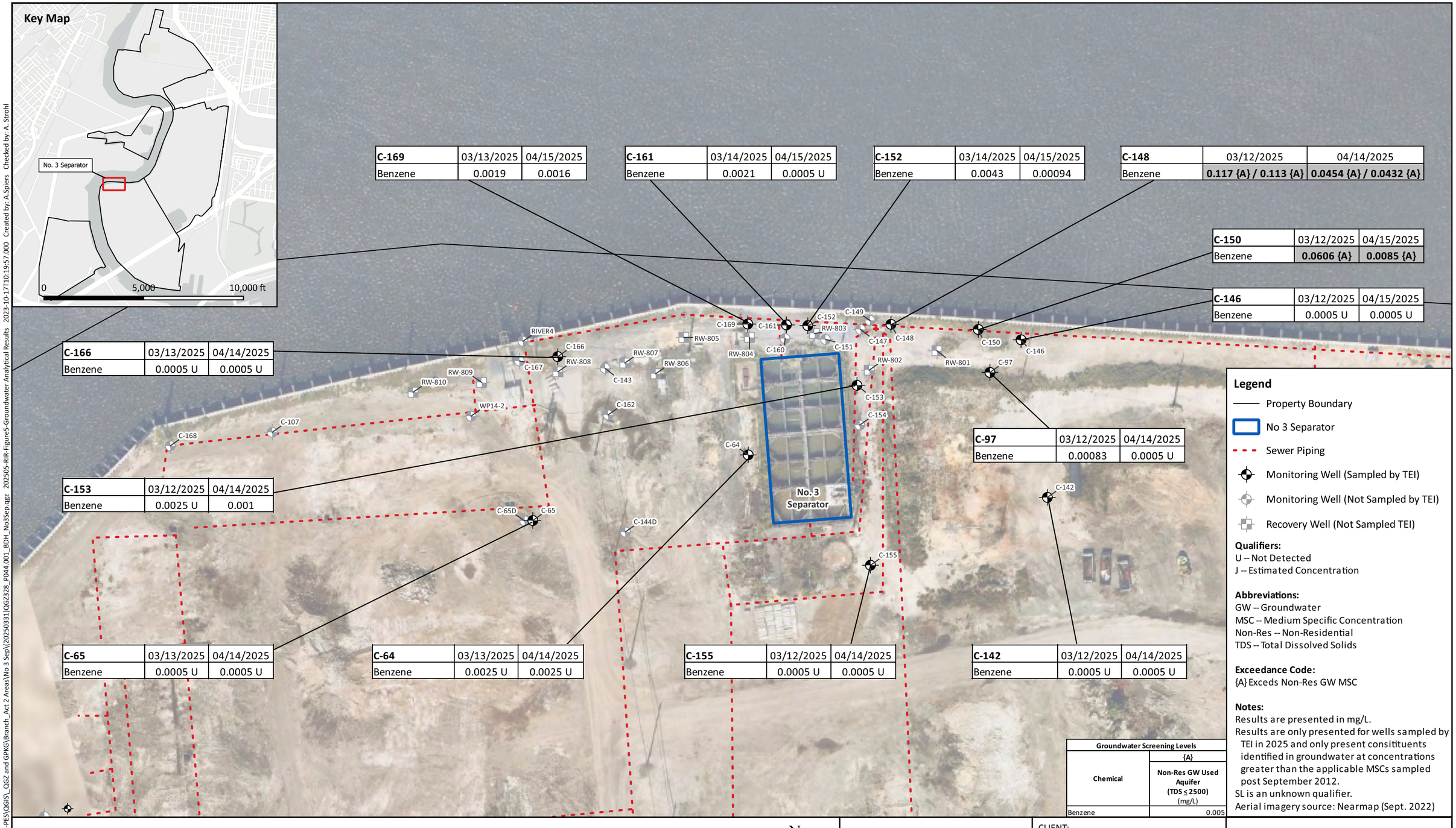
PROJECT: No. 3 Separator Area Remediation

PROJECT NUMBER: P044.001.003

TEI Sampled Monitoring Wells

FIGURE 4

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 202505-RIR-Figure4-TEI Sampled Monitoring Wells 2023-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl



C-169	03/13/2025	04/15/2025
Benzene	0.0019	0.0016

C-161	03/14/2025	04/15/2025
Benzene	0.0021	0.0005 U

C-152	03/14/2025	04/15/2025
Benzene	0.0043	0.00094

C-148	03/12/2025	04/14/2025
Benzene	**0.117 {A} / 0.113 {A}**	**0.0454 {A} / 0.0432 {A}**

C-150	03/12/2025	04/15/2025
Benzene	**0.0606 {A}**	**0.0085 {A}**

C-146	03/12/2025	04/15/2025
Benzene	0.0005 U	0.0005 U

C-166	03/13/2025	04/14/2025
Benzene	0.0005 U	0.0005 U

C-97	03/12/2025	04/14/2025
Benzene	0.00083	0.0005 U

C-153	03/12/2025	04/14/2025
Benzene	0.0025 U	0.001

C-65	03/13/2025	04/14/2025
Benzene	0.0005 U	0.0005 U

C-64	03/13/2025	04/14/2025
Benzene	0.0025 U	0.0025 U

C-155	03/12/2025	04/14/2025
Benzene	0.0005 U	0.0005 U

C-142	03/12/2025	04/14/2025
Benzene	0.0005 U	0.0005 U

Legend

- Property Boundary
- No 3 Separator
- Sewer Piping
- Monitoring Well (Sampled by TEI)
- Monitoring Well (Not Sampled by TEI)
- Recovery Well (Not Sampled TEI)

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

Abbreviations:
GW -- Groundwater
MSC -- Medium Specific Concentration
Non-Res -- Non-Residential
TDS -- Total Dissolved Solids

Exceedance Code:
{A} Exceeds Non-Res GW MSC

Notes:
Results are presented in mg/L.
Results are only presented for wells sampled by TEI in 2025 and only present consituents identified in groundwater at concentrations greater than the applicable MSCs sampled post September 2012.
SL is an unknown qualifier.
Aerial imagery source: Nearmap (Sept. 2022)

Groundwater Screening Levels	
Chemical	{A} Non-Res GW Used Aquifer (TDS ≤ 2500) (mg/L)
Benzene	0.005

C-150	03/12/2025	04/15/2025
Benzene	**0.0606 {A}**	**0.0085 {A}**

Location Code
Sample Date
Result

0 35 70 105 140 ft

1 Inch = 70 Feet

N

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terraphase engineering

CLIENT: Bellwether District Holdings, LLC

PROJECT: No. 3 Separator Area Remediation

PROJECT NUMBER: P044.001.003

Groundwater Analytical Results

FIGURE 5

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz 2025-10-17T10:19:57.000 Created by: A.Spiers Checked by: A. Strohl

Appendix A

Notification Documents

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

NOTICE OF INTENT TO REMEDIATE

For DEP Use Only
PF # ____
Rem ID # ____

Date: 4/17/2025 NIR Status: ☐ New ☒ Revised

Act 1995-2 requires four general information items to be included in the NIR: the general location, listing of contaminants, intended use of property, and proposed remediation measures. In addition, indicate the standard(s) to be obtained and attach a scaled site map (if available). Certain project amendments or changes will require submission of a revised NIR, a new public notice, and a new notification to the municipality. Changes to information marked by (**) or (††) indicate when a new NIR and new public and municipal notices are needed. DEP should also be notified of any significant changes to the initial NIR submission, including the change of future use of the property, contaminants added or removed, change of standards from site-specific to background or Statewide health, any change in the media being investigated, or change of any contact information.

Property Name No. 3 Separator Area - Girard Point

Former Name(s)/AKA Former Philadelphia Refinery

Address/Location 3144 W. Passyunk Avenue

City Philadelphia Zip Code 19153

**Municipality(s) Philadelphia County(ies) Philadelphia County

Tax Parcel ID# (if known) _____

Latitude 39 º (deg). 54 ‘ (min) 35 “ (sec)

Longitude 75 º (deg). 12 ‘ (min) 44 “ (sec)

Horizontal Collection Method GIS

Horizontal Reference Datum NAD83 Reference Point see Figure 1 attached

☐ **Wish to participate in the DEP/EPA One Cleanup Program.

Contact the Land Recycling Program Manager for details at landrecycling@pa.gov.

EPA ID#, if known _____

DEP ID#(s), if known 51-36624; 856439

(i.e., eFACTs primary facility ID#, storage tank facility ID#, water quality permit #, etc.)

Date Release Occurred (if known) 2013

Date each municipality was notified of any plan or report submitted under any remediation standard

_____

Place the newspaper name and date that your notice of your plan/report submission was published The Philadlephia Inquirer 4/16/2025

** A change in municipality, the addition of a new municipality, or deciding to participate in the DEP/EPA One Cleanup Program requires a new NIR to be submitted with new public and municipal notifications.

Contamination, Land Usage, and Proposed Remediation Section

Provide a brief description of the site contamination, to the extent known, in plain language (e.g., fuel oil spill, historical chemical industrial area, etc.), the current and intended future use of the property in the box below.

The No. 3 Separator Remediation System was a 10-well total fluids recovery system installed by Evergreen Resources Management Operations (Evergreen) in 2012 to address light non-aqueous phase liquid (LNAPL) from a prior release in the area of the property along the Schuylkill River near the No. 3 oil-water separator. In 2013, Bellwether District Holdings, LLC (BDH), formerly known as Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), assumed primary responsibility for the No. 3 Separator Remediation System due to petroleum releases from a process sewer system, which connected the 137 Unit to the No. 4 Separator. The future use of the property is expected to be non-residential.

Provide a general description of proposed remediation measures.

BDH continued to operate and monitor the recovery system until October 2021. Increases in LNAPL thicknesses were periodically observed in the monitoring and recovery wells associated with the system between 2013 and October 2021. After the shutdown of the plant air, skimmer pumps were used to continue to remove measurable LNAPL from the monitoring and recovery wells associated with the No. 3 Separator Remediation System. Stantec Consulting Services, Inc. (Stantec), on behalf of BDH, previously conducted bi-weekly LNAPL gauging of the monitoring and recovery wells. LNAPL levels have been generally stable in the monitoring and recovery wells in this area since December 2021. One well in the area, C-169, has reported fluctuations in LNAPL levels in 2022 through 2024. During the most recent gauging event in January 2025, measurable LNAPL was not reported in C-169.

The former storm and process sewer believed to be the source of residual oil to groundwater in the area was cleaned and abandoned in place by filling with flowable fill in February 2025. Terraphase is conducting groundwater and LNAPL monitoring in Spring 2025 to verify conditions after the sewer abandonment.

Standards Selection Section

Check all the boxes that apply for the appropriate contaminant groups according to the standard(s) and media of the remediation to be performed.

NOTE: Either the site-specific standard or a special industrial area requires a 30-day public and municipal comment period.

Contaminant Groups	Background		Statewide Health–Residential		Statewide Health–Non-Residential		††Site-Specific Standard		††Special Industrial Area	
	Soil	GW	Soil	GW	Soil	GW	Soil	GW	Soil	GW
Aviation Gasoline	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Diesel Fuel	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Fuel Oil No. 1	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Fuel Oil No. 2	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Fuel Oil No. 4	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Fuel Oil No. 5	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Fuel Oil No. 6	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Kerosene	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Jet Fuel	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Leaded Gasoline	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
New Motor Oil	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Unleaded Gasoline	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐
Used Motor Oil	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Chlorinated Solvents	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Inorganics	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Lead	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
MTBE	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other Organics	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PAHs	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PCBs	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Pesticides	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PFAS	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

GW: groundwater

†† Changing the selected standard from either background or Statewide health to the site-specific standard, changing to a combination of standards that includes the site-specific standard, or choosing the special industrial area designation requires a new NIR submission with new public and municipal notifications.

Please list individual contaminants here, by environmental medium and cleanup standard (optional):

GW (Site Specific): benzene, cumene, ethylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, xylenes, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluorene, naphthalene, phenathrene, and pyrene.

Property Owner, Remediator/Participant, and Consultant

Complete the form below for each recipient obtaining a release of liability upon approval of the final report. Attach additional sheets as necessary.

Property Owner

Contact Person/Title Anne R. Garr / Assistant Secretary

eFACTs Client ID(If Known) Facility No. 51-33624

Phone Number (312) 283-4469 Email Address agarr@hilcoglobal.com

Company Name Bellwether District Holdings, LLC EIN or Federal ID #

Address (street, city, state, zip) 3144 West Passyunk Avenue, Philadelphia, PA 19153

Client Type (choose from list below) Limited Liability Company

Client Types:

Association/Organization		
Authority	Limited Liability Partnership	Partnership-General
County	Municipality	Partnership-Limited
Estate/Trust	Non-Pennsylvania	Pennsylvania Corporation
Federal Agency	Government	School District
Individual	Other (Government)	Sole Proprietorship
Limited Liability company	Other (Non-Government)	State Agency

Consultant

Contact Person/Title Kevin Long/Senior Principal Consultant Email Address kevin.long@terraphase.com

Phone Number (609) 236-8171 Company Name Terraphase Engineering Inc.

Address (street, city, state, zip) 100 Canal Pointe Blvd, Suite 110, Princeton, NJ 08540

Other Participant (Remediator)

Contact Person/Title

Relationship to Site

(e.g. remediator, participant in cleanup if other than owner, etc.)

Phone Number Email Address

Company Name EIN or Federal ID #

Address (street, city, state, zip)

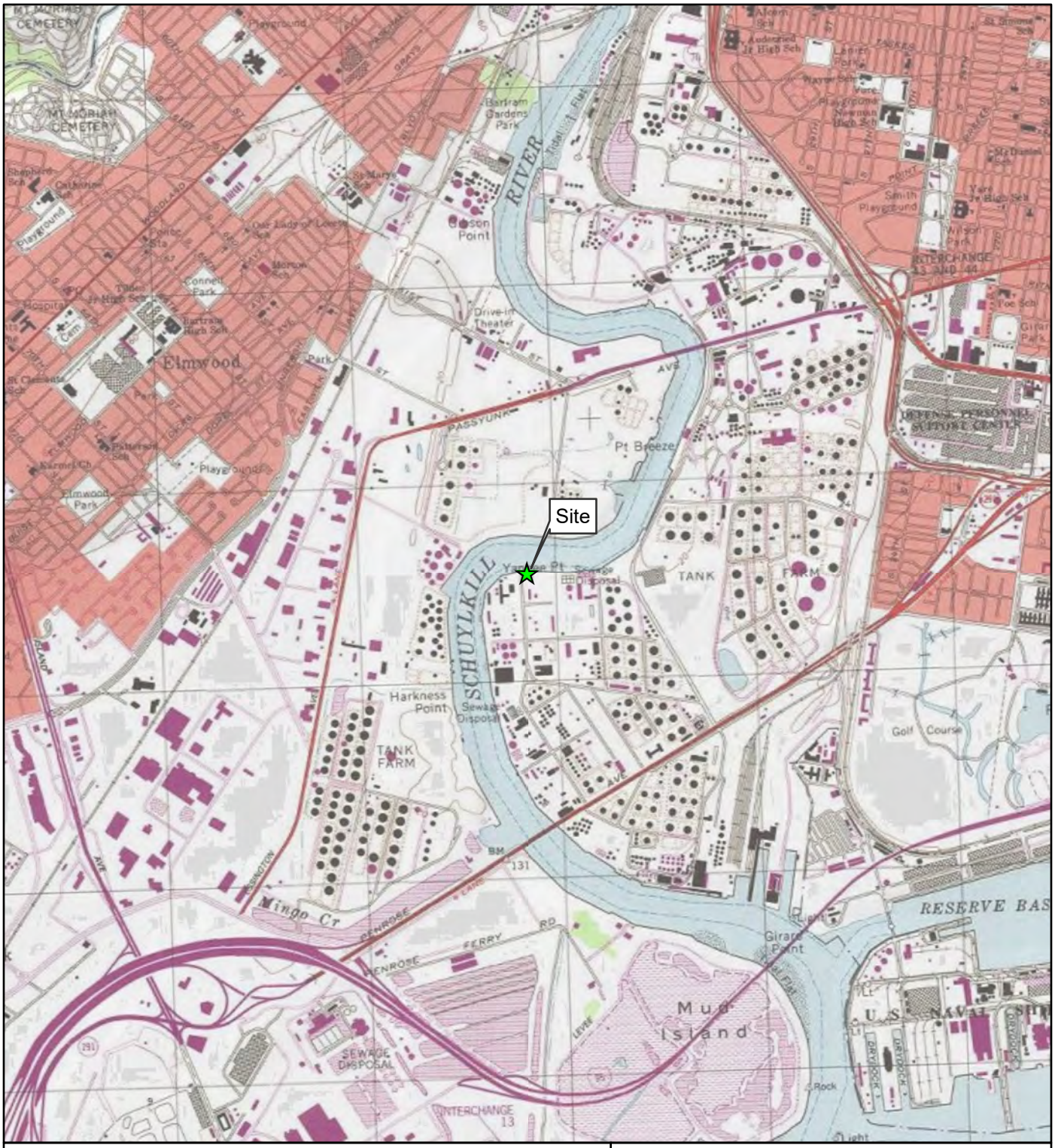
Preparer of Notice of Intent to Remediate

Name Kevin Long Title Senior Principal Consultant

Phone Number (609) 236-8171 Email Address kevin.long@terraphase.com

Company Name Terraphase Engineering Inc.

Address (street, city, state, zip) 100 Canal Pointe Blvd., Suite 110, Princeton, NJ 08540



0 2,400 4,800 Feet

1 inch = 2,400 feet

N

Legend

Site Location

Base Map: USGS Philadelphia (1995) 7.5 Minute Quadrangle.

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: No3 Separator Area Remediation

PROJECT NUMBER: P044.001.003

Site Location Map

FIGURE 1

File: N:\GIS\Prj\P044.001_PESRM-PES\Pro Project\No3Separator\P044_001_No3Separator.aprx Layout:Figure 1 - Site Location Map 1/20/2022 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Notice of an Intent
to Remediate to an Environmental Standard.
(Sections 302(e)(1)(ii), 303(h)(1)(ii),
304(n)(1)(i), and 305(c)(1))

Pursuant to the Land Recycling and Environmental Remediation Standards Act, the act of May 19, 1995, P.L. 4, No. 1995-2., notice is hereby given that Bellwether District Holdings, LLC (BDH) will submit to the Pennsylvania Department of Environmental Protection (PADEP), a Notice of Intent to Remediate (NIR) a site located at 3144 West Passyunk Avenue, Philadelphia. This NIR states the site, referred to as the "No. 3 Separator Area", is located at the former Philadelphia refinery. The site has been found to be contaminated due to petroleum-related releases associated with a stormwater and process sewer system. BDH has selected to remediate the area to attain Site-Specific Standards. The proposed future use of the property will be non-residential (i.e., commercial/industrial) use.

The Act provides for a 30-day public comment period for remediation to the Site-Specific Standard. The 30-day comment period is initiated with the publication of this notice. Until May 16, 2025, the City of Philadelphia may submit a request to BDH to develop and implement a public involvement plan involving the municipality in the development of the remediation and reuse plans for the site. Copies of these requests and of any comments should also be submitted to the PADEP at 2 E Main Street, Norristown, PA 19401.

The Philadelphia Inquirer
100 S. INDEPENDENCE MALL W, STE 600, PHILADELPHIA, PA 19106

Affidavit of Publication

On Behalf of:
TERRAPHASE ENGINEERING
1100 E HECTOR ST
SUITE 400
CONSHOHOCKEN, PA 19428

STATE OF PENNSYLVANIA COUNTY OF PHILADELPHIA:

Before the undersigned authority personally appeared the undersigned who, on oath represented a and say: that I am an employee of The Philadelphia Inquirer, LLC, and am authorized to make this affidavit of publication, and being duly sworn, I depose and say:

1. The Philadelphia Inquirer, LLC is the publisher of the Philadelphia Inquirer, with its headquarters at 100 S. Independence Mall West, Suite 600, Philadelphia, PA 19106.
2. The Philadelphia Inquirer is a newspaper that which was established in in the year 1829, since which date said daily newspaper has been continuously published and distributed daily in the City of Philadelphia, count and state aforesaid.
3. The printed notice or publication attached hereto set forth on attached
hereto was published in all regular print editions of
The Philadelphia Inquirer on

Legal Notices

as published in **Inquirer Legals** in the issue(s) of:

4/16/2025

4. Under oath, I state that the following is true and correct, and that neither I nor The Philadelphia Inquirer, LLC have any is interest in the subject matter of the aforesaid notice or advertisement.

Helene Sweeney

Nancy S. Fisher
Notary Public

My Commission Expires:

Commonwealth of Pennsylvania - Notary Seal
Nancy S Fisher, Notary Public
Philadelphia County
My Commission Expires June 27, 2027
Commission Number 1433937

Ad No: 185252
Customer No: 104799

COPY OF ADVERTISEMENT

Notice of an Intent
to Remediate to an Environmental Standard.
(Sections 302(e)(1)(ii), 303(h)(1)(ii),
304(n)(1)(i), and 305(c)(1))

Pursuant to the Land Recycling and Environmental Remediation Standards Act, the act of May 19, 1995, P.L. 4, No. 1995-2., notice is hereby given that Bellwether District Holdings, LLC (BDH) will submit to the Pennsylvania Department of Environmental Protection (PADEP), a Notice of Intent to Remediate (NIR) a site located at 3144 West Passyunk Avenue, Philadelphia. This NIR states the site, referred to as the "No. 3 Separator Area", is located at the former Philadelphia refinery. The site has been found to be contaminated due to petroleum-related releases associated with a stormwater and process sewer system. BDH has selected to remediate the area to attain Site-Specific Standards. The proposed future use of the property will be nonresidential (i.e., commercial/industrial) use.

The Act provides for a 30-day public comment period for remediation to the Site-Specific Standard. The 30-day comment period is initiated with the publication of this notice. Until May 16, 2025, the City of Philadelphia may submit a request to BDH to develop and implement a public involvement plan involving the municipality in the development of the remediation and reuse plans for the site. Copies of these requests and of any comments should also be submitted to the PADEP at 2 E Main Street, Norristown, PA 19401

terraphase engineering

April 16, 2025

Ms. Leigh Anne Rainford
Philadelphia Department of Public Health
Environmental Health Services
7801 Essington Avenue
Philadelphia, PA 19153

Sent via email to leighanne.rainford@phila.gov and via UPS, Proof of Delivery Requested

Subject: **Notice of Intent to Remediate**
No. 3 Separator Area – Girard Point
Former Philadelphia Refinery
3144 Passyunk Avenue
Philadelphia, PA 19153

Dear Ms. Rainford:

The Land Recycling and Environmental Remediation Standards Act (Act 2) requires that a Notice of Intent to Remediate (NIR) be provided to the municipality in which the site is located. Act 2 also provides that when a site is being remediated to the Site-Specific Standard, the municipality is afforded a 30-day comment period. In accordance with this provision of Act 2, Terraphase Engineering Inc. (Terraphase), on behalf of Bellwether District Holdings, LLC (BDH), is notifying you of BDH's intent to remediate the subject site to Site-Specific Standards.

A copy of the NIR, which will be sent to the Department of Environmental Protection (DEP), is enclosed. This notice will be published in the Pennsylvania Bulletin, and a summary of the notice will appear in a local newspaper.

Publication of this notice in a local newspaper initiates the 30-day public and municipal comment period. During this time, your municipality may request a public involvement plan for the community to be involved in the development of the remediation and reuse plans for the site. If the municipality wishes to be involved in this project, please send your comments to me, Kevin Long, at kevin.long@terraphase.com or 609-236-8171, ext. 93, with copies submitted to C. David Brown at the DEP, 2 E. Main Street, Norristown, PA 19401 or via email to cdbrown@pa.gov.

Sincerely,

for Terraphase Engineering Inc.

Kevin L. Long
Senior Principal Consultant
KL:cs

Enclosure: Notice of Intent to Remediate

cc: Julianna Connolly (jconnolly@hilcoglobal.com)
Joseph Jeray (jjeray@hilcoglobal.com)
Amy Piccone (apiccone@hilcoglobal.com)

From: UPS
To: Alexander Strohl
Subject: UPS Delivery Notification, Tracking Number 1Z75YA670191370067
Date: Thursday, April 17, 2025 10:14:24 AM

Hello, your package has been delivered.

Delivery Date: Thursday, 04/17/2025
Delivery Time: 10:08 AM
Left At: FRONT DESK
Signed by: hupp

TERRAPHASE ENGINEERING

Tracking Number:	**1Z75YA670191370067**
Ship To:	PHILADELPHIA DEPT OF PUBLIC HEALTH 7801 ESSINGTON AVENUE ENVIRONMENTAL HEALTH SERVICES PHILADELPHIA, PA 19153 US
Number of Packages:	1
UPS Service:	UPS Next Day Air®
Package Weight:	0.5 LBS
Reference Number:	P044.001.003_STROHL

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Pennsylvania
Department of Environmental Protection

May 2, 2025

Ms. Anne R. Garr
Bellwether District Holdings, LLC
111 South Wacker Drive, Suite 3000
Chicago, IL 60606

Re: Receipt of Notice of Intent to Remediate
Site-Specific Standard
No. 3 Separator Area – Girard Point
eFACTS PF No. 856439
eFACTS Activity No. 61224
3144 West Passyunk Avenue
City and County of Philadelphia

Dear Ms. Garr:

This letter acknowledges receipt of your Notice of Intent to Remediate (NIR) on April 17, 2025, pertaining to the subject property and submitted in accordance with the Land Recycling and Environmental Remediation Standards Act (Act 2). The procedures set forth in Act 2 must be followed in order for this site to qualify for the liability protection provided by the Act. The Department of Environmental Protection (DEP) will not accept plans and reports until after the 30-day comment period following submission of the NIR ends.

The 30-day comment period following submission of the NIR allows the municipality the opportunity to request to be involved in the development of remediation and reuse plans for the property. If the municipality requests a public involvement plan, any comments and responses must be included in any subsequent Site-Specific Standard reports. Remedial investigation reports, risk assessment reports, cleanup plans, and final reports submitted to DEP under the site-specific standard need to be accompanied by the required fees and documentation verifying compliance with the public notification requirements.

Additional technical and program information can be found at www.dep.pa.gov (Business>Land>Land Recycling). Also, please refer to the Land Recycling checklists which are helpful in assuring reports are complete before submittal. DEP uses the checklists to perform administrative and technical completeness reviews when plans and/or reports are submitted. It is strongly encouraged to include the appropriate completed checklist with your Final Report submission. Land Recycling checklists can also be found at the website under ‘Forms, Checklists & Notifications’ link.

Please refer to the Standard Attachment for considerations of other programs which may be applicable to this property.

Mr. Matthew Sabetta, P.G., is the project officer assigned to your project and will be working with you towards the remediation of this property. Frequent contact is encouraged between your representatives and our staff. If you have any questions or need further clarifications of our procedures, please contact the project officer by e-mail at msabetta@pa.gov or by telephone at 484.250.5788.

Sincerely,

C. David Brown, P.G.
Regional Manager
Environmental Cleanup and Brownfields

Enclosure: Standard Attachment

cc: City of Philadelphia
Mr. Long – Terraphase Engineering, Inc.
Mr. Sabetta, P.G.
Ms. Henderson
Re 30 (ekh25ecb) 856439-04302025-NIR

Pennsylvania
Department of Environmental Protection
Bureau of Environmental Cleanup and Brownfields

Thank you for participating in the Pennsylvania Department of Environmental Protection's (DEP) Land Recycling Program. You are receiving this Standard Attachment because you have provided a Notice of Intent to Remediate or a Final Report submission to the department. The following program summaries are provided to you as a guide to other programs that are commonly associated with brownfield remediation projects. These programs are important for the successful completion of site remediation and the grant of liability relief for your site. Please note if several of the following items apply to your site, it may be valuable to request a pre-application coordination meeting with your assigned DEP Project Manager. For remediation projects that involve multiple programs, an initial coordination meeting is beneficial to determine required date of submission(s), program participation consideration(s), and priorities.

This list is not meant to be all inclusive, but does summarize a listing of programs that are commonly affiliated with these types of projects.

Land Recycling Program Considerations

Uniform Environmental Covenants Act (UECA)
Based on the remediation standard that you have selected for your remediation/redevelopment project, you may be required to submit an environmental covenant. The covenant, as defined and governed under the auspices of UECA, provides a tool to ensure that the conditions allowing for a risk-based cleanup will continue in the future. UECA requires that a completed and signed environmental covenant shall be submitted to the appropriate regional DEP office no later than 30 days from receipt of the final cleanup approval letter. A $500 fee is required to be submitted with the environmental covenant. Once received, the DEP has 90 days to review and return the signed covenant for recordation. Notifications of recordation of the covenant are subsequently required to be sent within 90 days to the DEP and to the entities listed in Section 6507 of UECA and in accordance with the terms of the covenant. For more information, visit www.dep.pa.gov, under Businesses > Land > Land Recycling, select related information under 'Uniform Environmental Covenants'.

Other Program Requirements

Depending on the specific details of each case, other program requirements may be applicable to your site as cleanup is progressing and/or upon completion of Act 2 activities. These considerations are summarized in the following:

Land Disturbance
Depending on the remediation approach selected for your site, you must carefully evaluate the remedial activities to minimize erosion and sedimentation in conformance with Chapter 102 of the PA Code, Erosion and Sediment Control. These requirements may be satisfied with the development, implementation, and maintenance, of erosion and sediment control best management practices. Please note that any future earth disturbance or development at your site after cleanup is completed may require either approvals or permits from the appropriate county soil conservation district. Therefore,

you should contact the conservation district before engaging in any such activities. For more information regarding this topic, visit www.dep.pa.gov, Search 'Stormwater Management'.

Surface Water Discharge

Surface water discharges from sites undergoing Act 2 cleanups may be considered point or nonpoint sources. Point source discharges to surface water include, as examples, leachate discharge from a disposal unit, or, runoff from contaminated site discharges through a storm sewer. Discharges such as these are subject to National Pollutant Discharge Elimination System (NPDES) requirements, and as such may require a permit. Additionally, Act 2 requires that any site undergoing cleanup via the Statewide health or site-specific standard also demonstrate compliance with surface water quality criteria when a nonpoint source discharge, such as contaminated groundwater, discharges into surface water. More information regarding these programs may be found at the DEP's website or through your site's assigned Project Manager.

Sewage Facilities Program

The redevelopment of Act 2 sites after completion of cleanup activities may require you to investigate sewage planning considerations. For example, when site utilization is changed from industrial use to residential use as a result of Act 2 implementation, the sewage facilities planning for the property will require analysis/revision. Act 537, Sewage Facilities Program, contains provisions to enable proper municipal planning and permitting for current and future utilization of sewage facilities. For more information, visit www.dep.pa.gov, Search 'Act 537 Sewage Facilities Program'.

Water Well Abandonment

Abandoned wells must be reported on required forms to the PA Department of Conservation and Natural Resources (DCNR), Bureau of Topographic and Geologic Survey (BTGS). Information is available on the DCNR website, www.dcnr.state.pa.us, select Geology, and on the Geologic Survey portion of the website, under 'Groundwater' and 'Private Water Wells' section.

If available, the original driller's log should be included along with the details of the well abandonment procedure. A photograph should be taken of the site, and a reference map should be made to locate the abandoned well. **We recommend that you identify the exact location by GPS** (It also may be appropriate to survey the exact location of the well). If a permit was issued for the well installation (e.g. by a local agency or County Health Department), please provide a copy of your BTGS submission to the issuing agency and to this office.

Oil and Gas Well Site Restoration

If the site specified for remediation is considered to be part of a well site as that term is defined by Section 603a(d) of the Oil and Gas Act, you must ensure restoration of the area under Section 206 of the Oil and Gas Act, 58 P.S. § 601.206. The Department considers a well site to be restored under Section 206 when the disturbed or impacted area is returned to its approximate original contours and restored to conditions that support the same potential uses of the land that existed prior to the spill or release, including the vegetation of those areas. The restored area should be capable of supporting the type of vegetation that was present before the release.

Notification of Receipt of a Remedial Investigation Report and Cleanup Plan
(for site-specific standard)
(Section 304(n)(2)(i))

Notice is hereby given that Bellwether District Holdings, LLC (BDH) will submit a Remedial Investigation Report and Cleanup Plan (RIR/CP) to the Pennsylvania Department of Environmental Protection, Southeast Regional Office, to demonstrate attainment of the site-specific standard for the Girard Point Number 3 Separator (No. 3 Separator) Area (eFACTS PF No. 780190) within the Former Philadelphia Refinery located at 3144 West Passyunk Avenue, Philadelphia, Pennsylvania. BDH has indicated that the remediation measures taken have attained compliance with the site-specific cleanup standard established under the Land Recycling and Environmental Remediation Standards Act.

This notice is made under the provision of the Land Recycling and Environmental Remediation Standards Act, the Act of May 19, 1995, P.L. #4, No. 2.

The Philadelphia Inquirer
100 S. INDEPENDENCE MALL W, STE 600, PHILADELPHIA, PA 19106

Affidavit of Publication

On Behalf of:
TERRAPHASE ENGINEERING
1100 E HECTOR ST
SUITE 400
CONSHOHOCKEN, PA 19428

STATE OF PENNSYLVANIA COUNTY OF PHILADELPHIA:

Before the undersigned authority personally appeared the undersigned who, on oath represented a and say: that I am an employee of The Philadelphia Inquirer, LLC, and am authorized to make this affidavit of publication, and being duly sworn, I depose and say:

1. The Philadelphia Inquirer, LLC is the publisher of the Philadelphia Inquirer, with its headquarters at 100 S. Independence Mall West, Suite 600, Philadelphia, PA 19106.
2. The Philadelphia Inquirer is a newspaper that which was established in in the year 1829, since which date said daily newspaper has been continuously published and distributed daily in the City of Philadelphia, count and state aforesaid.
3. The printed notice or publication attached hereto set forth on attached
hereto was published in all regular print editions of
The Philadelphia Inquirer on

Legal Notices

as published in **Inquirer Legals** in the issue(s) of:

7/18/2025

4. Under oath, I state that the following is true and correct, and that neither I nor The Philadelphia Inquirer, LLC have any is interest in the subject matter of the aforesaid notice or advertisement.

Helene Sweeney

Nancy S. Fisher

Notary Public

My Commission Expires:

Commonwealth of Pennsylvania - Notary Seal
Nancy S Fisher, Notary Public
Philadelphia County
My Commission Expires June 27, 2027
Commission Number 1433937

Ad No: 190940
Customer No: 104799

COPY OF ADVERTISEMENT

Notification of Receipt of a Remedial Investigation Report and Cleanup Plan
(for site-specific standard)
(Section 304(n)(2)(i))

Notice is hereby given that Bellwether District Holdings, LLC (BDH) will submit a Remedial Investigation Report and Cleanup Plan (RIR/CP) to the Pennsylvania Department of Environmental Protection, Southeast Regional Office, to demonstrate attainment of the site-specific standard for the Girard Point Number 3 Separator (No. 3 Separator) Area (eFACTS PF No. 780190) within the Former Philadelphia Refinery located at 3144 West Passyunk Avenue, Philadelphia, Pennsylvania. BDH has indicated that the remediation measures taken have attained compliance with the site-specific cleanup standard established under the Land Recycling and Environmental Remediation Standards Act.

This notice is made under the provision of the Land Recycling and Environmental Remediation Standards Act, the Act of May 19, 1995, P.L. #4, No. 2.

July 17, 2025

Ms. Leigh Anne Rainford
Program Manager
Philadelphia Department of Public Health
Public Health Services
321 University Avenue – 2nd Floor
Philadelphia, PA 19104

sent via email to LeighAnne.Rainford@Phila.gov and UPS, Proof of Delivery Requested

Subject: **Notice of Remedial Investigation Report and Cleanup Plan Submission (eFACTS PF No. 780190)**
Girard Point No. 3 Separator Area
Former Philadelphia Energy Solutions Refinery
3144 West Passyunk Avenue
Philadelphia, PA 19153

Dear Ms. Rainford:

This letter provides notice that Terraphase Engineering Inc. (Terraphase), on behalf of Bellwether District Holdings, LLC (BDH), will submit a Remedial Investigation Report and Cleanup Plan (RIR/CP) to the Department of Environmental Protection for the Girard Point Number 3 Separator (No. 3 Separator) Area (eFACTS PF No. 780190) within the Former Philadelphia Refinery located at 3144 West Passyunk Avenue, Philadelphia, Pennsylvania. The RIR/CP indicates that the remediation performed has attained compliance with the site-specific cleanup standard.

This notice is made under the provision of the Land Recycling and Environmental Standards Act, the Act of May 19, 1995, P.L. #4, No. 2.

Sincerely,

for Terraphase Engineering Inc.

Kevin L. Long
Senior Principal Consultant

KL:cs

cc: Julianna Connolly (jconnolly@hilcoglobal.com)
Joseph Jeray (jjeray@hilcoglobal.com)
Amy Piccone (apiccone@hilcoglobal.com)

Outlook

UPS Delivery Notification, Tracking Number 1Z75YA671325855378

From UPS <pkginfo@ups.com>
Date Thu 7/17/2025 12:16 PM
To Samantha Chubb <samantha.chubb@terraphase.com>

Hello, your package has been delivered.

Delivery Date: Thursday, 07/17/2025
Delivery Time: 12:12 PM
Signed by: FRAZZIER

TERRAPHASE ENGINEERING

Tracking Number:	1Z75YA671325855378
Ship To:	PHILADELPHIA DEPT OF PUBLIC HEALTH 7801 ESSINGTON AVENUE ENVIRONMENTAL HEALTH SERVICES PHILADELPHIA, PA 19153 US
Number of Packages:	1
UPS Service:	UPS Next Day Air Saver®
Package Weight:	0.5 LBS
Reference Number:	P044.001.003_CHUBB

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pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS
LAND RECYCLING PROGRAM

Land Recycling Program
Transmittal Sheet for Plan/Report Submission

Instructions: Please provide all requested information in each of the four sections. This transmittal sheet shall accompany any plan/report submitted to the Department under the Land Recycling Program. Proper completion of the Transmittal Sheet will assist Department review and may avoid a finding of plan/report deficiency. The Facility ID number can be obtained from the Department's Environmental Cleanup Program in the region where the site is located.

Section 1 - Site Identification

eFACTS Facility ID 856439

Site Name Girard Point Number 3 Separator Area

Site Address 3144 West Passyunk Avenue, Philadelphia, Pennsylvania

Municipality and County Philadelphia, Philadelphia County

Section 2 - Remediation Standard . . Plan/Report . . Fees

Identify the remediation standard being pursued and the type of plan/report being submitted. Please note required Department fees follow each type of plan/report.

Check the relevant standard and the type of plan/report being submitted.

☐ Background Standard
Final Report ($250 fee)

☒ Site-Specific Standard

- ☒ Remedial Investigation Report ($250 fee)
- ☐ Risk Assessment Report ($250 fee)
- ☒ Cleanup Plan ($250 fee)
- ☐ Final Report ($500 fee)*

☐ Statewide Health Standard*
Final Report ($250 fee)

☐ Special Industrial Area

- ☐ Work Plan (no fee)
- ☐ Baseline Environmental Report (no fee)

*A final report submitted under a combination of cleanup standards should be accompanied with a fee representing the higher of the two standards' final report fee.

Ensure your check covers all required fees and is made payable to the **Commonwealth of Pennsylvania**.

Section 3 - Municipal/Public Notice Confirmation

There are two stages in the Land Recycling Program where municipal and public notices are required. Read the information associated with each stage. You will be asked to confirm that information establishing your compliance with these notification requirements has been included with this submission.

☐ Check here if you are planning to meet the Background or Statewide Health Standard and your Final Report has been submitted within 90 days of the release.

Indicate date of release here July 12, 2011

No further completion of this section is required if your Final Report for these two standards conforms to the 90 day time frame.

Stage 1 - Notice of Intent to Remediate (NIR)

☒ Check here to confirm you have included proof that a copy of your NIR was provided to each municipality where your site is located. Proof will be a copy of your cover letter and a copy of a signed certified mail receipt slip from the municipality.

☒ Check here to confirm a copy of a proof of publication document from a newspaper serving the area of your site has been included with this submission.

☒ Check here to indicate that a Site-Specific Standard or a Special Industrial Area is involved and a municipal request was received for development of a public involvement plan. The plan/report submission shall include municipality and public comments, which were submitted, and your responses to those comments.

Stage 2 - Cleanup Plan/Report Submission

July 17, 2025 Place date here that each municipality was notified of any plan or report submitted under any of the three remediation standards.

The Philadelphia Inquirer July 18, 2025 Place the newspaper name and date that your notice of your plan/report submission was published.

Section 4 - Project Contact

On the lines below, place the name, company, mailing addresses and business phone number of the individuals who can be contacted regarding this submission:

Consultant

Contact Person/Title: Kevin Long / Senior Principal Consultant

Phone Number 609-236-8171, ext 93

Email Address kevin.long@terraphase.com

Company Name: Terraphase Engineering Inc.

Mailing Address (street, city, state, zip)

100 Canal Pointe Blvd, Suite 110, Princeton, NJ 08540

Remediator

Contact Person/Title: Anne R. Garr/Assistant Secretary

Phone Number 312-383-4469

Email Address agarr@hilcoglobal.com

Company Name: Bellwether District Holdings, LLC

Mailing Address (street, city, state, zip)

3144 West Passyunk Avenue, Philadelphia, PA 19153

Other

Contact Person/Title:

Relationship to Site

(e.g. owner, participant in cleanup, responsible party, etc.)

Phone Number

Email Address

Company Name:

Mailing Address (street, city, state, zip)

Appendix B

Select Documents from Site-Wide Reporting



N

W E

S

Legend

- Shallow/Intermediate Monitoring Well with Apparent LNAPL Thickness (ft.)
- Shallow Monitoring Well with Apparent LNAPL Thickness (ft.)
- Monitoring Wells with No LNAPL
- Monitoring Wells Destroyed/Unable to Locate
- Staff Gauge Location
- Bulkhead
- Occupied Buildings
- Solid Waste Management Unit
- Area of Interest (AOI) Boundary

Light Non-Aqueous Phase Liquids (LNAPL) Types

- Lube Oil
- Residual Oil
- Middle Distillate
- Light Crude Oil

Notes:
1. Bing Maps aerial imagery provided by © 2010 Microsoft Corporation and its data suppliers and obtained under the licensing agreement with ESRI.
2. LNAPL thickness based on the January 2012 groundwater gauging event.

Figure 10 - Apparent LNAPL Thickness and Type
AOI-7 Site Characterization Report/ Remedial Investigation Report
Sunoco Philadelphia Refinery
Philadelphia, Pennsylvania

Sunoco, Inc. (R&M)
Philadelphia Refinery
3144 Passyunk Avenue
Philadelphia, PA.
19145

0 70 140 280 Feet

SCALE: 1" = 140'
DATE: February 13, 2012
DRN. BY: MH
CKD. BY: DW
JOB# : 2014401



Figure No.
2-8-18D

Title
SIMULATED BENZENE DISTRIBUTION OVER 30 YEARS - LOWER AQUIFER LOWER SAND (AOI 5-7)

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

Project Location:
City of Philadelphia, Pennsylvania

213403364
Prepared by MCW on 1/2/2025
Technical Review by JT on 1/2/2025
Independent Review by AK on 1/2/2025

0 1,000 2,000 Feet
1:128,858 (At Original document size of 11x17)

N

Legend

- Facility Area of Interest (AOI) Boundary
- AOI 10 (Sources Not Included in Assessment)
- Sewers
- Constant Concentration Boundary (≥1000 ug/L)
- River Boundary

Simulated Methyl Tertiary-Butyl Ether Dissolved Phase Distribution (ug/L)

- 20 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- >100,000



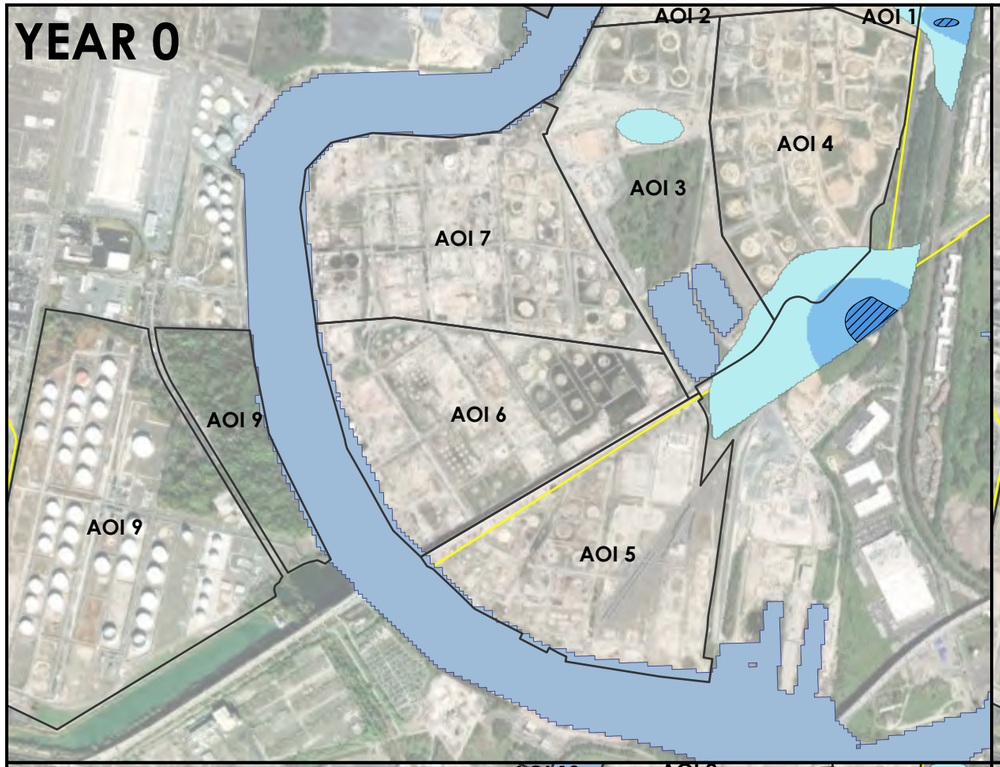
Notes:
1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Sources: Stantec
3. Service Layer Credits: USA Topo Maps: Copyright:© 2013 National Geographic Society, i-cubed
World Imagery: Maxar
4. ug/L = micrograms per liter

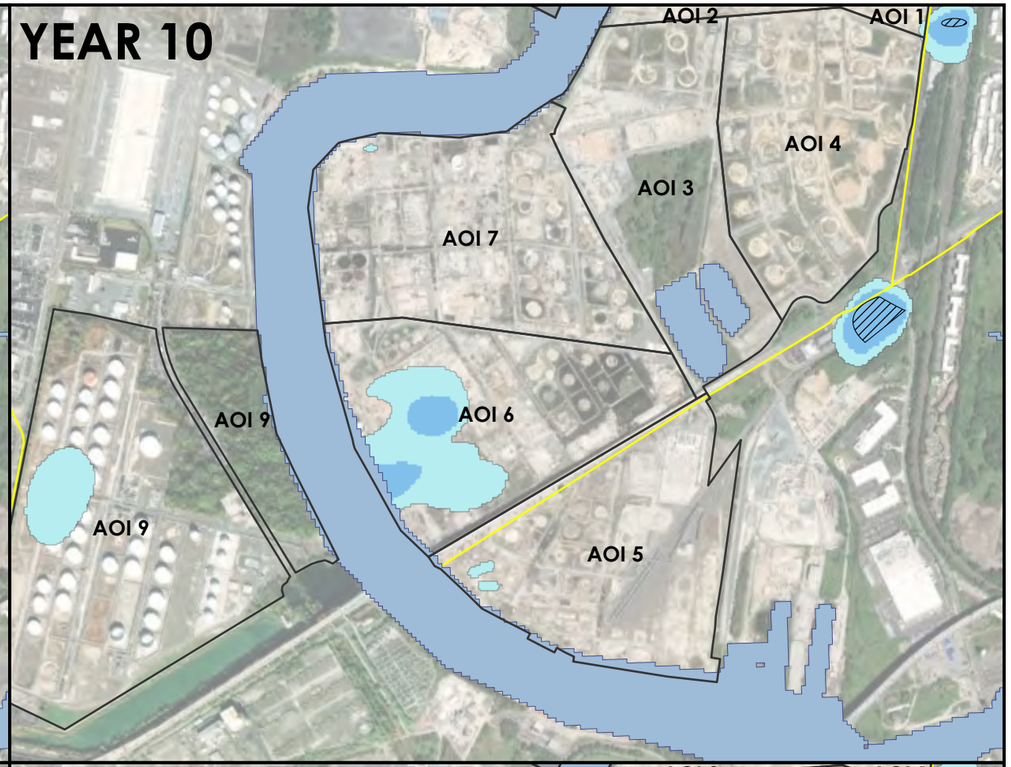
Stantec

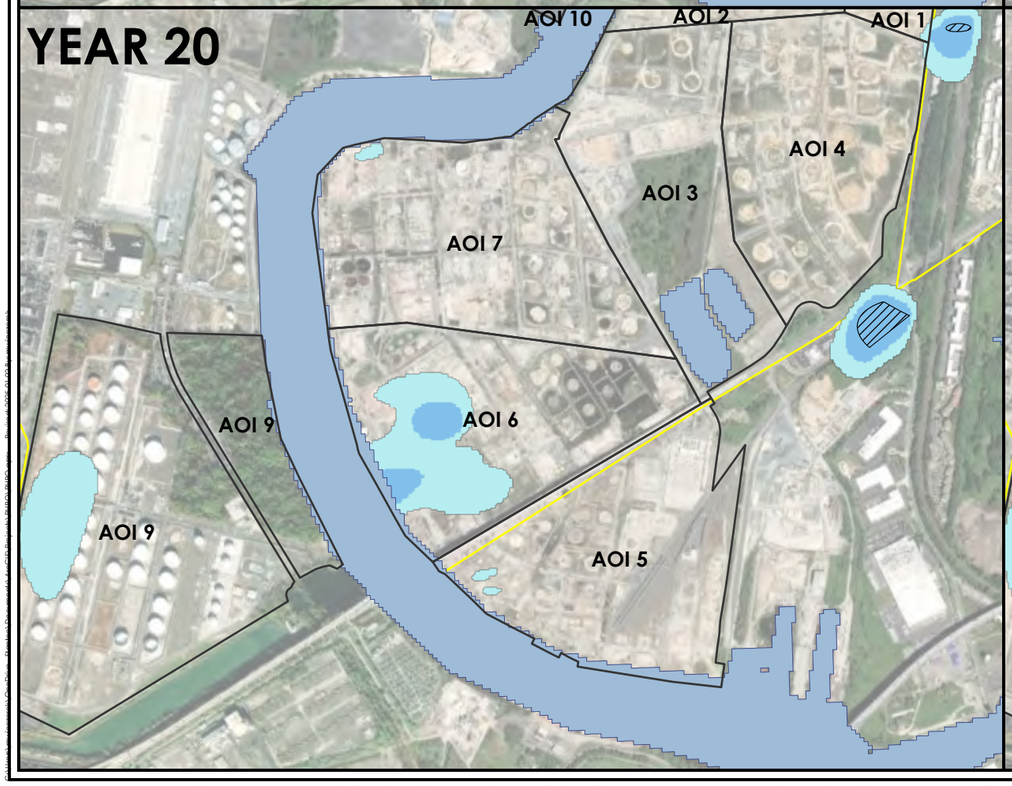
EVERGREEN

C:\Users\mwilcoxon\OneDrive - Stantec\Documents\ArcGIS\Projects\PhilRO\PhilRO.aprx Revised: 2025-01-02 By: mwilcoxon

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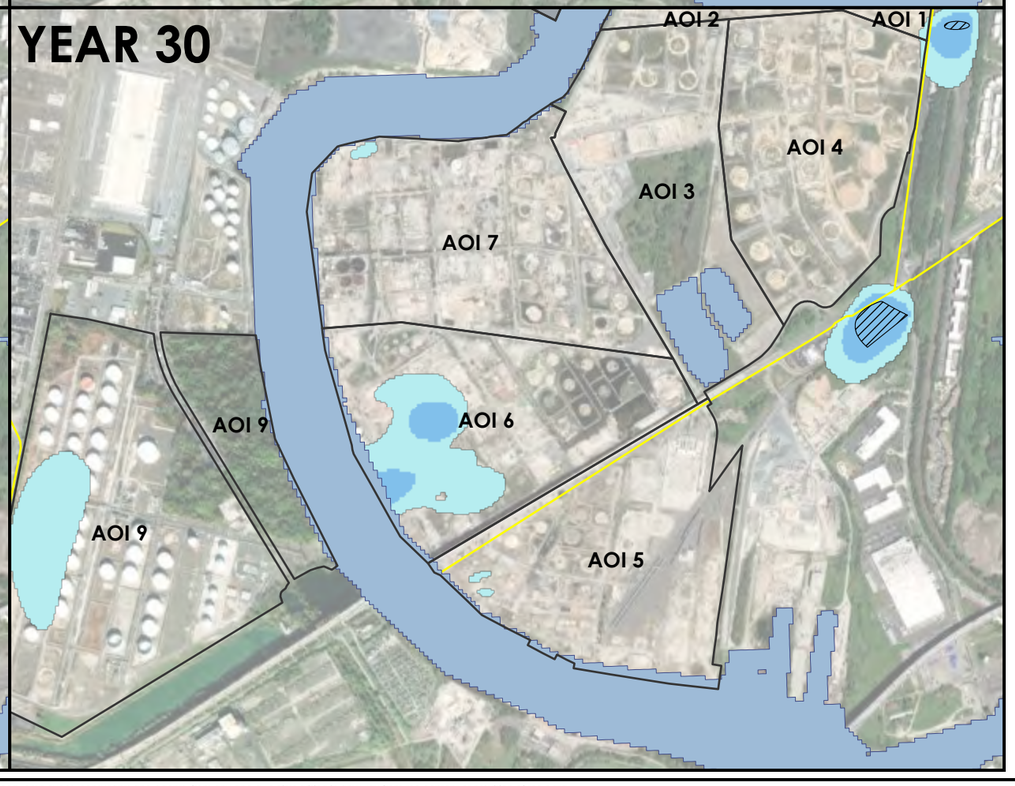


Figure No.
2-8-16D

Title

SIMULATED BENZENE DISTRIBUTION OVER 30 YEARS - LOWER AQUIFER MIDDLE SAND (AOI 5-7)

Client/Project

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

Project Location:
City of Philadelphia, Pennsylvania

213403364
Prepared by MCW on 1/2/2025
Technical Review by JT on 1/2/2025
Independent Review by AK on 1/2/2025

0 1,000 2,000 Feet
1:128,858 (At Original document size of 11x17)

N

Legend

- Facility Area of Interest (AOI) Boundary
- AOI 10 (Sources Not Included in Assessment)
- Sewers
- Constant Concentration Boundary (≥1000 ug/L)
- River Boundary

Simulated Methyl Tertiary-Butyl Ether Dissolved Phase Distribution (ug/L)

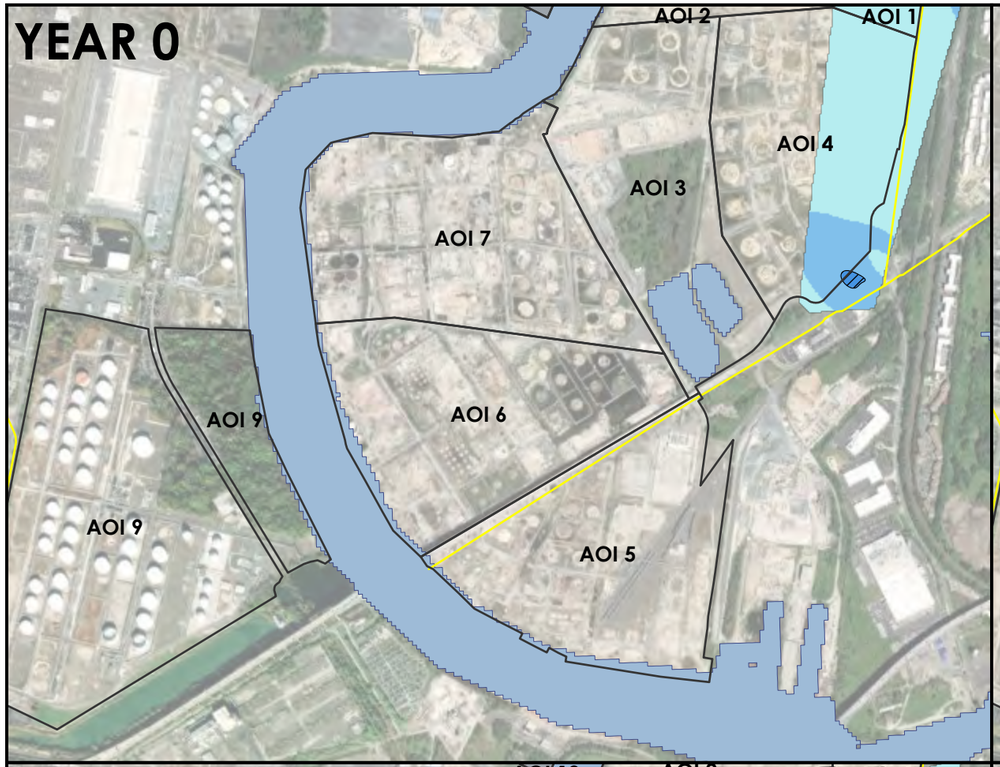
- 20 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- >100,000

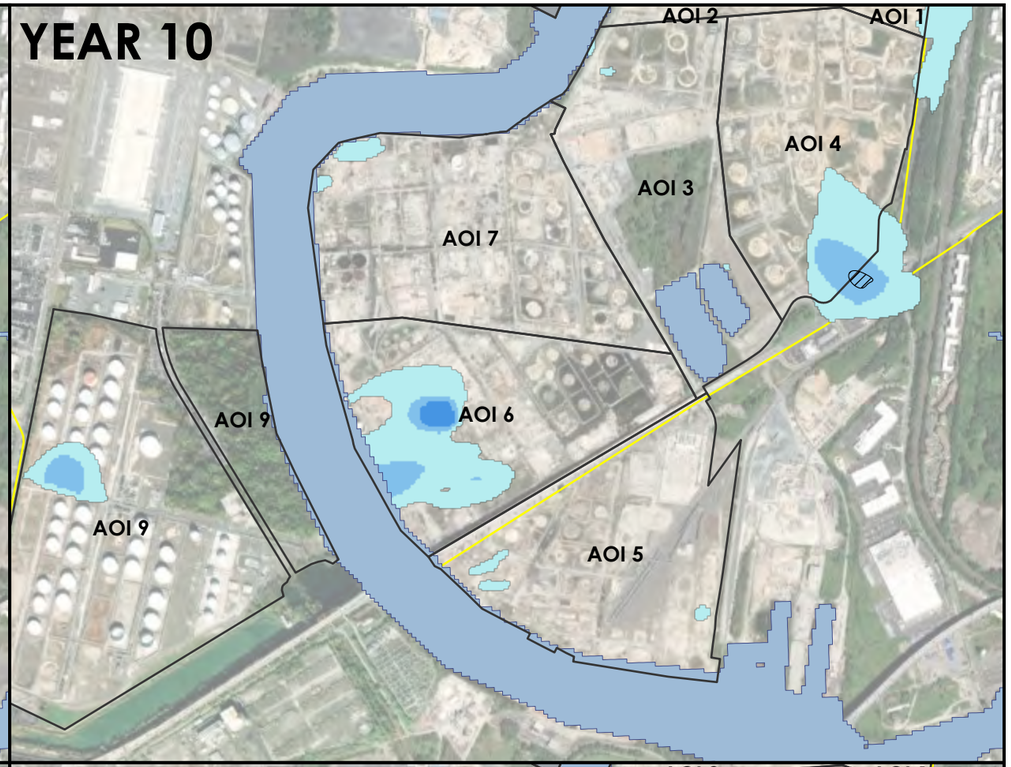


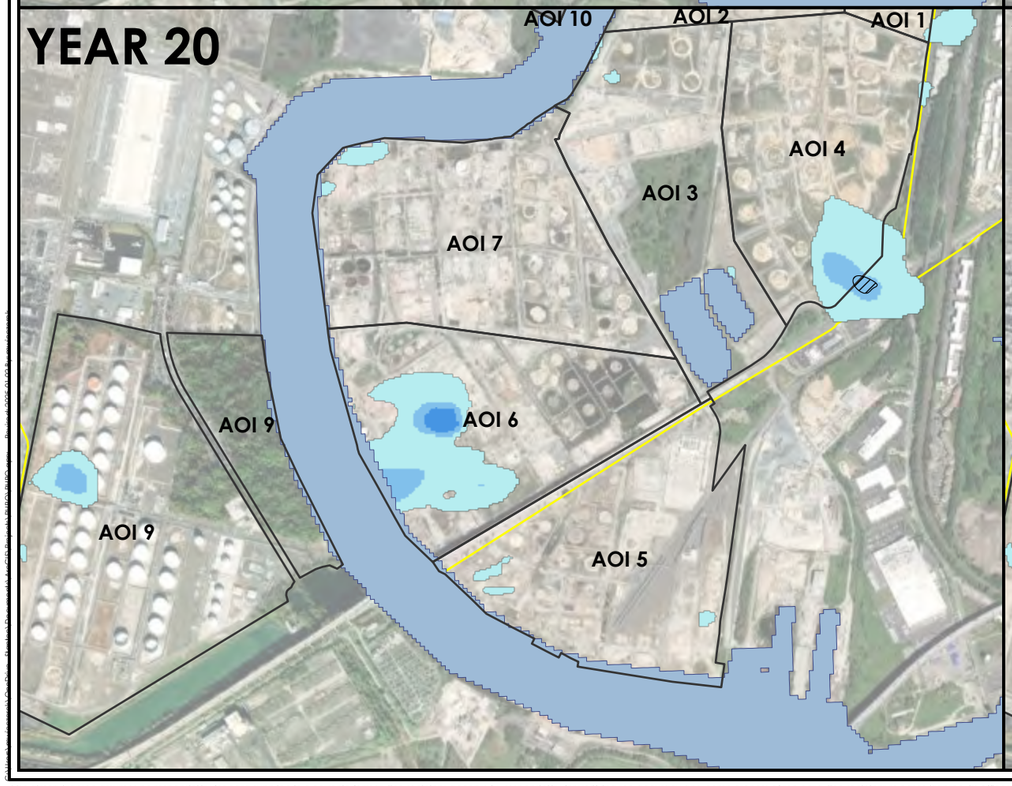
Notes:
1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Sources: Stantec
3. Service Layer Credits: USA Topo Maps: Copyright:© 2013 National Geographic Society, i-cubed
World Imagery: Maxar
4. ug/L = micrograms per liter

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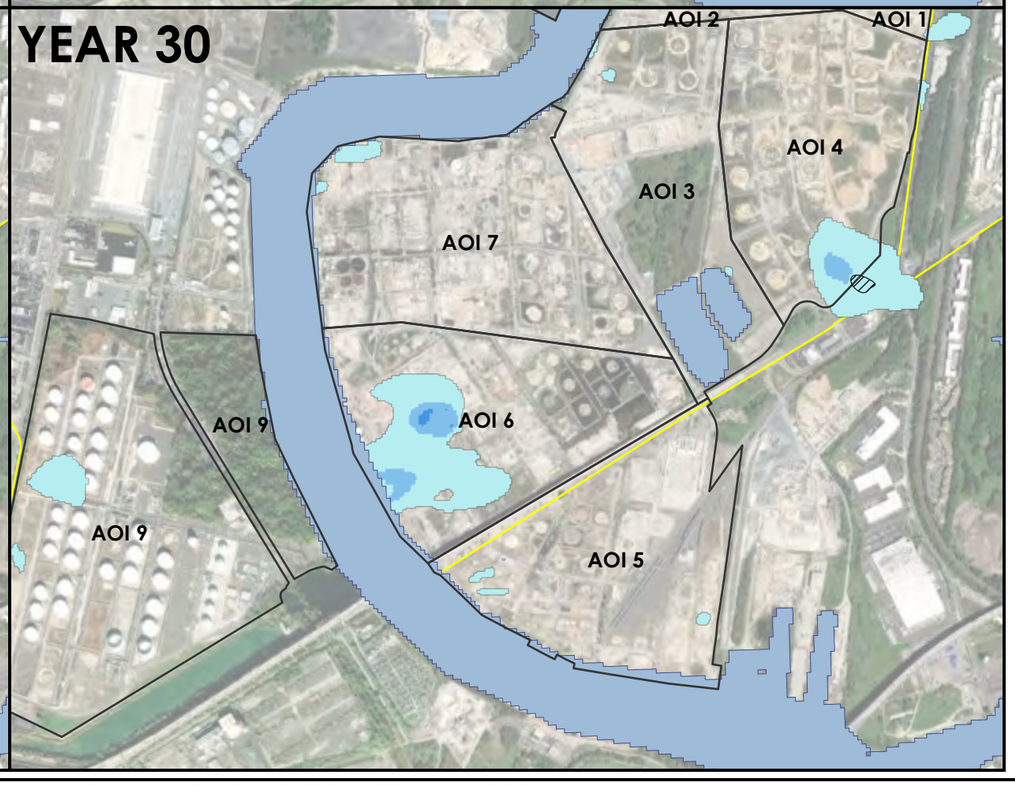


Figure No.
2-8-14D

Title
SIMULATED BENZENE DISTRIBUTION OVER 30 YEARS - UPPER SAND (AOI 5-7)

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

Project Location:
City of Philadelphia, Pennsylvania

213403364
Prepared by MCW on 1/2/2025
Technical Review by JT on 1/2/2025
Independent Review by AK on 1/2/2025

0 1,000 2,000 Feet
1:128,858 (At Original document size of 11x17)

N

Legend

- Facility Area of Interest (AOI) Boundary
- AOI 10 (Sources Not Included in Assessment)
- Sewers
- Constant Concentration Boundary (≥1000 ug/L)
- River Boundary

Simulated Benzene Dissolved Phase Distribution (ug/L)

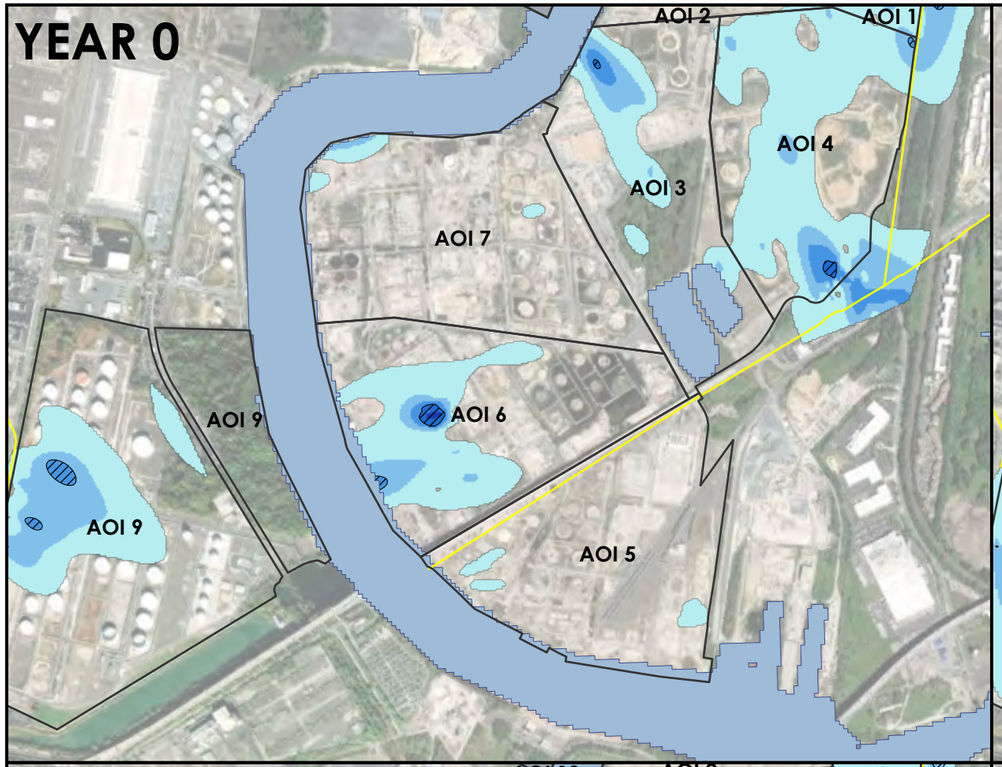
- 5 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- >100,000

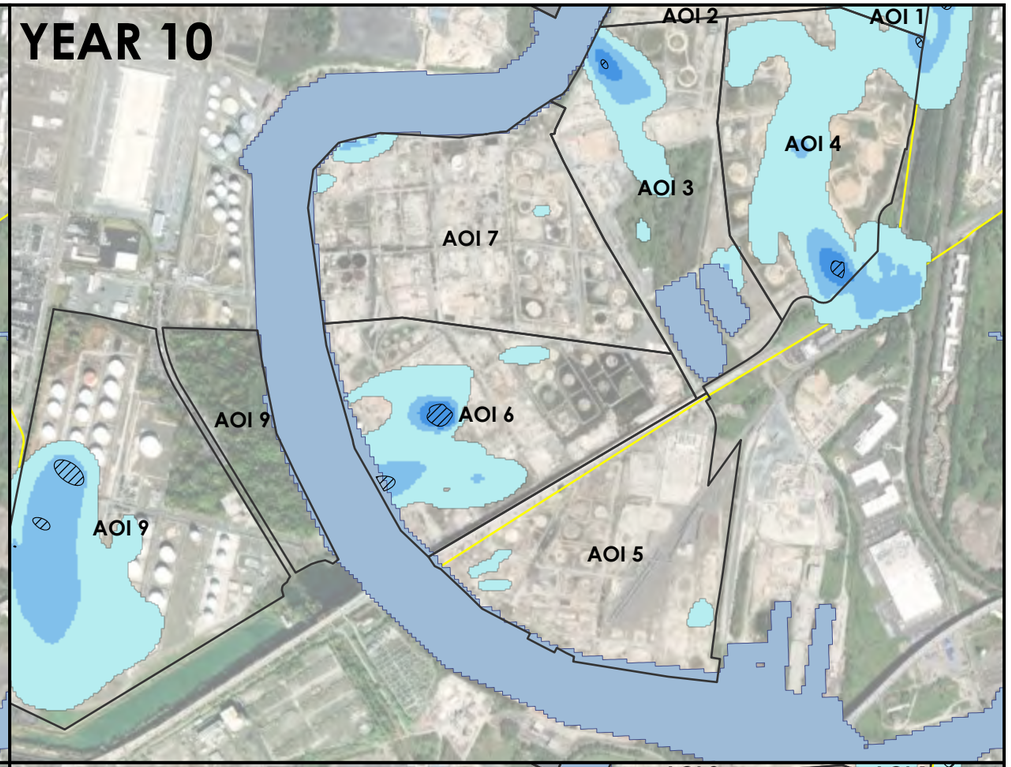


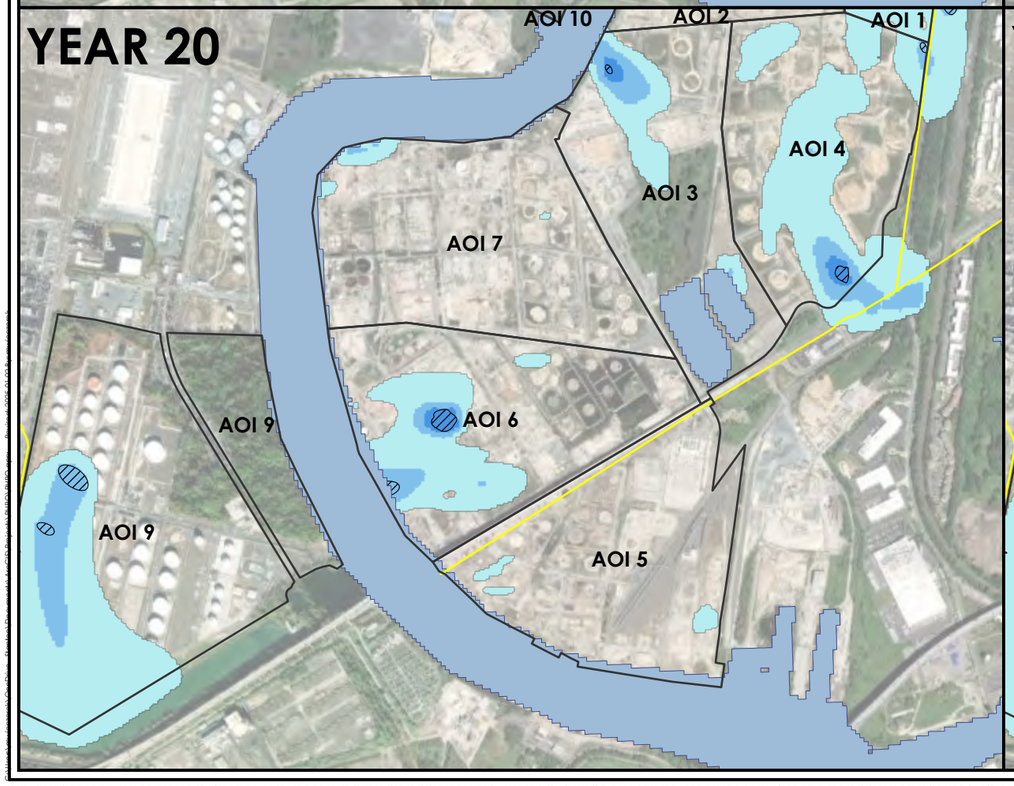
Notes:
1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Sources: Stantec
3. Service Layer Credits: USA Topo Maps: Copyright:© 2013 National Geographic Society, i-cubed
World Imagery: Maxar
4. ug/L = micrograms per liter

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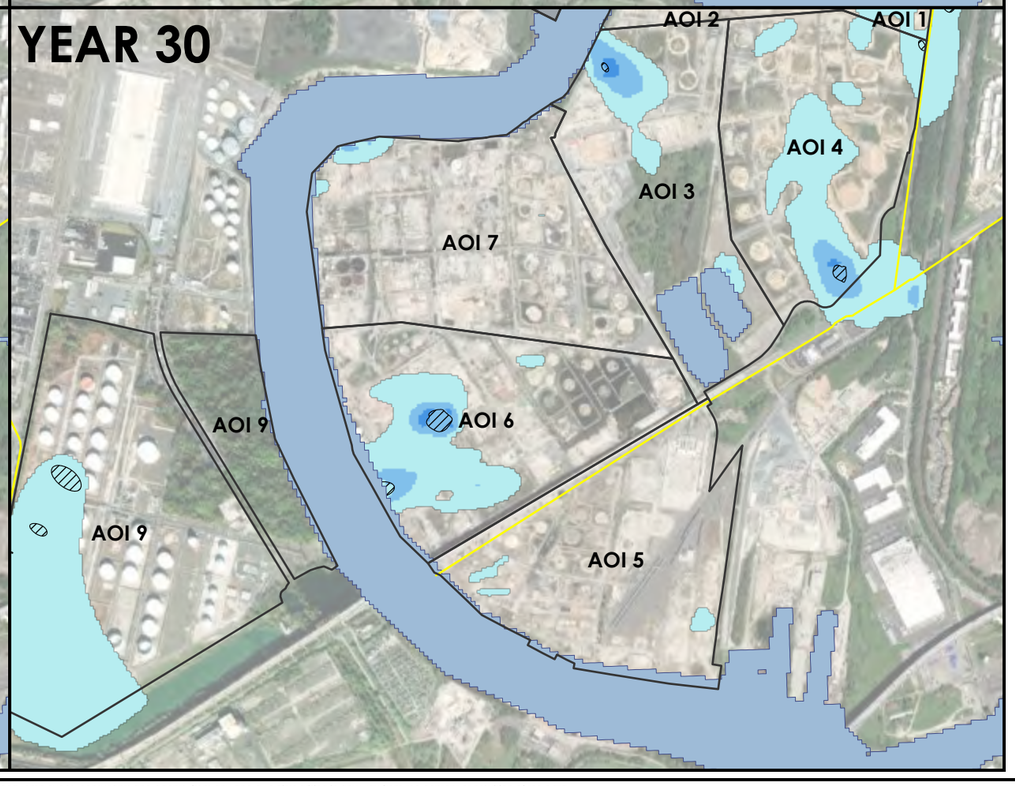


Figure No.

2-8-12D

Title

SIMULATED BENZENE DISTRIBUTION OVER 30 YEARS - WATER TABLE (AOI 5-7)

Client/Project

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

Project Location:
City of Philadelphia, Pennsylvania

213403364
Prepared by MCW on 1/2/2025
Technical Review by JT on 1/2/2025
Independent Review by AK on 1/2/2025

0 1,000 2,000 Feet

1:130,000 (At Original document size of 11x17)

N

Legend

- Facility Area of Interest (AOI) Boundary
- AOI 10 (Sources Not Included in Assessment)
- Sewers
- Decaying Concentration Area (≥1000 ug/L)
- Decaying Concentration Area (≥10,000 ug/L)
- River Boundary

Simulated Benzene Dissolved Phase Distribution (ug/L)

- 5 - 100
- 100 - 1,000
- 1,000 - 10,000
- 10,000 - 100,000
- >100,000



Notes:
1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Sources: Stantec
3. Service Layer Credits: USA Topo Maps: Copyright:© 2013 National Geographic Society, i-cubed
World Imagery: Maxar
4. ug/L = micrograms per liter

Stantec

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Appendix B
Gauging Information
No 3. Separator Area Remediation
Bellwether District Holdings, LLC, Philadelphia, PA

Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-107	7/14/2010	7.84	5.65	2.19
C-107	7/1/2009	7.01	5.57	1.44
C-107	6/22/2009	7.20	5.66	1.54
C-107	3/23/2009	6.97	5.74	1.23
C-107	11/25/2008	7.57	6.31	1.26
C-107	6/3/2008	7.32	6.66	0.66
C-107	11/15/2007	6.18	5.60	0.58
C-107	6/4/2007	8.09	5.86	2.23
C-107	11/7/2006	7.54	5.99	1.55
C-107	5/24/2006	7.31	5.43	1.88
C-107	5/19/2005	7.38	6.19	1.19
C-107	10/8/2004	6.45	5.59	0.86
C-107	11/24/2003	6.06	5.09	0.97
C-107	4/25/2003	6.10	5.87	0.23
C-107	11/1/2002	5.77	5.50	0.27
C-107	10/31/2002	6.15	5.48	0.67
C-107	11/9/2001	6.89	6.89	0.00
C-107	11/8/2001	7.70	7.00	0.70
C-107	1/30/2001	7.16	6.25	0.91
C-107	11/9/2000	7.73	6.47	1.26
C-107	5/16/2000	6.50	6.05	0.45
C-107	11/19/1999	7.08	6.75	0.33
C-107	11/18/1999	7.30	6.53	0.77
C-107	11/12/1998	1.37	1.32	0.05
C-107	11/13/1997	6.85	6.45	0.40
C-107	5/22/1997	7.08	6.66	0.42
C-107	12/5/1996	6.04	5.91	0.13
C-107	12/3/1996	5.91	5.72	0.19
C-107	11/19/1996	6.70	6.50	0.20
C-107	11/18/1996	6.96	6.24	0.72
C-107	6/7/1996	6.72	6.67	0.05
C-107	6/6/1996	7.30	6.41	0.89
C-107	1/22/1996	4.54	4.47	0.07
C-107	12/18/1995	7.97	6.26	1.71
C-142	4/11/2024	5.16		0.00
C-142	4/13/2023	6.30		0.00
C-142	3/8/2022	7.19		0.00
C-142	10/29/2021	6.26		0.00
C-142	4/20/2021	7.24		0.00
C-142	6/5/2020	5.98		0.00
C-142	10/7/2019	7.19		0.00
C-142	6/7/2019	6.35		0.00
C-142	6/22/2018	6.33		0.00
C-142	5/11/2017	6.95		0.00
C-142	3/2/2017	7.74		0.00
C-142	11/18/2016	8.43		0.00
C-142	7/19/2016	6.75		0.00
C-142	5/12/2016	7.10		0.00
C-142	11/18/2015	8.01		0.00
C-142	5/15/2015	7.56		0.00
C-142	12/9/2014	6.29		0.00
C-142	9/17/2014	6.63		0.00
C-142	9/11/2014	6.53		0.00
C-142	8/8/2014	6.34		0.00
C-142	5/15/2014	7.60		0.00
C-142	10/29/2013	7.80		0.00
C-142	10/17/2013	6.72		0.00
C-142	7/30/2013	5.05		0.00
C-142	7/19/2013	6.34		0.00
C-142	4/10/2013	7.72		0.00
C-142	4/3/2013	7.70		0.00
C-142	3/28/2013	6.84		0.00
C-142	5/9/2012	6.58		0.00
C-142	9/14/2011	3.81		0.00
C-142	8/17/2011	3.98		0.00
C-142	5/16/2011	5.72		0.00
C-142	7/8/2010	7.47		0.00
C-143	4/14/2022	3.21		0.00

Appendix B
Gauging Information
No 3. Separator Area Remediation
Bellwether District Holdings, LLC, Philadelphia, PA

Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-143	6/5/2020	11.18	11.17	0.01
C-143	6/22/2018	10.75		0.00
C-143	5/11/2017	10.23		0.00
C-143	3/2/2017	11.00		0.00
C-143	11/18/2016	11.13		0.00
C-143	5/12/2016	9.86		0.00
C-143	11/18/2015	11.02		0.00
C-143	5/15/2015	10.72		0.00
C-143	12/9/2014	10.55		0.00
C-143	9/17/2014	11.24		0.00
C-143	9/11/2014	11.24		0.00
C-143	8/8/2014	11.24		0.00
C-143	2/6/2014	9.89		0.00
C-143	10/29/2013	10.68	10.68	0.00
C-143	10/17/2013	9.35		0.00
C-143	7/30/2013	6.99		0.00
C-143	7/19/2013	7.19		0.00
C-143	5/9/2012	10.66	8.15	2.51
C-143	9/14/2011	8.92	6.17	2.75
C-143	8/17/2011	8.86	6.14	2.72
C-143	5/16/2011	10.09	8.04	2.05
C-143	7/8/2010	9.64	8.66	0.98
C-146	4/22/2024	2.36		0.00
C-146	4/11/2024	1.91		0.00
C-146	4/13/2023	8.49		0.00
C-146	5/11/2022	3.78		0.00
C-146	5/4/2021	12.78		0.00
C-146	4/30/2021	12.36		0.00
C-146	4/20/2021	11.93		0.00
C-146	6/5/2020	12.59		0.00
C-146	11/7/2019	11.90		0.00
C-146	10/7/2019	11.84		0.00
C-146	6/7/2019	9.25		0.00
C-146	10/31/2018	12.75		0.00
C-146	9/25/2018	12.01		0.00
C-146	7/19/2018	11.71	11.27	0.44
C-146	6/22/2018	10.69	10.41	0.28
C-146	6/8/2018	12.43	11.87	0.56
C-146	5/11/2017	11.18	10.92	0.26
C-146	3/2/2017	11.81	11.55	0.26
C-146	11/18/2016	12.11	12.04	0.07
C-146	9/7/2016	11.88	11.68	0.20
C-146	8/3/2016	11.78	11.66	0.12
C-146	8/1/2016	11.63	11.49	0.14
C-146	7/5/2016	11.68	11.46	0.22
C-146	6/7/2016	11.31	11.19	0.12
C-146	5/12/2016	11.76	11.58	0.18
C-146	4/5/2016	11.78	11.56	0.22
C-146	3/8/2016	12.01	11.74	0.27
C-146	1/7/2016	11.91	11.67	0.24
C-146	12/9/2015	12.23	11.86	0.37
C-146	11/18/2015	12.16	11.87	0.29
C-146	5/15/2015	12.33	12.01	0.32
C-146	12/9/2014	11.32	11.31	0.01
C-146	9/17/2014	11.75	11.66	0.09
C-146	9/11/2014	12.09	12.01	0.08
C-146	8/27/2014	11.90	11.81	0.09
C-146	8/8/2014	11.40	11.38	0.02
C-146	5/15/2014	12.01	11.96	0.05
C-146	2/6/2014	12.23	12.06	0.17
C-146	10/29/2013	12.76	12.57	0.19
C-146	10/17/2013	11.45	11.45	0.00
C-146	7/30/2013	11.56	11.55	0.01
C-146	7/19/2013	12.27	12.20	0.07
C-146	4/10/2013	12.86	12.57	0.29
C-146	4/3/2013	12.84	12.54	0.30
C-146	3/28/2013	12.80	12.50	0.30
C-146	5/9/2012	6.36		0.00

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-146	9/14/2011	4.81		0.00
C-146	8/17/2011	4.69		0.00
C-146	6/2/2011	6.20		0.00
C-147	10/29/2021	13.90		0.00
C-147	4/20/2021	11.14		0.00
C-147	6/5/2020	11.10	11.05	0.05
C-147	10/7/2019	12.11	11.85	0.26
C-147	6/7/2019	9.58	9.28	0.30
C-147	6/22/2018	10.56	10.18	0.38
C-147	6/8/2018	12.06	11.54	0.52
C-147	5/11/2017	11.04	10.62	0.42
C-147	3/2/2017	12.16	12.01	0.15
C-147	11/18/2016	12.67	12.66	0.01
C-147	5/12/2016	11.71	11.69	0.02
C-147	11/18/2015	12.37	12.34	0.03
C-147	5/15/2015	12.44	11.67	0.77
C-147	12/9/2014	11.05	10.69	0.36
C-147	9/17/2014	10.10	9.64	0.46
C-147	9/11/2014	11.14	11.03	0.11
C-147	8/27/2014	11.47	11.24	0.23
C-147	8/8/2014	11.78	11.00	0.78
C-147	5/15/2014	10.26	9.48	0.78
C-147	2/6/2014	11.44	9.71	1.73
C-147	10/29/2013	12.99	10.07	2.92
C-147	10/21/2013	12.92	9.94	2.98
C-147	10/17/2013	12.92	9.94	2.98
C-147	7/30/2013	9.80	9.49	0.31
C-147	7/19/2013	12.68	12.68	0.00
C-147	3/20/2013	12.97		0.00
C-147	5/9/2012	10.26	9.32	0.94
C-147	9/14/2011	5.44	5.38	0.06
C-147	8/17/2011	6.71	5.27	1.44
C-147	6/2/2011	8.17	3.64	4.53
C-148	6/5/2020	6.85	6.67	0.18
C-148	1/3/2020	10.34	10.22	0.12
C-148	6/7/2019	7.83		0.00
C-148	6/8/2018	12.12		0.00
C-148	5/11/2017	10.60		0.00
C-148	3/2/2017	11.68		0.00
C-148	11/18/2016	12.26		0.00
C-148	5/12/2016	11.58		0.00
C-148	11/18/2015	11.29		0.00
C-148	5/15/2015	12.85	12.48	0.37
C-148	12/9/2014	13.21	10.95	2.26
C-148	9/17/2014	11.38	10.97	0.41
C-148	9/11/2014	12.22	11.87	0.35
C-148	8/27/2014	12.47	12.09	0.38
C-148	8/8/2014	14.46	11.27	3.19
C-148	5/15/2014	12.40	11.65	0.75
C-148	2/6/2014	12.47	10.80	1.67
C-148	10/29/2013	15.14	11.95	3.19
C-148	10/21/2013	15.09	12.18	2.91
C-148	10/17/2013	15.09	12.18	2.91
C-148	7/30/2013	13.48	11.45	2.03
C-148	7/19/2013	13.79	13.54	0.25
C-148	4/10/2013	14.15	13.72	0.43
C-148	4/3/2013	13.78	13.29	0.49
C-148	3/28/2013	13.96	13.53	0.43
C-148	3/20/2013	13.40	13.29	0.11
C-148	5/9/2012	11.05	5.18	5.87
C-148	9/14/2011	4.93	4.92	0.01
C-148	8/17/2011	5.05	4.99	0.06
C-148	6/2/2011	6.39	6.08	0.31
C-149	7/19/2013	4.52		0.00
C-149	5/9/2012	7.38		0.00
C-149	6/2/2011	8.50	6.56	1.94
C-150	4/16/2024	2.25		0.00
C-150	4/13/2023	4.46		0.00

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-150	3/8/2022	4.59		0.00
C-150	10/29/2021	14.88	14.84	0.04
C-150	5/13/2021	15.21	15.19	0.02
C-150	4/20/2021	14.20	14.08	0.12
C-150	6/5/2020	11.79	11.32	0.47
C-150	10/7/2019	12.73	11.11	1.62
C-150	6/7/2019	8.98	8.94	0.04
C-150	6/22/2018	10.84	10.09	0.75
C-150	6/8/2018	14.82	13.33	1.49
C-150	5/11/2017	13.10	11.37	1.73
C-150	3/2/2017	14.20	12.44	1.76
C-150	11/18/2016	14.78	12.69	2.09
C-150	9/7/2016	14.13	12.20	1.93
C-150	8/3/2016	13.94	12.20	1.74
C-150	8/1/2016	12.03	12.02	0.01
C-150	7/5/2016	14.38	12.32	2.06
C-150	6/7/2016	13.68	11.74	1.94
C-150	5/12/2016	14.32	12.30	2.02
C-150	4/5/2016	14.81	12.55	2.26
C-150	3/8/2016	14.80	12.44	2.36
C-150	1/7/2016	14.69	12.22	2.47
C-150	12/9/2015	15.06	12.41	2.65
C-150	11/18/2015	13.97	11.09	2.88
C-150	5/15/2015	13.63	13.30	0.33
C-150	12/9/2014	12.50	12.16	0.34
C-150	9/17/2014	12.88	12.75	0.13
C-150	9/11/2014	13.07	13.02	0.05
C-150	8/27/2014	14.63	12.76	1.87
C-150	8/8/2014	14.54	12.57	1.97
C-150	5/15/2014	14.81	12.86	1.95
C-150	2/6/2014	12.43	12.22	0.21
C-150	10/29/2013	13.64	13.33	0.31
C-150	10/17/2013	12.75	12.41	0.34
C-150	7/30/2013	12.38	12.05	0.33
C-150	7/19/2013	13.87	13.83	0.04
C-150	4/10/2013	14.82	13.84	0.98
C-150	4/3/2013	14.52	13.41	1.11
C-150	3/28/2013	14.67	13.55	1.12
C-150	3/20/2013	14.19	13.10	1.09
C-150	5/9/2012	7.64	5.32	2.32
C-150	9/14/2011	5.30	5.29	0.01
C-150	8/17/2011	5.32		0.00
C-151	4/11/2024	1.02		0.00
C-151	4/13/2023	1.45		0.00
C-151	10/29/2021	13.00	12.97	0.03
C-151	4/20/2021	13.23		0.00
C-151	6/5/2020	13.12		0.00
C-151	6/8/2018	12.47		0.00
C-151	5/11/2017	10.88		0.00
C-151	3/2/2017	12.07		0.00
C-151	5/12/2016	11.82		0.00
C-151	11/18/2015	11.99		0.00
C-151	5/15/2015	12.78	12.59	0.19
C-151	12/9/2014	11.65	11.65	0.00
C-151	9/17/2014	11.99	11.95	0.04
C-151	9/11/2014	12.43	12.40	0.03
C-151	8/8/2014	12.43	12.40	0.03
C-151	5/15/2014	12.28		0.00
C-151	2/6/2014	11.79	11.38	0.41
C-151	10/29/2013	12.60		0.00
C-151	10/17/2013	11.91		0.00
C-151	7/30/2013	9.54		0.00
C-151	7/19/2013	13.19	13.19	0.00
C-151	4/10/2013	13.26		0.00
C-151	4/3/2013	12.74		0.00
C-151	3/28/2013	13.11		0.00
C-151	3/20/2013	12.85		0.00
C-151	5/9/2012	4.21		0.00

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C-151	9/14/2011	7.86	6.17	1.69
C-151	8/17/2011	6.80	6.40	0.40
C-152	4/11/2024	1.39	1.10	0.29
C-152	4/14/2023	2.93	2.47	0.46
C-152	10/29/2021	8.83	8.55	0.28
C-152	4/27/2021	8.72	8.52	0.20
C-152	6/5/2020	8.60	8.59	0.01
C-152	10/7/2019	8.89		0.00
C-152	6/7/2019	7.09		0.00
C-152	6/22/2018	6.94		0.00
C-152	6/8/2018	8.74		0.00
C-152	5/11/2017	8.01		0.00
C-152	3/2/2017	8.44		0.00
C-152	11/18/2016	9.26		0.00
C-152	7/21/2016	8.61	8.60	0.01
C-152	5/12/2016	8.54		0.00
C-152	11/18/2015	9.11		0.00
C-152	5/15/2015	9.36	9.12	0.24
C-152	9/17/2014	8.54		0.00
C-152	9/11/2014	9.42		0.00
C-152	8/27/2014	9.70		0.00
C-152	8/8/2014	9.64		0.00
C-152	5/15/2014	8.29		0.00
C-152	2/6/2014	8.67		0.00
C-152	10/29/2013	9.28		0.00
C-152	10/17/2013	8.09		0.00
C-152	7/30/2013	9.88		0.00
C-152	7/19/2013	9.38		0.00
C-152	4/10/2013	10.01		0.00
C-152	4/3/2013	9.79		0.00
C-152	3/28/2013	9.85		0.00
C-152	3/20/2013	8.43	8.42	0.01
C-152	5/9/2012	10.40	6.14	4.26
C-152	9/14/2011	5.93	5.19	0.74
C-152	8/17/2011	7.77	4.81	2.96
C-153	4/11/2024	1.66		0.00
C-153	4/13/2023	2.41		0.00
C-153	10/29/2021	14.10		0.00
C-153	4/20/2021	13.94		0.00
C-153	6/5/2020	14.52	14.51	0.01
C-153	10/7/2019	11.43		0.00
C-153	6/7/2019	8.67		0.00
C-153	6/22/2018	10.18		0.00
C-153	6/8/2018	13.54		0.00
C-153	5/11/2017	11.70	11.59	0.11
C-153	3/2/2017	13.01	12.82	0.19
C-153	11/18/2016	13.38	13.19	0.19
C-153	5/12/2016	12.93	12.65	0.28
C-153	11/18/2015	13.35	13.00	0.35
C-153	5/15/2015	13.89	13.37	0.52
C-153	12/9/2014	12.63	12.37	0.26
C-153	9/17/2014	13.28	13.07	0.21
C-153	9/11/2014	13.42	13.24	0.18
C-153	8/8/2014	13.27	13.19	0.08
C-153	5/15/2014	13.31	13.26	0.05
C-153	2/6/2014	12.59	12.58	0.01
C-153	10/29/2013	13.23	13.21	0.02
C-153	10/17/2013	12.43		0.00
C-153	7/30/2013	11.89		0.00
C-153	7/19/2013	13.91		0.00
C-153	4/10/2013	13.86		0.00
C-153	4/3/2013	13.44		0.00
C-153	3/28/2013	13.81		0.00
C-153	3/20/2013	13.61		0.00
C-153	5/11/2012	6.40	5.69	0.71
C-153	9/14/2011	4.28	4.25	0.03
C-153	8/17/2011	4.66	4.24	0.42
C-154	4/15/2024	1.61		0.00

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C-154	4/13/2023	4.51		0.00
C-154	10/29/2021	10.41		0.00
C-154	4/20/2021	10.52		0.00
C-154	6/5/2020	10.58		0.00
C-154	10/7/2019	10.60		0.00
C-154	6/7/2019	8.70		0.00
C-154	6/22/2018	9.94		0.00
C-154	6/8/2018	10.63		0.00
C-154	5/11/2017	10.65	10.65	0.00
C-154	3/2/2017	10.70	10.70	0.00
C-154	11/18/2016	10.67	10.66	0.01
C-154	5/12/2016	10.64	10.64	0.00
C-154	11/18/2015	10.65	10.64	0.01
C-154	5/15/2015	10.68	10.64	0.04
C-154	12/9/2014	10.69	10.68	0.01
C-154	9/17/2014	10.72	10.72	0.00
C-154	9/11/2014	10.70	10.70	0.00
C-154	8/8/2014	10.73	10.73	0.00
C-154	5/15/2014	10.74	10.73	0.01
C-154	2/6/2014	10.61	10.60	0.01
C-154	10/29/2013	10.77	10.74	0.03
C-154	10/17/2013	10.68	10.68	0.00
C-154	7/30/2013	10.59	10.57	0.02
C-154	7/19/2013	10.69	10.68	0.01
C-154	4/10/2013	11.09	10.72	0.37
C-154	4/3/2013	11.07	10.68	0.39
C-154	3/28/2013	11.04	10.67	0.37
C-154	3/20/2013	11.05	10.66	0.39
C-154	5/11/2012	5.86	5.57	0.29
C-154	9/14/2011	4.09		0.00
C-154	8/17/2011	4.14		0.00
C-155	4/11/2024	1.93		0.00
C-155	5/4/2023	2.35		0.00
C-155	10/29/2021	3.65		0.00
C-155	4/20/2021	3.99		0.00
C-155	6/5/2020	5.57		0.00
C-155	10/7/2019	4.97		0.00
C-155	6/7/2019	4.51		0.00
C-155	6/22/2018	4.44		0.00
C-155	5/11/2017	4.13		0.00
C-155	3/2/2017	4.73		0.00
C-155	11/18/2016	5.45		0.00
C-155	5/12/2016	4.06		0.00
C-155	11/18/2015	4.98		0.00
C-155	5/15/2015	5.11		0.00
C-155	12/9/2014	4.00		0.00
C-155	9/17/2014	5.14		0.00
C-155	9/11/2014	4.97		0.00
C-155	8/8/2014	4.47		0.00
C-155	5/15/2014	5.11		0.00
C-155	2/6/2014	3.19		0.00
C-155	10/29/2013	5.73		0.00
C-155	10/17/2013	4.70		0.00
C-155	7/30/2013	2.99		0.00
C-155	7/19/2013	4.31		0.00
C-155	4/10/2013	5.47		0.00
C-155	4/3/2013	4.86		0.00
C-155	3/28/2013	4.00		0.00
C-155	3/20/2013	3.70		0.00
C-155	5/11/2012	4.44		0.00
C-155	9/14/2011	3.50		0.00
C-155	8/17/2011	3.45		0.00
C-160	4/15/2024	--		0.00
C-160	4/13/2023	--		0.00
C-160	5/12/2016	--		0.00
C-160	9/17/2014	--		0.00
C-160	9/11/2014	--		0.00
C-160	8/8/2014	--		0.00

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C-160	2/6/2014	--		0.00
C-160	10/29/2013	--		0.00
C-160	10/17/2013	--		0.00
C-160	7/30/2013	--		0.00
C-160	5/9/2012	--		0.00
C-160	9/14/2011	--		0.00
C-161	4/15/2024	1.35	1.25	0.10
C-161	4/13/2023	3.30	2.84	0.46
C-161	2/28/2022	3.22	2.94	0.28
C-161	10/29/2021	9.83	8.26	1.57
C-161	4/20/2021	9.40	8.38	1.02
C-161	6/5/2020	9.46	9.45	0.01
C-161	10/7/2019	9.60	8.48	1.12
C-161	6/7/2019	9.18	7.59	1.59
C-161	6/22/2018	7.21		0.00
C-161	6/8/2018	8.87		0.00
C-161	5/11/2017	8.06		0.00
C-161	3/2/2017	8.81		0.00
C-161	11/18/2016	9.26	9.22	0.04
C-161	8/1/2016	8.52		0.00
C-161	5/12/2016	8.28		0.00
C-161	11/18/2015	8.93	8.92	0.01
C-161	5/15/2015	9.36	9.14	0.22
C-161	12/9/2014	9.12	9.12	0.00
C-161	9/17/2014	9.12	8.84	0.28
C-161	9/11/2014	9.35	9.03	0.32
C-161	8/27/2014	9.63	9.23	0.40
C-161	8/8/2014	9.87	9.36	0.51
C-161	5/15/2014	8.82	8.44	0.38
C-161	2/6/2014	10.49	7.67	2.82
C-161	10/29/2013	9.67	9.10	0.57
C-161	10/17/2013	8.33	8.03	0.30
C-161	7/30/2013	8.05	7.69	0.36
C-161	7/19/2013	10.04	9.42	0.62
C-161	4/10/2013	10.72	9.75	0.97
C-161	4/3/2013	11.08	9.85	1.23
C-161	3/28/2013	11.07	9.43	1.64
C-161	3/20/2013	11.03	6.53	4.50
C-161	5/9/2012	8.98	6.29	2.69
C-161	9/14/2011	8.15	4.67	3.48
C-162	4/15/2024	1.26		0.00
C-162	4/13/2023	4.01		0.00
C-162	10/29/2021	8.58		0.00
C-162	4/20/2021	8.12	8.10	0.02
C-162	6/5/2020	9.05		0.00
C-162	10/7/2019	9.68		0.00
C-162	6/7/2019	9.53		0.00
C-162	6/22/2018	8.44		0.00
C-162	6/8/2018	9.60		0.00
C-162	5/11/2017	8.75	8.75	0.00
C-162	3/2/2017	9.46		0.00
C-162	11/18/2016	9.18		0.00
C-162	5/12/2016	9.53		0.00
C-162	11/18/2015	8.93		0.00
C-162	5/15/2015	8.96		0.00
C-162	12/9/2014	8.53		0.00
C-162	9/17/2014	9.64		0.00
C-162	9/11/2014	9.71		0.00
C-162	8/8/2014	9.60		0.00
C-162	5/15/2014	9.38		0.00
C-162	2/6/2014	7.95		0.00
C-162	10/29/2013	8.90		0.00
C-162	10/17/2013	7.87		0.00
C-162	7/30/2013	6.59		0.00
C-162	7/19/2013	8.55		0.00
C-162	4/10/2013	8.53		0.00
C-162	4/3/2013	8.38		0.00
C-162	3/28/2013	8.41		0.00

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-162	3/20/2013	8.88		0.00
C-162	5/9/2012	6.01	4.90	1.11
C-166	4/11/2024	2.09		0.00
C-166	4/24/2023	5.17		0.00
C-166	4/14/2022	2.95		0.00
C-166	4/21/2021	6.69		0.00
C-166	6/5/2020	4.18		0.00
C-166	6/22/2018	7.06		0.00
C-166	6/8/2018	6.80		0.00
C-166	5/11/2017	7.17		0.00
C-166	5/12/2016	7.32		0.00
C-166	5/15/2015	7.17		0.00
C-166	9/17/2014	7.37		0.00
C-166	9/11/2014	7.37		0.00
C-166	8/8/2014	7.37		0.00
C-166	5/15/2014	7.06		0.00
C-166	10/29/2013	7.37		0.00
C-166	10/17/2013	7.05		0.00
C-166	7/30/2013	7.14	6.87	0.27
C-166	7/19/2013	7.06		0.00
C-166	5/9/2012	9.57	8.86	0.71
C-167	6/22/2018	12.33	10.32	2.01
C-167	6/8/2018	12.37		0.00
C-167	5/12/2016	12.38		0.00
C-167	9/17/2014	12.38		0.00
C-167	9/11/2014	12.38		0.00
C-167	8/8/2014	12.38		0.00
C-167	2/6/2014	12.33	11.54	0.79
C-167	10/29/2013	12.33		0.00
C-167	10/17/2013	12.31	12.13	0.18
C-167	7/30/2013	12.31	11.42	0.89
C-167	5/9/2012	9.03	9.03	0.00
C-168	4/30/2024	2.21		0.00
C-168	4/15/2024	1.97		0.00
C-168	5/11/2023	3.83	3.83	0.00
C-168	5/9/2022	2.86		0.00
C-168	10/29/2021	5.35		0.00
C-168	5/4/2021	6.79		0.00
C-168	4/21/2021	6.48		0.00
C-168	6/5/2020	5.67		0.00
C-168	11/7/2019	6.89	6.88	0.01
C-168	10/8/2019	8.10	8.10	0.00
C-168	6/6/2019	7.22		0.00
C-168	7/3/2018	4.64		0.00
C-168	5/11/2017	5.29	5.25	0.04
C-168	11/18/2016	5.73	5.54	0.19
C-168	5/12/2016	4.26	3.90	0.36
C-168	11/18/2015	3.85	3.84	0.01
C-168	5/15/2015	4.00	3.62	0.38
C-168	12/9/2014	3.11	2.94	0.17
C-168	9/17/2014	4.45	3.97	0.48
C-168	9/11/2014	4.34	3.91	0.43
C-168	8/8/2014	6.61	5.53	1.08
C-168	5/15/2014	6.70	6.70	0.00
C-168	2/6/2014	6.31	5.22	1.09
C-168	10/29/2013	6.70	6.57	0.13
C-168	10/17/2013	6.45	6.38	0.07
C-168	7/30/2013	6.32	6.04	0.28
C-168	7/19/2013	7.45	7.34	0.11
C-168	4/10/2013	7.07	6.96	0.11
C-168	4/3/2013	5.87	5.79	0.08
C-168	3/28/2013	5.72	5.70	0.02
C-168	5/9/2012	6.23	6.22	0.01
C-169	4/11/2024	3.57		0.00
C-169	4/13/2023	5.26	5.23	0.03
C-169	4/27/2022	6.04	4.99	1.05
C-169	4/21/2022	5.55	4.88	0.67
C-169	4/13/2022	4.69	4.41	0.28

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-169	4/5/2022	5.32	5.21	0.11
C-169	3/30/2022	6.17	5.02	1.15
C-169	3/21/2022	5.96	5.02	0.94
C-169	3/14/2022	5.64	5.04	0.60
C-169	3/7/2022	5.12	4.98	0.14
C-169	3/4/2022	5.38	5.17	0.21
C-169	2/25/2022	5.12	4.98	0.14
C-169	2/18/2022	5.01	4.90	0.11
C-169	1/4/2022	5.43	5.41	0.02
C-169	12/30/2021	5.86	5.85	0.01
C-169	12/20/2021	6.19	6.12	0.07
C-169	12/17/2021	6.10	6.10	0.00
C-169	12/13/2021	7.30	5.97	1.33
C-169	12/10/2021	9.01	5.94	3.07
C-169	12/6/2021	7.27	5.95	1.32
C-169	12/2/2021	7.27	5.95	1.32
C-169	11/29/2021	7.44	6.12	1.32
C-169	11/23/2021	7.73	6.47	1.26
C-169	11/18/2021	7.88	6.65	1.23
C-169	11/17/2021	7.88	6.65	1.23
C-169	11/15/2021	7.95	6.65	1.30
C-169	10/29/2021	8.83	7.50	1.33
C-169	4/20/2021	8.99	5.99	3.00
C-169	6/5/2020	8.74	8.32	0.42
C-169	10/7/2019	15.20	13.14	2.06
C-169	6/7/2019	10.69	8.71	1.98
C-169	6/22/2018	9.07	7.99	1.08
C-169	6/8/2018	9.36	8.27	1.09
C-169	5/11/2017	9.24	8.35	0.89
C-169	3/2/2017	14.22	12.46	1.76
C-169	11/18/2016	14.90	13.76	1.14
C-169	7/21/2016	12.93	12.03	0.90
C-169	5/12/2016	9.97	9.14	0.83
C-169	11/18/2015	13.17	13.08	0.09
C-169	5/15/2015	12.49	11.28	1.21
C-169	12/9/2014	10.52	10.35	0.17
C-169	9/17/2014	15.46	10.74	4.72
C-169	9/11/2014	15.00	12.05	2.95
C-169	8/27/2014	14.27	13.12	1.15
C-169	8/8/2014	14.67	12.55	2.12
C-169	5/16/2014	9.75	9.74	0.01
C-169	2/6/2014	13.97	7.93	6.04
C-169	10/29/2013	15.92	12.17	3.75
C-169	10/21/2013	14.82	12.14	2.68
C-169	10/17/2013	14.82	12.14	2.68
C-169	8/8/2013	13.82	12.77	1.05
C-169	8/7/2013	13.97	12.82	1.15
C-169	8/6/2013	14.32	12.52	1.80
C-169	8/5/2013	14.60	12.35	2.25
C-169	8/2/2013	13.47	10.15	3.32
C-169	7/31/2013	14.07	10.30	3.77
C-169	7/30/2013	15.04	9.17	5.87
C-169	7/19/2013	14.01	14.01	0.00
C-169	4/10/2013	14.50	13.41	1.09
C-169	4/3/2013	15.40	12.65	2.75
C-169	3/28/2013	12.49	10.05	2.44
C-169	3/20/2013	22.44	7.70	14.74
C-169	5/9/2012	6.53	6.21	0.32
C-64	4/16/2024	2.51		0.00
C-64	4/13/2023	3.92		0.00
C-64	10/29/2021	5.46		0.00
C-64	4/20/2021	6.43		0.00
C-64	6/5/2020	4.19	4.18	0.01
C-64	10/7/2019	6.39	6.37	0.02
C-64	6/7/2019	7.05	6.94	0.11
C-64	6/22/2018	6.72	6.71	0.01
C-64	6/8/2018	6.49	6.44	0.05
C-64	5/11/2017	5.96	5.89	0.07

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-64	3/2/2017	7.46	7.31	0.15
C-64	11/18/2016	7.92	7.76	0.16
C-64	5/12/2016	6.46	6.38	0.08
C-64	11/18/2015	7.65	7.54	0.11
C-64	5/15/2015	7.88	7.52	0.36
C-64	12/9/2014	7.30	6.82	0.48
C-64	9/17/2014	8.54	7.80	0.74
C-64	9/11/2014	8.47	7.74	0.73
C-64	8/8/2014	8.48	7.69	0.79
C-64	5/15/2014	8.64	7.51	1.13
C-64	2/6/2014	7.20	6.40	0.80
C-64	10/29/2013	8.62	7.76	0.86
C-64	10/17/2013	7.56		0.00
C-64	7/30/2013	4.31	3.36	0.95
C-64	7/19/2013	8.47	7.53	0.94
C-64	4/10/2013	8.60	7.67	0.93
C-64	4/3/2013	8.52	7.56	0.96
C-64	3/28/2013	8.40	7.54	0.86
C-64	5/9/2012	7.35	5.04	2.31
C-64	3/20/2012	9.69	8.77	0.92
C-64	9/14/2011	3.60	3.59	0.01
C-64	8/17/2011	3.59	3.58	0.01
C-64	5/16/2011	5.15		0.00
C-64	7/8/2010	6.83		0.00
C-64	7/1/2009	4.86		0.00
C-64	6/22/2009	4.60		0.00
C-64	3/23/2009	4.55		0.00
C-64	11/25/2008	4.43		0.00
C-64	6/3/2008	5.38		0.00
C-64	11/15/2007	4.23		0.00
C-64	6/4/2007	2.61		0.00
C-64	11/7/2006	4.54		0.00
C-64	5/24/2006	4.35		0.00
C-64	5/19/2005	5.24		0.00
C-64	10/21/2004	4.81		0.00
C-64	10/8/2004	4.65		0.00
C-64	10/31/2002	4.32		0.00
C-64	11/8/2001	5.99		0.00
C-64	11/9/2000	5.52		0.00
C-64	11/18/1999	5.01		0.00
C-64	11/12/1998	4.04		0.00
C-64	11/13/1997	4.87		0.00
C-64	11/18/1996	5.18		0.00
C-64	12/18/1995	5.18		0.00
C-65	4/11/2024	2.29		0.00
C-65	10/31/2023	4.52	4.51	0.01
C-65	4/13/2023	4.35		0.00
C-65	2/27/2023	3.99	3.97	0.02
C-65	2/28/2022	4.02	1.61	2.41
C-65	10/29/2021	3.53	2.78	0.75
C-65	4/21/2021	3.97	3.62	0.35
C-65	6/4/2020	3.41		0.00
C-65	10/8/2019	2.94	2.72	0.22
C-65	6/6/2019	2.06	1.62	0.44
C-65	6/22/2018	3.28	2.90	0.38
C-65	6/8/2018	3.11	2.72	0.39
C-65	5/11/2017	3.61	3.24	0.37
C-65	3/2/2017	4.54	4.12	0.42
C-65	11/18/2016	4.01	3.49	0.52
C-65	5/12/2016	1.67	1.26	0.41
C-65	11/18/2015	2.02	1.48	0.54
C-65	5/15/2015	1.38	0.86	0.52
C-65	12/9/2014	1.34	0.86	0.48
C-65	9/17/2014	1.05	0.53	0.52
C-65	9/11/2014	0.95	0.50	0.45
C-65	8/8/2014	0.97	0.52	0.45
C-65	5/15/2014	-1.26		0.00
C-65	10/29/2013	1.20	0.60	0.60

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
C-65	10/17/2013	1.04	0.52	0.52
C-65	7/30/2013	1.12	0.48	0.64
C-65	7/19/2013	1.03	0.54	0.49
C-65	4/10/2013	1.70	1.15	0.55
C-65	4/3/2013	1.79	1.20	0.59
C-65	3/28/2013	1.76	1.30	0.46
C-65	5/9/2012	1.57	1.06	0.51
C-65	5/16/2011	1.58	1.13	0.45
C-65	7/14/2010	1.99	1.53	0.46
C-65	7/1/2009	1.83	1.47	0.36
C-65	6/22/2009	2.49	2.11	0.38
C-65	3/23/2009	1.02	0.70	0.32
C-65	11/25/2008	4.52	4.18	0.34
C-65	6/3/2008	4.18	3.86	0.32
C-65	11/15/2007	4.47	3.98	0.49
C-65	6/4/2007	5.18	3.07	2.11
C-65	11/7/2006	3.25	3.12	0.13
C-65	5/24/2006	4.60	3.01	1.59
C-65	5/19/2005	5.96	4.08	1.88
C-65	11/24/2003	4.01	3.73	0.28
C-65	4/25/2003	3.89	3.87	0.02
C-65	11/20/2002	4.50	4.48	0.02
C-65	11/1/2002	3.98	3.92	0.06
C-65	10/31/2002	6.27	3.77	2.50
C-65	11/8/2001	5.28	4.97	0.31
C-65	11/9/2000	5.17	4.59	0.58
C-65	11/18/1999	5.14	4.91	0.23
C-65	5/20/1999	4.41	4.41	0.00
C-65	12/16/1998	5.11	5.09	0.02
C-65	11/13/1998	5.25	5.23	0.02
C-65	11/12/1998	6.38	5.44	0.94
C-65	5/20/1998	4.14	4.00	0.14
C-65	12/17/1997	4.76	4.67	0.09
C-65	11/14/1997	4.44	4.33	0.11
C-65	11/13/1997	7.53	4.85	2.68
C-65	5/22/1997	4.66	4.55	0.11
C-65	12/17/1996	4.54	4.52	0.02
C-65	12/5/1996	5.12	5.04	0.08
C-65	12/3/1996	5.35	3.81	1.54
C-65	11/19/1996	4.81	4.80	0.01
C-65	11/18/1996	6.98	4.82	2.16
C-65	6/6/1996	4.68	4.34	0.34
C-65	1/22/1996	4.06	3.83	0.23
C-65	12/18/1995	5.86	4.88	0.98
C-97	4/22/2024	2.82		0.00
C-97	4/13/2023	5.03		0.00
C-97	10/7/2019	12.64	12.62	0.02
C-97	6/7/2019	9.90	9.87	0.03
C-97	6/22/2018	11.48	11.16	0.32
C-97	6/8/2018	14.78	14.60	0.18
C-97	5/11/2017	13.42	12.50	0.92
C-97	3/2/2017	14.49	13.57	0.92
C-97	11/18/2016	14.77	13.83	0.94
C-97	9/7/2016	14.40	13.51	0.89
C-97	8/3/2016	14.31	13.44	0.87
C-97	7/21/2016	14.97	13.68	1.29
C-97	7/5/2016	14.85	13.56	1.29
C-97	6/7/2016	14.32	12.91	1.41
C-97	5/12/2016	15.86	13.49	2.37
C-97	4/5/2016	14.91	13.86	1.05
C-97	3/8/2016	14.88	13.57	1.31
C-97	1/7/2016	14.46	13.39	1.07
C-97	12/9/2015	14.73	13.75	0.98
C-97	11/18/2015	14.68	13.57	1.11
C-97	5/15/2015	14.66	14.25	0.41
C-97	12/9/2014	13.62	13.25	0.37
C-97	9/17/2014	13.96	13.96	0.00
C-97	9/11/2014	14.07	14.07	0.00

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C-97	8/27/2014	14.14	14.14	0.00
C-97	8/8/2014	13.96		0.00
C-97	5/15/2014	14.06		0.00
C-97	2/6/2014	13.18	13.18	0.00
C-97	10/29/2013	14.20	14.19	0.01
C-97	10/17/2013	13.25	13.24	0.01
C-97	7/30/2013	13.06	13.06	0.00
C-97	7/19/2013	14.80	14.80	0.00
C-97	4/10/2013	15.03		0.00
C-97	4/3/2013	14.71	14.70	0.01
C-97	3/28/2013	14.77	14.77	0.00
C-97	3/20/2013	14.72	14.71	0.01
C-97	5/9/2012	7.02	6.87	0.15
C-97	9/14/2011	5.96	5.24	0.72
C-97	8/17/2011	5.47	5.25	0.22
C-97	5/16/2011	6.86	6.76	0.10
C-97	7/8/2010	7.98	7.73	0.25
C-97	7/1/2009	7.08	7.08	0.00
C-97	6/22/2009	6.07	6.06	0.01
C-97	3/23/2009	5.87	5.87	0.00
C-97	11/25/2008	5.98	5.98	0.00
C-97	6/3/2008	7.21	7.21	0.00
C-97	11/15/2007	5.58	5.58	0.00
C-97	6/4/2007	6.16	6.15	0.01
C-97	11/7/2006	6.19	6.15	0.04
C-97	5/24/2006	5.95	5.94	0.01
C-97	5/19/2005	7.27	7.27	0.00
C-97	10/21/2004	6.66		0.00
C-97	10/8/2004	6.35	6.35	0.00
C-97	11/24/2003	6.05	6.05	0.00
C-97	10/31/2002	5.89	5.88	0.01
C-97	11/8/2001	7.80	7.71	0.09
C-97	11/9/2000	7.26	7.24	0.02
C-97	11/18/1999	7.22	7.21	0.01
C-97	11/12/1998	6.89	6.87	0.02
C-97	11/13/1997	6.69	6.69	0.00
C-97	11/18/1996	6.99	6.98	0.01
C-97	12/18/1995	6.83	6.82	0.01
RIVER4	10/8/2019	--		0.00
RIVER4	6/6/2019	--		0.00
RIVER4	6/22/2018	--		0.00
RIVER4	8/7/2017	--		0.00
RIVER4	5/11/2017	--		0.00
RIVER4	8/12/2016	--		0.00
RIVER4	5/12/2016	--		0.00
RIVER4	8/4/2015	--		0.00
RIVER4	5/15/2015	--		0.00
RIVER4	5/15/2014	--		0.00
RIVER4	10/17/2013	--		0.00
RIVER4	3/28/2013	--		0.00
River4	5/9/2012	--		0.00
River4	6/2/2011	--		0.00
RIVER4	7/8/2010	--		0.00
River4	6/22/2009	--		0.00
River4	11/25/2008	--		0.00
River4	8/18/2008	--		0.00
River4	6/3/2008	--		0.00
River4	3/31/2008	--		0.00
River4	11/15/2007	--		0.00
River4	9/18/2007	--		0.00
River4	6/4/2007	--		0.00
River4	3/2/2007	--		0.00
RIVER4	11/7/2006	--		0.00
River4	8/30/2006	--		0.00
River4	5/24/2006	--		0.00
RIVER4	10/30/2005	--		0.00
River4	10/8/2004	--		0.00
River4	11/24/2003	--		0.00

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River4	11/1/2002	--		0.00
River4	11/8/2001	--		0.00
River4	11/9/2000	--		0.00
River4	11/18/1999	--		0.00
River4	11/12/1998	--		0.00
River4	11/13/1997	--		0.00
River4	12/5/1996	--		0.00
RW-801	4/11/2024	1.66		0.00
RW-801	4/14/2023	5.18		0.00
RW-801	6/15/2022	3.34		0.00
RW-801	4/27/2022	3.70		0.00
RW-801	4/21/2022	3.66		0.00
RW-801	4/13/2022	3.09		0.00
RW-801	4/5/2022	4.34		0.00
RW-801	3/30/2022	4.36		0.00
RW-801	3/21/2022	4.38		0.00
RW-801	3/14/2022	4.31		0.00
RW-801	3/7/2022	4.72		0.00
RW-801	3/4/2022	4.52		0.00
RW-801	3/3/2022	4.30		0.00
RW-801	2/25/2022	4.72		0.00
RW-801	2/18/2022	4.55		0.00
RW-801	1/4/2022	7.03		0.00
RW-801	12/30/2021	8.54		0.00
RW-801	12/20/2021	8.77		0.00
RW-801	12/17/2021	8.93		0.00
RW-801	12/13/2021	9.21		0.00
RW-801	12/10/2021	9.39		0.00
RW-801	12/6/2021	9.67		0.00
RW-801	12/2/2021	10.02		0.00
RW-801	11/29/2021	10.31		0.00
RW-801	11/23/2021	10.95		0.00
RW-801	11/18/2021	11.75		0.00
RW-801	11/17/2021	11.75		0.00
RW-801	11/15/2021	12.12		0.00
RW-801	11/10/2021	21.99		0.00
RW-801	11/1/2021	16.37		0.00
RW-801	10/19/2021	17.96		0.00
RW-801	9/21/2021	18.02		0.00
RW-801	8/18/2021	14.04		0.00
RW-801	7/13/2021	14.71		0.00
RW-801	6/15/2021	15.34		0.00
RW-801	5/4/2021	17.59		0.00
RW-801	4/20/2021	16.69		0.00
RW-801	1/25/2021	18.54		0.00
RW-801	12/11/2020	18.54		0.00
RW-801	11/17/2020	18.54		0.00
RW-801	10/12/2020	18.54		0.00
RW-801	9/1/2020	18.54		0.00
RW-801	8/3/2020	18.54		0.00
RW-801	7/2/2020	16.69		0.00
RW-801	6/5/2020	18.45		0.00
RW-801	3/3/2020	17.74		0.00
RW-801	2/4/2020	17.74		0.00
RW-801	12/4/2019	22.13		0.00
RW-801	10/7/2019	19.44		0.00
RW-801	9/10/2019	19.44		0.00
RW-801	8/5/2019	19.24		0.00
RW-801	7/11/2019	19.24		0.00
RW-801	6/6/2019	11.90		0.00
RW-801	5/7/2019	11.90		0.00
RW-801	4/4/2019	19.24		0.00
RW-801	3/4/2019	19.24		0.00
RW-801	2/13/2019	19.24		0.00
RW-801	1/15/2019	19.24		0.00
RW-801	12/17/2018	19.24		0.00
RW-801	11/5/2018	19.24		0.00
RW-801	10/22/2018	19.24		0.00

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RW-801	9/17/2018	19.24		0.00
RW-801	8/23/2018	19.24		0.00
RW-801	6/22/2018	10.31		0.00
RW-801	6/8/2018	19.24		0.00
RW-801	3/12/2018	19.24		0.00
RW-801	2/6/2018	19.24		0.00
RW-801	1/3/2018	19.24		0.00
RW-801	12/6/2017	19.24		0.00
RW-801	10/2/2017	19.24		0.00
RW-801	9/5/2017	19.34		0.00
RW-801	8/7/2017	19.34		0.00
RW-801	7/5/2017	19.34		0.00
RW-801	6/5/2017	11.34		0.00
RW-801	5/11/2017	19.34		0.00
RW-801	4/5/2017	19.34		0.00
RW-801	3/2/2017	19.39		0.00
RW-801	1/3/2017	19.39		0.00
RW-801	11/18/2016	19.44		0.00
RW-801	9/7/2016	19.39		0.00
RW-801	8/12/2016	19.44		0.00
RW-801	8/3/2016	19.44		0.00
RW-801	7/5/2016	19.44		0.00
RW-801	6/7/2016	19.44		0.00
RW-801	5/12/2016	19.44	19.44	0.00
RW-801	4/5/2016	19.44	19.44	0.00
RW-801	3/8/2016	19.54		0.00
RW-801	2/8/2016	19.49		0.00
RW-801	1/7/2016	19.49		0.00
RW-801	12/2/2015	19.49	19.49	0.00
RW-801	11/18/2015	19.49		0.00
RW-801	8/4/2015	19.54		0.00
RW-801	7/6/2015	19.49		0.00
RW-801	6/1/2015	19.39		0.00
RW-801	5/15/2015	19.39		0.00
RW-801	4/8/2015	19.34		0.00
RW-801	2/24/2015	19.34		0.00
RW-801	2/13/2015	19.34	19.34	0.00
RW-801	1/7/2015	20.34		0.00
RW-801	12/9/2014	20.34		0.00
RW-801	12/8/2014	20.34		0.00
RW-801	11/10/2014	20.34	20.34	0.00
RW-801	10/6/2014	20.34		0.00
RW-801	9/17/2014	13.05	13.04	0.01
RW-801	9/11/2014	20.29	20.29	0.00
RW-801	9/3/2014	20.34		0.00
RW-801	8/11/2014	20.34		0.00
RW-801	8/8/2014	20.34		0.00
RW-801	7/21/2014	20.34		0.00
RW-801	6/10/2014	20.34		0.00
RW-801	5/15/2014	20.37		0.00
RW-801	4/8/2014	20.09		0.00
RW-801	2/6/2014	12.47		0.00
RW-801	1/23/2014	20.09	20.09	0.00
RW-801	12/31/2013	20.09	20.09	0.00
RW-801	11/12/2013	20.09	20.09	0.00
RW-801	10/29/2013	20.34		0.00
RW-801	10/17/2013	20.34		0.00
RW-801	10/1/2013	20.34		0.00
RW-801	9/17/2013	21.19		0.00
RW-801	9/5/2013	21.19		0.00
RW-801	8/21/2013	18.29		0.00
RW-801	8/6/2013	21.19		0.00
RW-801	7/30/2013	21.19		0.00
RW-801	7/19/2013	21.19		0.00
RW-801	7/5/2013	21.19		0.00
RW-801	6/28/2013	9.47		0.00
RW-801	5/14/2013	20.39		0.00
RW-801	5/6/2013	20.39		0.00

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RW-801	4/23/2013	20.39		0.00
RW-801	4/16/2013	20.39		0.00
RW-801	4/10/2013	20.39		0.00
RW-801	4/3/2013	20.39		0.00
RW-801	3/28/2013	20.39		0.00
RW-801	3/20/2013	13.79		0.00
RW-801	3/19/2013	14.00		0.00
RW-801	3/11/2013	13.74		0.00
RW-801	2/14/2013	19.39		0.00
RW-801	1/31/2013	20.39		0.00
RW-801	1/15/2013	20.39		0.00
RW-801	1/3/2013	20.39		0.00
RW-801	12/11/2012	20.39		0.00
RW-801	11/26/2012	20.39		0.00
RW-801	10/9/2012	20.39		0.00
RW-801	9/10/2012	20.39		0.00
RW-801	8/3/2012	8.34	6.79	1.55
RW-801	5/9/2012	7.60	5.84	1.76
RW-802	4/11/2024	2.22		0.00
RW-802	4/13/2023	4.83		0.00
RW-802	6/15/2022	3.80		0.00
RW-802	4/27/2022	4.17		0.00
RW-802	4/21/2022	4.13		0.00
RW-802	4/13/2022	3.60		0.00
RW-802	4/5/2022	4.40		0.00
RW-802	3/30/2022	4.83		0.00
RW-802	3/21/2022	4.85		0.00
RW-802	3/14/2022	4.77		0.00
RW-802	3/7/2022	5.39		0.00
RW-802	3/4/2022	4.93		0.00
RW-802	3/3/2022	4.77		0.00
RW-802	2/25/2022	5.39		0.00
RW-802	2/18/2022	5.12		0.00
RW-802	1/4/2022	7.91		0.00
RW-802	12/30/2021	7.94		0.00
RW-802	12/20/2021	9.24		0.00
RW-802	12/17/2021	9.37		0.00
RW-802	12/13/2021	9.66		0.00
RW-802	12/10/2021	9.88		0.00
RW-802	12/6/2021	10.14		0.00
RW-802	12/2/2021	10.51		0.00
RW-802	11/29/2021	10.75		0.00
RW-802	11/23/2021	11.38		0.00
RW-802	11/18/2021	12.23		0.00
RW-802	11/17/2021	12.23		0.00
RW-802	11/15/2021	12.54		0.00
RW-802	11/10/2021	26.46		0.00
RW-802	11/1/2021	19.94		0.00
RW-802	10/19/2021	20.23		0.00
RW-802	9/21/2021	19.75		0.00
RW-802	8/18/2021	14.38	14.33	0.05
RW-802	7/13/2021	20.46		0.00
RW-802	6/15/2021	18.75		0.00
RW-802	5/4/2021	19.40		0.00
RW-802	4/20/2021	14.97		0.00
RW-802	1/25/2021	20.95		0.00
RW-802	12/11/2020	20.95		0.00
RW-802	11/17/2020	20.95		0.00
RW-802	10/12/2020	20.95		0.00
RW-802	9/1/2020	20.95		0.00
RW-802	8/3/2020	20.95		0.00
RW-802	7/2/2020	20.81		0.00
RW-802	6/5/2020	20.97		0.00
RW-802	3/3/2020	20.85		0.00
RW-802	2/4/2020	10.85		0.00
RW-802	12/4/2019	17.81		0.00
RW-802	10/7/2019	21.00		0.00
RW-802	9/10/2019	21.00		0.00

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RW-802	8/5/2019	21.25		0.00
RW-802	7/11/2019	21.25		0.00
RW-802	6/6/2019	21.25		0.00
RW-802	5/7/2019	21.25		0.00
RW-802	4/4/2019	21.25		0.00
RW-802	3/4/2019	21.25		0.00
RW-802	2/13/2019	21.25		0.00
RW-802	1/15/2019	21.25		0.00
RW-802	12/17/2018	21.25		0.00
RW-802	11/5/2018	21.25		0.00
RW-802	10/22/2018	21.25		0.00
RW-802	9/17/2018	21.25		0.00
RW-802	8/23/2018	21.25		0.00
RW-802	6/22/2018	10.76		0.00
RW-802	6/8/2018	21.25		0.00
RW-802	3/12/2018	21.25		0.00
RW-802	2/6/2018	18.20		0.00
RW-802	1/3/2018	12.08		0.00
RW-802	12/6/2017	21.25		0.00
RW-802	10/2/2017	13.18		0.00
RW-802	9/5/2017	21.25		0.00
RW-802	8/7/2017	21.25		0.00
RW-802	7/5/2017	21.25		0.00
RW-802	6/5/2017	21.25		0.00
RW-802	5/11/2017	21.25		0.00
RW-802	4/5/2017	21.25		0.00
RW-802	3/2/2017	21.45		0.00
RW-802	1/3/2017	21.45		0.00
RW-802	11/18/2016	21.40		0.00
RW-802	9/7/2016	22.50		0.00
RW-802	8/12/2016	22.50		0.00
RW-802	8/3/2016	22.50		0.00
RW-802	7/5/2016	22.50		0.00
RW-802	6/7/2016	22.50		0.00
RW-802	5/12/2016	22.50		0.00
RW-802	4/5/2016	22.50		0.00
RW-802	3/8/2016	22.60		0.00
RW-802	2/8/2016	22.60		0.00
RW-802	1/7/2016	22.60		0.00
RW-802	12/2/2015	22.65	22.65	0.00
RW-802	11/18/2015	22.60	22.60	0.00
RW-802	8/4/2015	22.60	22.60	0.00
RW-802	7/6/2015	22.60		0.00
RW-802	6/1/2015	22.60		0.00
RW-802	5/15/2015	22.60		0.00
RW-802	4/8/2015	15.20		0.00
RW-802	2/24/2015	12.20	12.20	0.00
RW-802	2/13/2015	15.20	15.20	0.00
RW-802	1/7/2015	22.45		0.00
RW-802	12/9/2014	22.40		0.00
RW-802	12/8/2014	22.45		0.00
RW-802	11/10/2014	22.45		0.00
RW-802	10/6/2014	22.45	22.45	0.00
RW-802	9/17/2014	14.07	13.50	0.57
RW-802	9/11/2014	22.40	22.40	0.00
RW-802	9/3/2014	22.40	22.40	0.00
RW-802	8/11/2014	22.40	22.40	0.00
RW-802	8/8/2014	22.40	22.40	0.00
RW-802	7/21/2014	22.40		0.00
RW-802	6/10/2014	22.40		0.00
RW-802	5/15/2014	22.50	22.50	0.00
RW-802	4/8/2014	22.25		0.00
RW-802	2/6/2014	13.78	12.75	1.03
RW-802	1/23/2014	22.25		0.00
RW-802	12/31/2013	22.25		0.00
RW-802	11/12/2013	22.25		0.00
RW-802	10/29/2013	22.25		0.00
RW-802	10/17/2013	22.25		0.00

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RW-802	10/1/2013	22.25		0.00
RW-802	9/17/2013	14.15		0.00
RW-802	9/5/2013	22.25		0.00
RW-802	8/21/2013	12.89		0.00
RW-802	8/6/2013	22.20		0.00
RW-802	7/30/2013	22.20		0.00
RW-802	7/19/2013	22.20		0.00
RW-802	6/28/2013	11.87	11.87	0.00
RW-802	5/14/2013	22.25		0.00
RW-802	5/6/2013	22.25		0.00
RW-802	4/23/2013	22.25	22.25	0.00
RW-802	4/16/2013	22.25		0.00
RW-802	4/10/2013	22.25		0.00
RW-802	4/3/2013	22.02		0.00
RW-802	3/28/2013	22.02		0.00
RW-802	3/20/2013	14.21		0.00
RW-802	3/19/2013	14.53		0.00
RW-802	3/11/2013	21.45		0.00
RW-802	2/14/2013	22.05		0.00
RW-802	1/31/2013	21.45		0.00
RW-802	1/15/2013	21.45		0.00
RW-802	1/3/2013	21.45		0.00
RW-802	12/11/2012	21.45		0.00
RW-802	11/26/2012	21.45		0.00
RW-802	10/9/2012	21.45		0.00
RW-802	9/10/2012	21.05		0.00
RW-802	8/3/2012	8.82	7.21	1.61
RW-802	5/9/2012	7.74	6.31	1.43
RW-803	4/11/2024	2.46		0.00
RW-803	4/13/2023	4.94		0.00
RW-803	6/15/2022	3.93	3.92	0.01
RW-803	4/27/2022	4.43	4.40	0.03
RW-803	4/21/2022	4.38	4.37	0.01
RW-803	4/13/2022	3.76	3.75	0.01
RW-803	4/5/2022	4.98	4.97	0.01
RW-803	3/30/2022	5.15	5.14	0.01
RW-803	3/21/2022	5.03	5.02	0.01
RW-803	3/14/2022	5.02	5.01	0.01
RW-803	3/7/2022	5.03		0.00
RW-803	3/4/2022	5.28	5.27	0.01
RW-803	3/3/2022	5.02	5.01	0.01
RW-803	2/25/2022	5.03		0.00
RW-803	2/18/2022	4.90		0.00
RW-803	1/4/2022	7.64	7.63	0.01
RW-803	12/30/2021	7.80		0.00
RW-803	12/20/2021	8.64	8.63	0.01
RW-803	12/17/2021	8.65	8.65	0.00
RW-803	12/13/2021	8.79		0.00
RW-803	12/10/2021	8.83		0.00
RW-803	12/6/2021	9.10		0.00
RW-803	12/2/2021	9.34		0.00
RW-803	11/29/2021	9.49		0.00
RW-803	11/23/2021	10.17		0.00
RW-803	11/18/2021	10.70	10.69	0.01
RW-803	11/17/2021	10.70	10.69	0.01
RW-803	11/15/2021	10.90	10.90	0.00
RW-803	11/10/2021	21.25		0.00
RW-803	11/1/2021	22.22		0.00
RW-803	10/19/2021	22.15		0.00
RW-803	9/21/2021	21.99		0.00
RW-803	8/18/2021	20.26	20.24	0.02
RW-803	7/13/2021	21.63		0.00
RW-803	6/15/2021	20.92		0.00
RW-803	5/4/2021	20.87	20.87	0.00
RW-803	4/20/2021	20.92		0.00
RW-803	1/25/2021	20.87		0.00
RW-803	12/11/2020	20.87		0.00
RW-803	11/17/2020	20.87		0.00

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RW-803	10/12/2020	20.87		0.00
RW-803	9/1/2020	20.87		0.00
RW-803	8/3/2020	20.87		0.00
RW-803	7/2/2020	23.91		0.00
RW-803	6/5/2020	22.83		0.00
RW-803	3/3/2020	21.87		0.00
RW-803	2/4/2020	21.87		0.00
RW-803	12/4/2019	21.87		0.00
RW-803	10/7/2019	20.27		0.00
RW-803	9/10/2019	20.27		0.00
RW-803	8/5/2019	21.92		0.00
RW-803	7/11/2019	21.92		0.00
RW-803	6/6/2019	21.92		0.00
RW-803	5/7/2019	21.92		0.00
RW-803	4/4/2019	21.92		0.00
RW-803	3/4/2019	21.92		0.00
RW-803	2/13/2019	21.92		0.00
RW-803	1/15/2019	21.92		0.00
RW-803	12/17/2018	21.92		0.00
RW-803	11/5/2018	21.92		0.00
RW-803	10/22/2018	21.92		0.00
RW-803	9/17/2018	21.92		0.00
RW-803	8/23/2018	21.92		0.00
RW-803	6/22/2018	10.17		0.00
RW-803	6/8/2018	23.27		0.00
RW-803	3/12/2018	21.92		0.00
RW-803	2/6/2018	23.32		0.00
RW-803	1/3/2018	21.92		0.00
RW-803	12/6/2017	23.47		0.00
RW-803	10/2/2017	23.47		0.00
RW-803	9/5/2017	23.47		0.00
RW-803	8/7/2017	23.47		0.00
RW-803	7/5/2017	23.47		0.00
RW-803	6/5/2017	22.27		0.00
RW-803	5/11/2017	22.57		0.00
RW-803	4/5/2017	21.97		0.00
RW-803	3/2/2017	23.47		0.00
RW-803	1/3/2017	23.47		0.00
RW-803	11/18/2016	23.47		0.00
RW-803	9/7/2016	22.47		0.00
RW-803	8/12/2016	22.47		0.00
RW-803	8/3/2016	22.47		0.00
RW-803	7/5/2016	22.47		0.00
RW-803	6/7/2016	22.47		0.00
RW-803	5/12/2016	22.47		0.00
RW-803	4/5/2016	22.47		0.00
RW-803	3/8/2016	22.52		0.00
RW-803	2/8/2016	22.52		0.00
RW-803	1/7/2016	22.52		0.00
RW-803	12/2/2015	22.52		0.00
RW-803	11/18/2015	22.47		0.00
RW-803	8/4/2015	22.62		0.00
RW-803	7/6/2015	22.62		0.00
RW-803	6/1/2015	22.62		0.00
RW-803	5/15/2015	22.62		0.00
RW-803	4/8/2015	22.62		0.00
RW-803	2/24/2015	22.62	22.62	0.00
RW-803	2/13/2015	22.61	22.61	0.00
RW-803	1/7/2015	24.07		0.00
RW-803	12/9/2014	24.07		0.00
RW-803	12/8/2014	24.07	24.07	0.00
RW-803	11/10/2014	24.05	24.02	0.03
RW-803	10/6/2014	24.12	24.07	0.05
RW-803	9/17/2014	11.87	11.87	0.00
RW-803	9/11/2014	24.08	23.98	0.10
RW-803	9/3/2014	24.68	23.85	0.83
RW-803	8/11/2014	25.74	23.57	2.17
RW-803	8/8/2014	25.74	23.57	2.17

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-803	7/21/2014	25.32	23.17	2.15
RW-803	6/10/2014	21.62		0.00
RW-803	5/15/2014	11.99		0.00
RW-803	4/8/2014	21.62		0.00
RW-803	2/6/2014	11.93	11.82	0.11
RW-803	1/23/2014	21.62		0.00
RW-803	12/31/2013	21.62		0.00
RW-803	11/12/2013	21.62		0.00
RW-803	10/29/2013	21.92		0.00
RW-803	10/17/2013	21.92		0.00
RW-803	10/1/2013	21.92		0.00
RW-803	9/17/2013	21.92		0.00
RW-803	9/5/2013	21.97		0.00
RW-803	8/21/2013	21.97		0.00
RW-803	8/6/2013	21.97	21.97	0.00
RW-803	7/30/2013	21.92	21.92	0.00
RW-803	7/19/2013	21.92		0.00
RW-803	7/5/2013	21.92	21.92	0.00
RW-803	6/28/2013	21.92		0.00
RW-803	5/14/2013	21.92		0.00
RW-803	5/6/2013	21.92		0.00
RW-803	4/23/2013	21.92		0.00
RW-803	4/16/2013	21.92	21.92	0.00
RW-803	4/10/2013	21.92		0.00
RW-803	4/3/2013	21.92		0.00
RW-803	3/28/2013	21.92		0.00
RW-803	3/20/2013	12.42		0.00
RW-803	3/19/2013	15.11		0.00
RW-803	3/11/2013	21.92	21.92	0.00
RW-803	2/14/2013	21.92		0.00
RW-803	1/31/2013	21.92	21.92	0.00
RW-803	1/15/2013	21.92	21.92	0.00
RW-803	1/3/2013	21.92	21.92	0.00
RW-803	12/11/2012	21.92	21.92	0.00
RW-803	11/26/2012	21.92		0.00
RW-803	10/9/2012	21.92		0.00
RW-803	9/10/2012	21.87	21.87	0.00
RW-803	8/3/2012	10.74	6.97	3.77
RW-803	5/9/2012	11.11	6.16	4.95
RW-804	4/11/2024	2.07		0.00
RW-804	4/13/2023	4.85		0.00
RW-804	6/15/2022	4.19	4.18	0.01
RW-804	4/27/2022	4.31	4.29	0.02
RW-804	4/21/2022	4.14	4.13	0.01
RW-804	4/13/2022	3.29	3.28	0.01
RW-804	4/5/2022	4.65	4.63	0.02
RW-804	3/30/2022	4.79	4.78	0.01
RW-804	3/21/2022	4.68	4.67	0.01
RW-804	3/14/2022	4.52	4.51	0.01
RW-804	3/7/2022	4.54	4.50	0.04
RW-804	3/4/2022	4.80	4.79	0.01
RW-804	3/3/2022	4.63	4.62	0.01
RW-804	2/28/2022	4.88	4.56	0.32
RW-804	2/25/2022	4.54	4.50	0.04
RW-804	2/18/2022	4.42	4.40	0.02
RW-804	1/4/2022	5.14	5.12	0.02
RW-804	12/30/2021	5.69	5.68	0.01
RW-804	12/20/2021	6.36	6.35	0.01
RW-804	12/17/2021	6.18	6.18	0.00
RW-804	12/13/2021	6.40	6.39	0.01
RW-804	12/10/2021	6.49	6.49	0.00
RW-804	12/6/2021	9.02	6.15	2.87
RW-804	12/2/2021	9.10	6.15	2.95
RW-804	11/29/2021	9.69	6.48	3.21
RW-804	11/23/2021	9.83	6.97	2.86
RW-804	11/18/2021	12.74	10.18	2.56
RW-804	11/17/2021	12.74	10.18	2.56
RW-804	11/15/2021	13.42	11.11	2.31

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-804	11/1/2021	21.99	21.98	0.01
RW-804	10/19/2021	21.98		0.00
RW-804	9/21/2021	21.92	21.91	0.01
RW-804	8/18/2021	14.67	14.56	0.11
RW-804	7/13/2021	20.50		0.00
RW-804	6/15/2021	20.46		0.00
RW-804	5/4/2021	20.25		0.00
RW-804	4/20/2021	20.44	20.41	0.03
RW-804	1/25/2021	20.35		0.00
RW-804	12/11/2020	20.35		0.00
RW-804	11/17/2020	20.35		0.00
RW-804	10/12/2020	20.35		0.00
RW-804	9/1/2020	20.35		0.00
RW-804	8/3/2020	20.35		0.00
RW-804	7/2/2020	21.30		0.00
RW-804	6/5/2020	21.20		0.00
RW-804	3/3/2020	21.35		0.00
RW-804	2/4/2020	21.35		0.00
RW-804	12/4/2019	21.30		0.00
RW-804	10/7/2019	21.25		0.00
RW-804	9/10/2019	21.25		0.00
RW-804	8/5/2019	22.05		0.00
RW-804	7/11/2019	22.05		0.00
RW-804	6/6/2019	22.05		0.00
RW-804	5/7/2019	22.05		0.00
RW-804	4/4/2019	22.05		0.00
RW-804	3/4/2019	22.05		0.00
RW-804	2/13/2019	22.05		0.00
RW-804	1/15/2019	22.05		0.00
RW-804	12/17/2018	22.05		0.00
RW-804	11/5/2018	22.05		0.00
RW-804	10/22/2018	22.05		0.00
RW-804	9/17/2018	22.05		0.00
RW-804	8/23/2018	21.25		0.00
RW-804	6/22/2018	11.23	10.83	0.40
RW-804	6/8/2018	21.25		0.00
RW-804	3/12/2018	21.25		0.00
RW-804	2/6/2018	21.25		0.00
RW-804	1/3/2018	21.25		0.00
RW-804	12/6/2017	21.25		0.00
RW-804	10/2/2017	21.25		0.00
RW-804	9/5/2017	21.25		0.00
RW-804	8/7/2017	21.25		0.00
RW-804	7/5/2017	21.25		0.00
RW-804	6/5/2017	21.25		0.00
RW-804	5/11/2017	21.25		0.00
RW-804	4/5/2017	21.25		0.00
RW-804	3/2/2017	21.25		0.00
RW-804	1/3/2017	21.25		0.00
RW-804	11/18/2016	21.30		0.00
RW-804	9/7/2016	21.95		0.00
RW-804	8/12/2016	21.95		0.00
RW-804	8/3/2016	21.95		0.00
RW-804	7/5/2016	21.95		0.00
RW-804	6/7/2016	21.95		0.00
RW-804	5/12/2016	21.95		0.00
RW-804	4/5/2016	21.95		0.00
RW-804	3/8/2016	22.05		0.00
RW-804	2/8/2016	22.05		0.00
RW-804	1/7/2016	22.05		0.00
RW-804	12/2/2015	22.05		0.00
RW-804	11/18/2015	22.05		0.00
RW-804	8/4/2015	22.45		0.00
RW-804	7/6/2015	22.45		0.00
RW-804	6/1/2015	22.45		0.00
RW-804	5/15/2015	22.40		0.00
RW-804	4/8/2015	22.40		0.00
RW-804	2/24/2015	22.40		0.00

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RW-804	2/13/2015	22.38	22.38	0.00
RW-804	1/7/2015	22.05		0.00
RW-804	12/9/2014	22.05		0.00
RW-804	12/8/2014	22.05		0.00
RW-804	11/10/2014	22.05		0.00
RW-804	10/6/2014	22.05		0.00
RW-804	9/17/2014	14.26	13.81	0.45
RW-804	9/11/2014	22.05		0.00
RW-804	9/3/2014	22.05	22.05	0.00
RW-804	8/11/2014	22.05		0.00
RW-804	8/8/2014	22.05		0.00
RW-804	7/21/2014	22.05		0.00
RW-804	6/10/2014	22.05		0.00
RW-804	5/15/2014	22.07	22.07	0.00
RW-804	4/8/2014	21.90		0.00
RW-804	2/6/2014	17.62	10.85	6.77
RW-804	1/23/2014	21.90	21.90	0.00
RW-804	12/31/2013	21.90	21.90	0.00
RW-804	11/12/2013	21.90	21.90	0.00
RW-804	10/29/2013	21.90		0.00
RW-804	10/17/2013	21.90		0.00
RW-804	10/1/2013	21.90		0.00
RW-804	9/17/2013	21.60	21.60	0.00
RW-804	9/5/2013	21.65		0.00
RW-804	8/21/2013	21.65		0.00
RW-804	8/6/2013	21.65	21.65	0.00
RW-804	7/30/2013	21.60	21.60	0.00
RW-804	7/19/2013	21.60		0.00
RW-804	7/5/2013	21.60	21.60	0.00
RW-804	6/28/2013	21.60	21.60	0.00
RW-804	5/14/2013	21.55		0.00
RW-804	5/6/2013	21.55		0.00
RW-804	4/23/2013	21.55		0.00
RW-804	4/16/2013	21.55		0.00
RW-804	4/10/2013	21.55	21.55	0.00
RW-804	4/3/2013	21.55	21.55	0.00
RW-804	3/28/2013	21.56	21.56	0.00
RW-804	3/20/2013	18.62	10.36	8.26
RW-804	3/19/2013	17.63	11.81	5.82
RW-804	3/11/2013	21.50	21.50	0.00
RW-804	2/14/2013	21.50		0.00
RW-804	1/31/2013	21.50	21.50	0.00
RW-804	1/15/2013	21.50	21.50	0.00
RW-804	1/3/2013	21.50	21.50	0.00
RW-804	12/11/2012	21.50	21.50	0.00
RW-804	11/26/2012	21.50		0.00
RW-804	10/9/2012	21.50		0.00
RW-804	9/10/2012	21.50	21.50	0.00
RW-804	8/3/2012	9.23	6.60	2.63
RW-804	5/9/2012	9.02	5.81	3.21
RW-805	4/11/2024	1.85		0.00
RW-805	4/13/2023	4.86		0.00
RW-805	6/15/2022	3.93		0.00
RW-805	4/27/2022	4.22		0.00
RW-805	4/21/2022	3.99		0.00
RW-805	4/13/2022	3.17		0.00
RW-805	4/5/2022	4.49		0.00
RW-805	3/30/2022	4.55		0.00
RW-805	3/21/2022	4.58		0.00
RW-805	3/14/2022	4.34		0.00
RW-805	3/7/2022	4.28		0.00
RW-805	3/4/2022	4.71		0.00
RW-805	3/3/2022	4.53		0.00
RW-805	2/25/2022	4.28		0.00
RW-805	2/18/2022	4.18		0.00
RW-805	1/4/2022	4.94		0.00
RW-805	12/30/2021	5.52		0.00
RW-805	12/20/2021	6.11		0.00

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RW-805	12/17/2021	6.00		0.00
RW-805	12/13/2021	6.14		0.00
RW-805	12/10/2021	6.13		0.00
RW-805	12/6/2021	6.17		0.00
RW-805	12/2/2021	6.32		0.00
RW-805	11/29/2021	6.63		0.00
RW-805	11/23/2021	7.61		0.00
RW-805	11/18/2021	11.02		0.00
RW-805	11/17/2021	11.02		0.00
RW-805	11/15/2021	12.38	12.38	0.00
RW-805	11/10/2021	22.33		0.00
RW-805	11/1/2021	22.38		0.00
RW-805	10/19/2021	22.45		0.00
RW-805	9/21/2021	21.69		0.00
RW-805	8/18/2021	18.70	18.69	0.01
RW-805	7/13/2021	21.22		0.00
RW-805	6/15/2021	21.43		0.00
RW-805	5/4/2021	20.60		0.00
RW-805	4/27/2021	17.19	17.18	0.01
RW-805	1/25/2021	19.35		0.00
RW-805	12/11/2020	19.35		0.00
RW-805	11/17/2020	19.35		0.00
RW-805	10/12/2020	19.35		0.00
RW-805	9/1/2020	19.25		0.00
RW-805	8/3/2020	19.25		0.00
RW-805	7/2/2020	19.17		0.00
RW-805	6/5/2020	19.38		0.00
RW-805	3/3/2020	18.70		0.00
RW-805	2/4/2020	18.70		0.00
RW-805	12/4/2019	19.17		0.00
RW-805	10/7/2019	19.35		0.00
RW-805	9/10/2019	19.35		0.00
RW-805	8/5/2019	18.65		0.00
RW-805	7/11/2019	18.65		0.00
RW-805	6/6/2019	18.65		0.00
RW-805	5/7/2019	18.65		0.00
RW-805	4/4/2019	18.65		0.00
RW-805	3/4/2019	18.65		0.00
RW-805	2/13/2019	18.65		0.00
RW-805	1/15/2019	18.65		0.00
RW-805	12/17/2018	18.65		0.00
RW-805	11/5/2018	18.65		0.00
RW-805	10/22/2018	18.65		0.00
RW-805	9/17/2018	18.65		0.00
RW-805	8/23/2018	18.65		0.00
RW-805	6/22/2018	11.21		0.00
RW-805	6/8/2018	18.65		0.00
RW-805	3/12/2018	18.65		0.00
RW-805	2/6/2018	18.65		0.00
RW-805	1/3/2018	18.65		0.00
RW-805	12/6/2017	18.65		0.00
RW-805	10/2/2017	18.65		0.00
RW-805	9/5/2017	18.50		0.00
RW-805	8/7/2017	18.50		0.00
RW-805	7/5/2017	18.50		0.00
RW-805	6/5/2017	18.50		0.00
RW-805	5/11/2017	18.50		0.00
RW-805	4/5/2017	18.50	18.50	0.00
RW-805	3/2/2017	18.60		0.00
RW-805	1/3/2017	18.60		0.00
RW-805	11/18/2016	18.60		0.00
RW-805	9/7/2016	18.65		0.00
RW-805	8/12/2016	18.70		0.00
RW-805	8/3/2016	18.65	18.65	0.00
RW-805	7/5/2016	18.65		0.00
RW-805	6/7/2016	18.65		0.00
RW-805	5/12/2016	18.65		0.00
RW-805	4/5/2016	18.65		0.00

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RW-805	3/8/2016	16.95		0.00
RW-805	2/8/2016	19.50		0.00
RW-805	1/7/2016	19.50		0.00
RW-805	12/2/2015	19.45		0.00
RW-805	11/18/2015	19.45		0.00
RW-805	8/4/2015	19.45		0.00
RW-805	7/6/2015	19.45		0.00
RW-805	6/1/2015	19.45		0.00
RW-805	5/15/2015	19.45		0.00
RW-805	4/8/2015	19.45		0.00
RW-805	2/24/2015	19.45		0.00
RW-805	2/13/2015	18.85	18.85	0.00
RW-805	1/7/2015	19.00	19.00	0.00
RW-805	12/9/2014	19.00		0.00
RW-805	12/8/2014	19.00	19.00	0.00
RW-805	11/10/2014	19.00	19.00	0.00
RW-805	10/6/2014	19.00		0.00
RW-805	9/17/2014	14.67	14.67	0.00
RW-805	9/11/2014	18.95		0.00
RW-805	9/3/2014	18.95	18.95	0.00
RW-805	8/11/2014	18.95		0.00
RW-805	8/8/2014	18.95		0.00
RW-805	7/21/2014	18.95		0.00
RW-805	6/10/2014	18.95		0.00
RW-805	5/15/2014	18.96	18.96	0.00
RW-805	4/8/2014	18.90		0.00
RW-805	2/6/2014	15.17	13.42	1.75
RW-805	1/23/2014	18.90	18.90	0.00
RW-805	12/31/2013	18.90	18.90	0.00
RW-805	11/12/2013	18.90	18.90	0.00
RW-805	10/29/2013	18.85		0.00
RW-805	10/17/2013	18.85		0.00
RW-805	10/1/2013	18.85		0.00
RW-805	9/17/2013	18.75		0.00
RW-805	9/5/2013	18.90		0.00
RW-805	8/21/2013	18.95		0.00
RW-805	8/6/2013	18.95	18.95	0.00
RW-805	7/30/2013	18.95		0.00
RW-805	7/19/2013	18.95		0.00
RW-805	7/5/2013	18.95		0.00
RW-805	6/28/2013	18.75		0.00
RW-805	5/14/2013	18.90		0.00
RW-805	5/6/2013	18.90		0.00
RW-805	4/23/2013	18.90	18.90	0.00
RW-805	4/16/2013	18.90		0.00
RW-805	4/10/2013	18.90	18.90	0.00
RW-805	4/3/2013	18.90		0.00
RW-805	3/28/2013	18.90	18.89	0.01
RW-805	3/20/2013	14.96	14.00	0.96
RW-805	3/19/2013	15.70	15.20	0.50
RW-805	3/11/2013	18.90	18.90	0.00
RW-805	2/14/2013	18.90		0.00
RW-805	1/31/2013	18.90	18.90	0.00
RW-805	1/15/2013	18.90	18.90	0.00
RW-805	1/3/2013	18.90	18.90	0.00
RW-805	12/11/2012	18.90	18.90	0.00
RW-805	11/26/2012	18.90	18.90	0.00
RW-805	10/9/2012	18.90	18.90	0.00
RW-805	9/10/2012	18.90	18.90	0.00
RW-805	8/3/2012	9.70	6.37	3.33
RW-805	5/9/2012	9.46	5.79	3.67
RW-806	4/11/2024	1.41		0.00
RW-806	4/14/2023	4.64		0.00
RW-806	6/15/2022	3.88		0.00
RW-806	4/27/2022	3.94		0.00
RW-806	4/21/2022	3.82		0.00
RW-806	4/13/2022	2.90		0.00
RW-806	4/5/2022	4.46		0.00

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RW-806	3/30/2022	4.81		0.00
RW-806	3/21/2022	4.45		0.00
RW-806	3/14/2022	4.27		0.00
RW-806	3/7/2022	4.74		0.00
RW-806	3/4/2022	4.50		0.00
RW-806	3/3/2022	4.29		0.00
RW-806	2/25/2022	4.74		0.00
RW-806	2/18/2022	4.30		0.00
RW-806	1/4/2022	5.75		0.00
RW-806	12/30/2021	5.46		0.00
RW-806	12/20/2021	5.91		0.00
RW-806	12/17/2021	5.77		0.00
RW-806	12/13/2021	6.06		0.00
RW-806	12/10/2021	6.03		0.00
RW-806	12/6/2021	6.08		0.00
RW-806	12/2/2021	6.31		0.00
RW-806	11/29/2021	6.54		0.00
RW-806	11/23/2021	6.97		0.00
RW-806	11/18/2021	9.89		0.00
RW-806	11/17/2021	9.89		0.00
RW-806	11/15/2021	10.38		0.00
RW-806	11/10/2021	22.61		0.00
RW-806	11/1/2021	21.23		0.00
RW-806	10/19/2021	22.14		0.00
RW-806	9/21/2021	21.93		0.00
RW-806	8/18/2021	15.23		0.00
RW-806	7/13/2021	22.10		0.00
RW-806	6/15/2021	21.93		0.00
RW-806	5/4/2021	21.91		0.00
RW-806	4/20/2021	21.91		0.00
RW-806	1/25/2021	21.01		0.00
RW-806	12/11/2020	21.01		0.00
RW-806	11/17/2020	21.01		0.00
RW-806	10/12/2020	21.01		0.00
RW-806	9/1/2020	21.01		0.00
RW-806	8/3/2020	21.01		0.00
RW-806	7/2/2020	21.98		0.00
RW-806	6/5/2020	22.01		0.00
RW-806	3/3/2020	22.01		0.00
RW-806	2/4/2020	22.01		0.00
RW-806	12/4/2019	21.92		0.00
RW-806	10/7/2019	21.81		0.00
RW-806	9/10/2019	21.81		0.00
RW-806	8/5/2019	21.81		0.00
RW-806	7/11/2019	21.81		0.00
RW-806	6/6/2019	21.81		0.00
RW-806	5/7/2019	21.81		0.00
RW-806	4/4/2019	21.81		0.00
RW-806	3/4/2019	21.81		0.00
RW-806	2/13/2019	21.81		0.00
RW-806	1/15/2019	21.81		0.00
RW-806	12/17/2018	21.81		0.00
RW-806	11/5/2018	21.81		0.00
RW-806	10/22/2018	21.81		0.00
RW-806	9/17/2018	21.81		0.00
RW-806	8/23/2018	21.81		0.00
RW-806	6/22/2018	10.28		0.00
RW-806	6/8/2018	21.81		0.00
RW-806	3/12/2018	21.81		0.00
RW-806	2/6/2018	21.81		0.00
RW-806	1/3/2018	21.81		0.00
RW-806	12/6/2017	21.81		0.00
RW-806	10/2/2017	21.81		0.00
RW-806	9/5/2017	21.81		0.00
RW-806	8/7/2017	21.81		0.00
RW-806	7/5/2017	21.81		0.00
RW-806	6/5/2017	21.81		0.00
RW-806	5/11/2017	21.81		0.00

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RW-806	4/5/2017	21.81		0.00
RW-806	3/2/2017	21.71		0.00
RW-806	1/3/2017	21.71		0.00
RW-806	11/18/2016	21.66		0.00
RW-806	9/7/2016	21.51		0.00
RW-806	8/12/2016	21.51		0.00
RW-806	8/3/2016	21.51		0.00
RW-806	7/5/2016	21.51		0.00
RW-806	6/7/2016	21.51		0.00
RW-806	5/12/2016	21.61		0.00
RW-806	4/5/2016	21.41		0.00
RW-806	3/8/2016	21.61		0.00
RW-806	2/8/2016	21.61		0.00
RW-806	1/7/2016	21.61		0.00
RW-806	12/2/2015	21.51		0.00
RW-806	11/18/2015	21.61		0.00
RW-806	8/4/2015	21.71		0.00
RW-806	7/6/2015	21.71		0.00
RW-806	6/1/2015	21.66		0.00
RW-806	5/15/2015	21.66		0.00
RW-806	4/8/2015	21.66		0.00
RW-806	2/24/2015	21.66		0.00
RW-806	2/13/2015	21.66		0.00
RW-806	1/7/2015	21.66		0.00
RW-806	12/9/2014	21.66		0.00
RW-806	12/8/2014	21.66		0.00
RW-806	11/10/2014	21.66		0.00
RW-806	10/6/2014	21.66		0.00
RW-806	9/17/2014	20.01		0.00
RW-806	9/11/2014	21.61		0.00
RW-806	9/3/2014	21.61		0.00
RW-806	8/11/2014	21.61		0.00
RW-806	8/8/2014	21.61		0.00
RW-806	7/21/2014	21.61		0.00
RW-806	6/10/2014	21.61		0.00
RW-806	5/15/2014	21.52		0.00
RW-806	4/8/2014	21.86		0.00
RW-806	2/6/2014	10.19		0.00
RW-806	1/23/2014	21.86		0.00
RW-806	12/31/2013	21.86		0.00
RW-806	11/12/2013	21.86		0.00
RW-806	10/29/2013	21.11		0.00
RW-806	10/17/2013	21.11		0.00
RW-806	10/1/2013	21.11		0.00
RW-806	9/17/2013	21.11		0.00
RW-806	9/5/2013	10.09		0.00
RW-806	8/21/2013	8.76		0.00
RW-806	8/6/2013	9.89		0.00
RW-806	7/30/2013	21.11		0.00
RW-806	7/19/2013	21.11		0.00
RW-806	7/5/2013	10.32		0.00
RW-806	6/28/2013	21.11		0.00
RW-806	5/14/2013	21.16		0.00
RW-806	5/6/2013	21.16		0.00
RW-806	4/23/2013	21.16		0.00
RW-806	4/16/2013	21.16		0.00
RW-806	4/10/2013	21.16		0.00
RW-806	4/3/2013	21.16		0.00
RW-806	3/28/2013	21.15		0.00
RW-806	3/20/2013	15.10		0.00
RW-806	3/19/2013	12.73		0.00
RW-806	3/11/2013	12.65		0.00
RW-806	2/14/2013	21.06		0.00
RW-806	1/31/2013	21.06		0.00
RW-806	1/15/2013	21.06		0.00
RW-806	1/3/2013	21.06		0.00
RW-806	12/11/2012	21.06		0.00
RW-806	11/26/2012	21.06		0.00

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RW-806	10/9/2012	21.06		0.00
RW-806	9/10/2012	21.06	21.06	0.00
RW-806	8/3/2012	6.35	5.92	0.43
RW-806	5/9/2012	6.04	5.57	0.47
RW-807	4/11/2024	0.36		0.00
RW-807	4/13/2023	3.46		0.00
RW-807	6/15/2022	2.77		0.00
RW-807	4/27/2022	2.81		0.00
RW-807	4/21/2022	2.58		0.00
RW-807	4/13/2022	1.69		0.00
RW-807	4/5/2022	3.08		0.00
RW-807	3/30/2022	3.41		0.00
RW-807	3/7/2022	3.22		0.00
RW-807	3/4/2022	3.37		0.00
RW-807	3/3/2022	3.18		0.00
RW-807	2/25/2022	3.22		0.00
RW-807	2/18/2022	3.02		0.00
RW-807	1/4/2022	3.60		0.00
RW-807	12/30/2021	4.11		0.00
RW-807	12/20/2021	4.66		0.00
RW-807	12/17/2021	4.58		0.00
RW-807	12/13/2021	4.69		0.00
RW-807	12/10/2021	4.72		0.00
RW-807	12/6/2021	4.70		0.00
RW-807	12/2/2021	4.87		0.00
RW-807	11/29/2021	5.22		0.00
RW-807	11/23/2021	6.18		0.00
RW-807	11/18/2021	9.59		0.00
RW-807	11/17/2021	9.59		0.00
RW-807	11/15/2021	10.97		0.00
RW-807	11/1/2021	18.94	18.92	0.02
RW-807	10/19/2021	17.83	17.79	0.04
RW-807	9/21/2021	18.94	18.88	0.06
RW-807	8/18/2021	17.14	17.12	0.02
RW-807	7/13/2021	19.90	19.88	0.02
RW-807	6/15/2021	18.87	18.84	0.03
RW-807	5/4/2021	18.94		0.00
RW-807	4/20/2021	19.46	19.44	0.02
RW-807	1/25/2021	17.94		0.00
RW-807	12/11/2020	17.94		0.00
RW-807	11/17/2020	17.94		0.00
RW-807	10/12/2020	17.94		0.00
RW-807	9/1/2020	17.94		0.00
RW-807	8/3/2020	17.94		0.00
RW-807	7/2/2020	17.87		0.00
RW-807	6/5/2020	18.29		0.00
RW-807	3/3/2020	17.94		0.00
RW-807	2/4/2020	17.94		0.00
RW-807	12/4/2019	17.88		0.00
RW-807	10/7/2019	18.04		0.00
RW-807	9/10/2019	18.04		0.00
RW-807	8/5/2019	16.04		0.00
RW-807	7/11/2019	16.04		0.00
RW-807	6/6/2019	16.55		0.00
RW-807	5/7/2019	16.55		0.00
RW-807	4/4/2019	16.04		0.00
RW-807	3/4/2019	16.04		0.00
RW-807	2/13/2019	16.04		0.00
RW-807	1/15/2019	16.04		0.00
RW-807	12/17/2018	16.04		0.00
RW-807	11/5/2018	16.04		0.00
RW-807	10/22/2018	16.04		0.00
RW-807	9/17/2018	16.04		0.00
RW-807	8/23/2018	16.04		0.00
RW-807	6/22/2018	9.74		0.00
RW-807	6/8/2018	16.04		0.00
RW-807	3/12/2018	16.04		0.00
RW-807	2/6/2018	16.04		0.00

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RW-807	1/3/2018	16.04		0.00
RW-807	12/6/2017	18.79		0.00
RW-807	10/2/2017	18.79		0.00
RW-807	9/5/2017	18.84		0.00
RW-807	8/7/2017	18.84		0.00
RW-807	7/5/2017	18.84		0.00
RW-807	6/5/2017	18.84		0.00
RW-807	5/11/2017	18.84		0.00
RW-807	4/5/2017	18.84		0.00
RW-807	3/2/2017	18.89		0.00
RW-807	1/3/2017	18.89		0.00
RW-807	11/18/2016	19.04		0.00
RW-807	9/7/2016	18.99		0.00
RW-807	8/12/2016	18.99		0.00
RW-807	8/3/2016	18.99		0.00
RW-807	7/5/2016	18.99		0.00
RW-807	6/7/2016	18.99		0.00
RW-807	5/12/2016	18.84		0.00
RW-807	4/5/2016	18.99		0.00
RW-807	3/8/2016	19.04		0.00
RW-807	2/8/2016	20.64		0.00
RW-807	1/7/2016	20.64		0.00
RW-807	12/2/2015	20.64		0.00
RW-807	11/18/2015	20.74		0.00
RW-807	8/4/2015	20.64		0.00
RW-807	7/6/2015	18.84		0.00
RW-807	6/1/2015	18.74		0.00
RW-807	5/15/2015	20.34		0.00
RW-807	4/8/2015	20.54		0.00
RW-807	2/24/2015	20.54		0.00
RW-807	2/13/2015	20.53		0.00
RW-807	1/7/2015	18.74		0.00
RW-807	12/9/2014	18.74		0.00
RW-807	12/8/2014	18.74		0.00
RW-807	11/10/2014	18.74		0.00
RW-807	10/6/2014	18.74		0.00
RW-807	9/17/2014	13.17		0.00
RW-807	9/11/2014	18.64		0.00
RW-807	9/3/2014	18.64		0.00
RW-807	8/11/2014	18.64		0.00
RW-807	8/8/2014	18.64		0.00
RW-807	7/21/2014	18.74		0.00
RW-807	6/10/2014	18.24		0.00
RW-807	5/15/2014	18.23		0.00
RW-807	4/8/2014	18.54		0.00
RW-807	2/6/2014	11.44	11.44	0.00
RW-807	1/23/2014	18.54		0.00
RW-807	12/31/2013	18.54		0.00
RW-807	11/12/2013	18.54		0.00
RW-807	10/29/2013	18.44		0.00
RW-807	10/17/2013	18.44		0.00
RW-807	10/1/2013	18.44		0.00
RW-807	9/17/2013	19.29		0.00
RW-807	9/5/2013	19.89		0.00
RW-807	8/21/2013	19.89		0.00
RW-807	8/6/2013	19.89		0.00
RW-807	7/30/2013	19.89		0.00
RW-807	7/19/2013	19.89		0.00
RW-807	7/5/2013	19.89		0.00
RW-807	6/28/2013	19.89		0.00
RW-807	5/14/2013	19.89		0.00
RW-807	5/6/2013	19.89		0.00
RW-807	4/23/2013	19.89		0.00
RW-807	4/16/2013	19.89		0.00
RW-807	4/10/2013	18.39		0.00
RW-807	4/3/2013	18.39		0.00
RW-807	3/28/2013	18.39		0.00
RW-807	3/20/2013	12.72		0.00

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RW-807	3/19/2013	13.84		0.00
RW-807	3/11/2013	18.39		0.00
RW-807	2/14/2013	18.39		0.00
RW-807	1/31/2013	18.39		0.00
RW-807	1/15/2013	18.39		0.00
RW-807	1/3/2013	18.39		0.00
RW-807	12/11/2012	18.39		0.00
RW-807	11/26/2012	18.39		0.00
RW-807	10/9/2012	18.39		0.00
RW-807	9/10/2012	18.39		0.00
RW-807	8/3/2012	6.07	4.68	1.39
RW-807	5/9/2012	5.80	4.19	1.61
RW-808	4/15/2024	4.27		0.00
RW-808	4/14/2023	6.01		0.00
RW-808	6/15/2022	4.48	4.47	0.01
RW-808	3/7/2022	4.86		0.00
RW-808	3/4/2022	5.12		0.00
RW-808	3/3/2022	4.91		0.00
RW-808	2/25/2022	4.86		0.00
RW-808	2/18/2022	4.78		0.00
RW-808	1/4/2022	5.47		0.00
RW-808	12/30/2021	5.84		0.00
RW-808	12/20/2021	6.40		0.00
RW-808	12/17/2021	6.32		0.00
RW-808	12/13/2021	6.51		0.00
RW-808	12/10/2021	6.44		0.00
RW-808	12/6/2021	6.44		0.00
RW-808	12/2/2021	6.61		0.00
RW-808	11/29/2021	9.15		0.00
RW-808	11/23/2021	7.95		0.00
RW-808	11/18/2021	11.18		0.00
RW-808	11/17/2021	11.18		0.00
RW-808	11/15/2021	12.47		0.00
RW-808	11/4/2021	8.78	8.71	0.07
RW-808	11/1/2021	19.53		0.00
RW-808	10/19/2021	19.31		0.00
RW-808	9/21/2021	19.27		0.00
RW-808	8/18/2021	17.99		0.00
RW-808	7/13/2021	18.79		0.00
RW-808	6/15/2021	19.77		0.00
RW-808	5/4/2021	19.69		0.00
RW-808	4/21/2021	19.51		0.00
RW-808	1/25/2021	19.29		0.00
RW-808	12/11/2020	19.29		0.00
RW-808	11/17/2020	19.29		0.00
RW-808	10/12/2020	19.29		0.00
RW-808	9/1/2020	19.29		0.00
RW-808	8/3/2020	19.29		0.00
RW-808	7/2/2020	19.38		0.00
RW-808	6/5/2020	19.42		0.00
RW-808	3/3/2020	19.44		0.00
RW-808	2/4/2020	19.44		0.00
RW-808	12/4/2019	19.38		0.00
RW-808	10/7/2019	19.29		0.00
RW-808	9/10/2019	19.29		0.00
RW-808	8/5/2019	19.79		0.00
RW-808	7/11/2019	19.79		0.00
RW-808	6/6/2019	19.79		0.00
RW-808	5/7/2019	19.79		0.00
RW-808	4/4/2019	19.79		0.00
RW-808	3/4/2019	19.79		0.00
RW-808	2/13/2019	19.79		0.00
RW-808	1/15/2019	19.79		0.00
RW-808	12/17/2018	19.79		0.00
RW-808	11/5/2018	19.79		0.00
RW-808	10/22/2018	19.79		0.00
RW-808	9/17/2018	19.79		0.00
RW-808	8/23/2018	19.79		0.00

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RW-808	6/22/2018	11.42	11.42	0.00
RW-808	6/8/2018	19.79		0.00
RW-808	3/12/2018	19.44		0.00
RW-808	2/6/2018	19.44		0.00
RW-808	1/3/2018	19.44		0.00
RW-808	12/6/2017	19.44		0.00
RW-808	10/2/2017	19.44		0.00
RW-808	9/5/2017	19.39		0.00
RW-808	8/7/2017	19.39		0.00
RW-808	7/5/2017	19.39		0.00
RW-808	6/5/2017	19.39		0.00
RW-808	5/11/2017	19.39		0.00
RW-808	4/5/2017	19.39		0.00
RW-808	3/2/2017	19.39		0.00
RW-808	1/3/2017	19.39		0.00
RW-808	11/18/2016	19.39		0.00
RW-808	9/7/2016	19.69	19.69	0.00
RW-808	8/12/2016	19.79		0.00
RW-808	8/3/2016	16.35	16.28	0.07
RW-808	7/5/2016	19.49		0.00
RW-808	6/7/2016	19.49	19.49	0.00
RW-808	5/12/2016	20.09		0.00
RW-808	4/5/2016	19.99		0.00
RW-808	3/8/2016	20.09		0.00
RW-808	2/8/2016	20.09		0.00
RW-808	1/7/2016	20.09		0.00
RW-808	12/2/2015	20.04	20.04	0.00
RW-808	11/18/2015	20.09		0.00
RW-808	8/4/2015	20.04		0.00
RW-808	7/6/2015	20.04		0.00
RW-808	6/1/2015	20.04		0.00
RW-808	5/15/2015	20.05		0.00
RW-808	4/8/2015	20.09	20.09	0.00
RW-808	2/24/2015	20.09	20.09	0.00
RW-808	2/13/2015	20.00	20.00	0.00
RW-808	1/7/2015	20.09		0.00
RW-808	12/9/2014	20.09		0.00
RW-808	12/8/2014	20.09	20.09	0.00
RW-808	11/10/2014	20.09	20.09	0.00
RW-808	10/6/2014	20.09		0.00
RW-808	9/17/2014	15.14	14.74	0.40
RW-808	9/11/2014	19.99	19.99	0.00
RW-808	9/3/2014	20.09	20.09	0.00
RW-808	8/11/2014	20.07	20.07	0.00
RW-808	8/8/2014	20.07	20.07	0.00
RW-808	7/21/2014	20.09		0.00
RW-808	6/10/2014	20.09		0.00
RW-808	5/15/2014	20.08	20.08	0.00
RW-808	4/8/2014	20.19	20.19	0.00
RW-808	2/6/2014	16.11	13.49	2.62
RW-808	1/23/2014	20.19	20.19	0.00
RW-808	12/31/2013	20.19	20.19	0.00
RW-808	11/12/2013	20.19	20.19	0.00
RW-808	10/29/2013	20.19		0.00
RW-808	10/17/2013	20.19		0.00
RW-808	10/1/2013	20.19		0.00
RW-808	9/17/2013	13.69	13.69	0.00
RW-808	9/5/2013	13.64	13.56	0.08
RW-808	8/21/2013	12.99	12.79	0.20
RW-808	8/6/2013	19.99		0.00
RW-808	7/30/2013	18.59		0.00
RW-808	7/19/2013	19.99	19.99	0.00
RW-808	7/5/2013	19.99		0.00
RW-808	6/28/2013	18.24	18.24	0.00
RW-808	5/14/2013	19.94		0.00
RW-808	5/6/2013	19.94		0.00
RW-808	4/23/2013	19.94		0.00
RW-808	4/16/2013	19.94		0.00

Appendix B
Gauging Information
No 3. Separator Area Remediation
Bellwether District Holdings, LLC, Philadelphia, PA

Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-808	4/10/2013	19.94		0.00
RW-808	4/3/2013	19.94	19.94	0.00
RW-808	3/28/2013	19.94		0.00
RW-808	3/20/2013	14.44		0.00
RW-808	3/19/2013	15.54		0.00
RW-808	3/11/2013	19.94	19.94	0.00
RW-808	2/14/2013	19.94		0.00
RW-808	1/31/2013	19.94	19.94	0.00
RW-808	1/15/2013	19.94	19.94	0.00
RW-808	1/3/2013	19.94	19.94	0.00
RW-808	12/11/2012	19.94	19.94	0.00
RW-808	11/26/2012	19.94	19.94	0.00
RW-808	10/9/2012	19.94	19.94	0.00
RW-808	9/10/2012	19.94		0.00
RW-808	8/3/2012	10.52	6.61	3.91
RW-808	5/9/2012	9.90	7.24	2.66
RW-809	4/11/2024	2.88		0.00
RW-809	4/13/2023	5.27		0.00
RW-809	6/15/2022	4.77		0.00
RW-809	3/7/2022	5.84		0.00
RW-809	3/4/2022	5.66		0.00
RW-809	3/3/2022	5.43		0.00
RW-809	2/25/2022	5.84		0.00
RW-809	2/18/2022	5.63		0.00
RW-809	1/4/2022	5.95		0.00
RW-809	12/30/2021	6.53		0.00
RW-809	12/20/2021	7.04		0.00
RW-809	12/17/2021	6.99		0.00
RW-809	12/13/2021	7.11		0.00
RW-809	12/10/2021	7.12		0.00
RW-809	12/6/2021	7.19		0.00
RW-809	12/2/2021	7.43		0.00
RW-809	11/29/2021	7.82		0.00
RW-809	11/23/2021	9.11	9.11	0.00
RW-809	11/18/2021	10.08	10.07	0.01
RW-809	11/17/2021	10.08	10.07	0.01
RW-809	11/15/2021	10.39		0.00
RW-809	11/4/2021	7.94	7.86	0.08
RW-809	11/1/2021	20.68		0.00
RW-809	10/19/2021	20.42		0.00
RW-809	9/21/2021	20.44		0.00
RW-809	8/18/2021	11.05	11.04	0.01
RW-809	7/13/2021	12.16	12.14	0.02
RW-809	6/15/2021	22.45		0.00
RW-809	5/4/2021	19.34		0.00
RW-809	4/27/2021	10.73	10.72	0.01
RW-809	1/25/2021	21.64		0.00
RW-809	12/11/2020	21.64		0.00
RW-809	11/17/2020	21.64		0.00
RW-809	10/12/2020	21.64		0.00
RW-809	9/1/2020	21.64		0.00
RW-809	8/3/2020	21.64		0.00
RW-809	7/2/2020	21.02		0.00
RW-809	6/5/2020	18.78		0.00
RW-809	3/3/2020	21.04		0.00
RW-809	2/4/2020	21.04		0.00
RW-809	12/4/2019	15.13		0.00
RW-809	10/7/2019	21.14		0.00
RW-809	9/10/2019	21.14		0.00
RW-809	8/5/2019	21.14		0.00
RW-809	7/11/2019	21.14		0.00
RW-809	6/6/2019	21.14		0.00
RW-809	5/7/2019	21.14		0.00
RW-809	4/4/2019	21.14		0.00
RW-809	3/4/2019	21.14		0.00
RW-809	1/15/2019	1.34		0.00
RW-809	11/5/2018	21.14		0.00
RW-809	10/22/2018	21.14		0.00

Appendix B
Gauging Information
No 3. Separator Area Remediation
Bellwether District Holdings, LLC, Philadelphia, PA

Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-809	9/17/2018	21.14		0.00
RW-809	8/23/2018	21.14		0.00
RW-809	6/22/2018	10.29	10.16	0.13
RW-809	6/8/2018	21.14		0.00
RW-809	3/12/2018	21.14		0.00
RW-809	2/6/2018	21.14		0.00
RW-809	1/3/2018	21.14		0.00
RW-809	12/6/2017	21.14		0.00
RW-809	10/2/2017	21.14		0.00
RW-809	9/5/2017	21.04		0.00
RW-809	8/7/2017	21.04		0.00
RW-809	7/5/2017	21.04		0.00
RW-809	6/5/2017	21.04		0.00
RW-809	5/11/2017	21.04	21.04	0.00
RW-809	4/5/2017	21.04	21.04	0.00
RW-809	3/2/2017	21.14		0.00
RW-809	1/3/2017	21.14		0.00
RW-809	11/18/2016	21.24		0.00
RW-809	9/7/2016	21.44		0.00
RW-809	8/12/2016	21.44		0.00
RW-809	8/3/2016	21.44	21.44	0.00
RW-809	7/5/2016	21.44		0.00
RW-809	6/7/2016	21.44		0.00
RW-809	5/12/2016	21.44		0.00
RW-809	4/5/2016	21.44		0.00
RW-809	3/8/2016	21.39		0.00
RW-809	2/8/2016	21.24		0.00
RW-809	1/7/2016	21.24	21.24	0.00
RW-809	12/2/2015	21.29	21.29	0.00
RW-809	11/18/2015	21.29	21.29	0.00
RW-809	11/4/2015	21.24	21.24	0.00
RW-809	10/5/2015	20.04	20.04	0.00
RW-809	9/1/2015	21.22	21.22	0.00
RW-809	8/4/2015	21.09		0.00
RW-809	7/6/2015	21.14		0.00
RW-809	6/1/2015	21.19		0.00
RW-809	5/15/2015	21.24		0.00
RW-809	4/8/2015	21.19		0.00
RW-809	2/24/2015	21.19		0.00
RW-809	2/13/2015	21.19	21.19	0.00
RW-809	1/7/2015	21.14		0.00
RW-809	12/9/2014	21.14		0.00
RW-809	12/8/2014	21.14	21.14	0.00
RW-809	11/10/2014	21.14	21.14	0.00
RW-809	10/6/2014	21.14		0.00
RW-809	9/17/2014	15.64	11.42	4.22
RW-809	9/11/2014	21.09		0.00
RW-809	9/3/2014	21.09	21.09	0.00
RW-809	8/11/2014	21.09		0.00
RW-809	8/8/2014	21.09		0.00
RW-809	7/21/2014	20.34		0.00
RW-809	6/10/2014	21.04		0.00
RW-809	5/15/2014	21.03	21.03	0.00
RW-809	4/8/2014	23.94	23.94	0.00
RW-809	2/6/2014	9.96	9.80	0.16
RW-809	1/23/2014	23.94	23.94	0.00
RW-809	12/31/2013	23.94	23.94	0.00
RW-809	11/12/2013	23.94	23.94	0.00
RW-809	10/29/2013	24.04		0.00
RW-809	10/17/2013	24.04		0.00
RW-809	10/1/2013	24.04		0.00
RW-809	9/17/2013	20.24	20.24	0.00
RW-809	9/5/2013	20.24	20.24	0.00
RW-809	8/21/2013	20.34	20.34	0.00
RW-809	8/6/2013	20.34	20.34	0.00
RW-809	7/30/2013	20.34	20.34	0.00
RW-809	7/19/2013	20.34		0.00
RW-809	7/5/2013	20.34		0.00

Appendix B
Gauging Information
No 3. Separator Area Remediation
Bellwether District Holdings, LLC, Philadelphia, PA

Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-809	6/28/2013	20.29	20.29	0.00
RW-809	5/14/2013	20.29	20.29	0.00
RW-809	5/6/2013	20.29	20.29	0.00
RW-809	4/23/2013	20.29	20.29	0.00
RW-809	4/16/2013	20.29		0.00
RW-809	4/10/2013	20.24	20.24	0.00
RW-809	4/3/2013	20.24	20.24	0.00
RW-809	3/28/2013	20.24	20.24	0.00
RW-809	3/20/2013	11.15	11.14	0.01
RW-809	3/19/2013	11.83	11.83	0.00
RW-809	3/11/2013	20.24	20.24	0.00
RW-809	2/14/2013	20.24		0.00
RW-809	1/31/2013	20.24	20.24	0.00
RW-809	1/15/2013	20.24	20.24	0.00
RW-809	1/3/2013	20.24	20.24	0.00
RW-809	12/11/2012	20.24	20.24	0.00
RW-809	11/26/2012	20.24	20.24	0.00
RW-809	10/9/2012	20.24	20.24	0.00
RW-809	9/10/2012	20.24	20.24	0.00
RW-809	8/3/2012	9.82	6.44	3.38
RW-809	5/9/2012	11.36	8.18	3.18
RW-810	4/15/2024	2.96		0.00
RW-810	4/13/2023	16.91		0.00
RW-810	3/7/2022	5.26		0.00
RW-810	3/4/2022	5.24		0.00
RW-810	3/3/2022	5.05		0.00
RW-810	2/25/2022	5.26		0.00
RW-810	2/18/2022	5.12		0.00
RW-810	1/4/2022	5.97		0.00
RW-810	12/30/2021	6.34		0.00
RW-810	12/20/2021	9.76		0.00
RW-810	12/17/2021	6.77		0.00
RW-810	12/13/2021	6.98		0.00
RW-810	12/10/2021	7.01		0.00
RW-810	12/6/2021	7.15		0.00
RW-810	12/2/2021	7.42		0.00
RW-810	11/29/2021	7.73		0.00
RW-810	11/23/2021	8.89		0.00
RW-810	11/18/2021	9.26		0.00
RW-810	11/17/2021	9.26		0.00
RW-810	11/15/2021	9.24		0.00
RW-810	11/4/2021	8.69		0.00
RW-810	11/1/2021	9.22		0.00
RW-810	10/19/2021	9.63		0.00
RW-810	9/21/2021	8.45		0.00
RW-810	8/18/2021	9.08		0.00
RW-810	7/13/2021	8.57		0.00
RW-810	6/15/2021	8.59		0.00
RW-810	5/4/2021	9.43		0.00
RW-810	4/21/2021	9.05		0.00
RW-810	1/25/2021	16.48		0.00
RW-810	12/11/2020	16.48		0.00
RW-810	11/17/2020	16.48		0.00
RW-810	10/12/2020	16.48		0.00
RW-810	9/1/2020	16.48		0.00
RW-810	8/3/2020	16.48		0.00
RW-810	7/2/2020	14.23	14.23	0.00
RW-810	6/5/2020	17.90		0.00
RW-810	3/3/2020	14.38		0.00
RW-810	2/10/2020	13.88		0.00
RW-810	12/4/2019	17.33		0.00
RW-810	10/7/2019	16.38		0.00
RW-810	9/10/2019	16.38		0.00
RW-810	8/5/2019	15.88		0.00
RW-810	7/11/2019	15.88		0.00
RW-810	6/6/2019	15.88		0.00
RW-810	5/7/2019	15.88		0.00
RW-810	4/4/2019	15.88		0.00

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Gauging Information
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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-810	3/4/2019	15.88		0.00
RW-810	2/15/2019	15.88		0.00
RW-810	1/15/2019	15.88		0.00
RW-810	12/17/2018	15.88		0.00
RW-810	11/5/2018	15.88		0.00
RW-810	10/22/2018	15.88		0.00
RW-810	9/17/2018	15.88		0.00
RW-810	8/23/2018	15.88		0.00
RW-810	6/22/2018	9.27	9.26	0.01
RW-810	6/8/2018	15.88		0.00
RW-810	3/12/2018	15.58		0.00
RW-810	2/6/2018	15.58		0.00
RW-810	1/3/2018	15.58		0.00
RW-810	12/6/2017	15.58		0.00
RW-810	10/2/2017	15.58		0.00
RW-810	9/5/2017	15.58		0.00
RW-810	8/7/2017	15.58		0.00
RW-810	7/5/2017	15.58		0.00
RW-810	6/5/2017	15.58		0.00
RW-810	5/11/2017	15.58		0.00
RW-810	4/5/2017	16.88	16.88	0.00
RW-810	3/2/2017	17.38	17.38	0.00
RW-810	1/3/2017	17.48		0.00
RW-810	11/18/2016	17.53		0.00
RW-810	9/7/2016	17.71	17.71	0.00
RW-810	8/12/2016	17.63		0.00
RW-810	8/3/2016	17.65		0.00
RW-810	7/5/2016	17.65	17.65	0.00
RW-810	6/7/2016	17.43	17.43	0.00
RW-810	5/12/2016	17.68	17.68	0.00
RW-810	4/5/2016	17.78	17.78	0.00
RW-810	3/8/2016	17.78	17.78	0.00
RW-810	2/8/2016	18.48		0.00
RW-810	1/7/2016	18.38	18.38	0.00
RW-810	12/2/2015	18.33	18.33	0.00
RW-810	11/18/2015	18.30	18.30	0.00
RW-810	11/4/2015	9.58		0.00
RW-810	8/4/2015	16.48	16.48	0.00
RW-810	7/6/2015	17.08		0.00
RW-810	6/1/2015	17.63	17.63	0.00
RW-810	5/15/2015	18.30		0.00
RW-810	4/8/2015	16.96		0.00
RW-810	2/24/2015	18.88		0.00
RW-810	2/13/2015	18.94	18.94	0.00
RW-810	1/7/2015	19.88		0.00
RW-810	12/9/2014	20.13		0.00
RW-810	12/8/2014	19.88		0.00
RW-810	11/10/2014	19.88		0.00
RW-810	10/6/2014	19.88		0.00
RW-810	9/17/2014	10.78		0.00
RW-810	9/11/2014	20.38		0.00
RW-810	9/3/2014	20.13		0.00
RW-810	8/11/2014	20.38		0.00
RW-810	8/8/2014	20.38		0.00
RW-810	7/21/2014	20.18		0.00
RW-810	6/10/2014	19.93		0.00
RW-810	5/15/2014	20.97		0.00
RW-810	4/8/2014	14.28	14.28	0.00
RW-810	2/6/2014	8.19	8.19	0.00
RW-810	1/23/2014	14.28	14.28	0.00
RW-810	12/31/2013	14.28	14.28	0.00
RW-810	11/12/2013	14.28	14.28	0.00
RW-810	10/29/2013	12.96	12.96	0.00
RW-810	10/17/2013	11.28	11.28	0.00
RW-810	10/1/2013	11.28	11.28	0.00
RW-810	9/17/2013	10.88		0.00
RW-810	9/5/2013	10.96		0.00
RW-810	8/21/2013	10.97		0.00

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Location ID	Measurement Date	Depth to Water (ft bgs)	LNAPL Depth (ft bgs)	LNAPL Thickness (ft)
RW-810	8/6/2013	10.93	10.93	0.00
RW-810	7/30/2013	10.39	10.39	0.00
RW-810	7/19/2013	10.96	10.96	0.00
RW-810	7/5/2013	10.11	10.11	0.00
RW-810	6/28/2013	8.58	8.58	0.00
RW-810	5/14/2013	10.79	10.79	0.00
RW-810	5/6/2013	10.73	10.73	0.00
RW-810	4/23/2013	10.73	10.73	0.00
RW-810	4/16/2013	10.78	10.78	0.00
RW-810	4/10/2013	10.81	10.81	0.00
RW-810	4/3/2013	10.74	10.73	0.01
RW-810	3/28/2013	11.58	10.09	1.49
RW-810	3/20/2013	10.63	9.03	1.60
RW-810	3/19/2013	10.03	9.29	0.74
RW-810	3/11/2013	20.78	20.78	0.00
RW-810	2/14/2013	20.78		0.00
RW-810	1/31/2013	20.78	20.78	0.00
RW-810	1/15/2013	20.78	20.78	0.00
RW-810	1/3/2013	20.78	20.78	0.00
RW-810	12/11/2012	20.78	20.78	0.00
RW-810	11/26/2012	20.78	20.78	0.00
RW-810	10/9/2012	20.78	20.78	0.00
RW-810	9/10/2012	20.78	20.78	0.00
RW-810	8/3/2012	8.86	6.33	2.53
RW-810	5/9/2012	10.82	8.18	2.64
WP14-2	11/2/2021	8.89		0.00
WP14-2	4/21/2021	8.99		0.00
WP14-2	6/5/2020	10.26		0.00
WP14-2	7/16/2019	9.19		0.00
WP14-2	6/22/2018	9.90	9.90	0.00
WP14-2	6/8/2018	10.24		0.00
WP14-2	5/12/2016	10.17		0.00
WP14-2	12/9/2014	8.27		0.00
WP14-2	9/17/2014	9.63		0.00
WP14-2	9/11/2014	10.22		0.00
WP14-2	8/8/2014	10.02		0.00
WP14-2	2/6/2014	7.98	7.97	0.01
WP14-2	10/29/2013	9.96	9.92	0.04
WP14-2	10/17/2013	9.09	9.02	0.07
WP14-2	7/30/2013	8.23	8.22	0.01
WP14-2	7/19/2013	10.12	9.73	0.39
WP14-2	4/10/2013	9.55	9.38	0.17

Appendix C

Sewer Pipe Closure Documentation

MOBILE DREDGING & VIDEO PIPE
A Carylon Company

1566 Harding Highway
Newfield, NJ 08344
p: (856) 697-1900
f: (856) 697-0757
mobiledredging.com

Terra Phase Engineering Inc.

Philadelphia, PA

CCTV REPORT

Work Preformed 2/13/2025 to 2/17/2025

Mobile Dredging and Video Pipe Services Inc., , , Tel: 1-800-634-6014

Query						
Section No.	Date	Street	Purpose	Upstream MH	Downstream MH	Length Surveyed
3	3/3/2025	PASSYUNK AVE	Routine Assessment	MH-5	MH-6	383.60
5	2/17/2025	PASSYUNK AVE	Routine Assessment	MH-2	MH-3	14.80
4	2/17/2025	PASSYUNK AVE	Routine Assessment	MH-1	MH-2	22.80
6	2/17/2025	PASSYUNK AVE	Routine Assessment	MH-5	MH-4	73.90
7	2/17/2025	PASSYUNK AVE	Routine Assessment	MH-4	MH-3	140.70
						635.80 ft

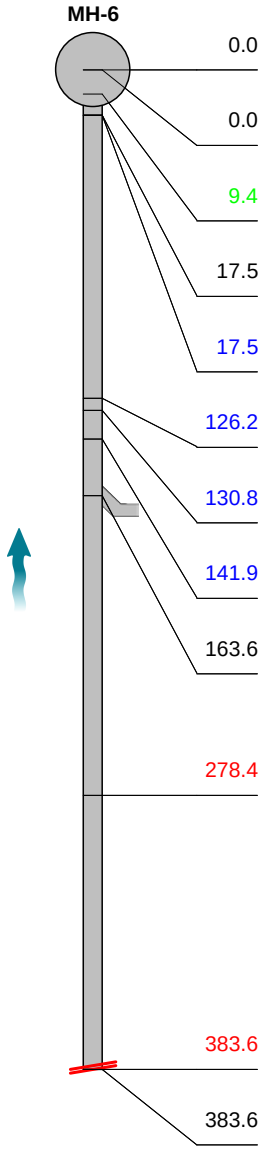
MOBILE DREDGING & VIDEO PIPE
A Carylon Company

Mobile Dredge and Video Pipe Inc.
1566 Harding Hwy, Newfield, NJ 08344
Tel. (800) 634-6014

Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
3/3/2025	**TERENGPA-1**		**Alex Kudla**	**U-0421-70401698**	**2/13/2025 8:45:26 AM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	**Upstream**		**383.6 '**	**383.6 '**

City:	**PHILADELPHIA**	Drainage Area:		Upstream MH:	**MH-5**
Street:	**PASSYUNK AVE**	Media Label:	**DT**	Up Rim to Invert:	**0.0**
Location Code:		Flow Control:		Downstream MH:	**MH-6**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Other**	Total gallons used:	**0.0**
Pipe size:	**24 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Concrete Pipe (non-reinforced)**	Purpose:	**Routine Assessment**	Joints failed:	**0**
Lining Method:		Owner:	**Philadephia**		
Additional Info:					



1:2896 Distance	Code	Observation	Counter	Photo	Grade
0.0	AMH	Manhole / 6	00:00:00	MH-5_MH-6_33202595952	
0.0	MWL	Water Level, 10% of the vertical dimension	00:00:12	MH-5_MH-6_33202595952	
9.4	CC	Crack Circumferential from 12 o'clock to 12 o'clock	00:02:20	MH-5_MH-6_33202595952	S1
17.5	MGO	Miscellaneous General Observation / LIFT HOLES	00:02:55	MH-5_MH-6_33202595952	
17.5	FC	Fracture Circumferential from 1 o'clock to 5 o'clock	00:03:39	MH-5_MH-6_33202595952	S2
126.2	ISSR	Intruding Sealing Material Sealing Ring, 5% of cross sectional area from 11 o'clock to 3 o'clock	00:06:29	MH-5_MH-6_33202595952	M2
130.8	DSC	Deposits Settled Compacted, 5% of cross sectional area from 11 o'clock to 2 o'clock / COMPACTEDE DEBRIS	00:06:59	MH-5_MH-6_33202595952	M2
141.9	ISSR	Intruding Sealing Material Sealing Ring, 5% of cross sectional area from 10 o'clock to 3 o'clock	00:07:37	MH-5_MH-6_33202595952	M2
163.6	TF	Tap Factory Made at 11 o'clock, dia/height: 6inch	00:08:28	MH-5_MH-6_33202595952	
278.4	HVV	Hole Void Visible from 11 o'clock to 1 o'clock	00:12:47	MH-5_MH-6_33202595952	S5
383.6	DSC	Deposits Settled Compacted, 60% of cross sectional area from 2 o'clock to 10 o'clock / DEBRIS	00:15:43	MH-5_MH-6_33202595952	M5
383.6	MSA	Miscellaneous Survey Abandoned / UNABLE TO ADVANCE	00:15:56	MH-5_MH-6_33202595952	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5121	5123	5224	8.0	11.0	19.0	2.7	2.8	2.7

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Tel. (800) 634-6014

Section Pictures - 3/3/2025 - 2/13/2025 8:45:26 AM

City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA	**PASSYUNK AVE**	**3/3/2025**	**2/13/2025 8:45:26 AM**	**3**



MH-5_MH-6_332025 95952 AM_AMH_01.jpg, 00:00:00, 0.00ft
Manhole



MH-5_MH-6_332025 95952 AM_MWL_02.jpg, 00:00:12, 0.00ft
Water Level, 10% of the vertical dimension



MH-5_MH-6_332025 95952 AM_CC_03.jpg, 00:02:20, 9.40ft
Crack Circumferential from 12 o'clock to 12 o'clock



MH-5_MH-6_332025 95952 AM_CC_04.jpg, 00:02:20, 9.40ft
Crack Circumferential from 12 o'clock to 12 o'clock



MH-5_MH-6_332025 95952 AM_MGO_05.jpg, 00:02:55, 17.50ft
Miscellaneous General Observation

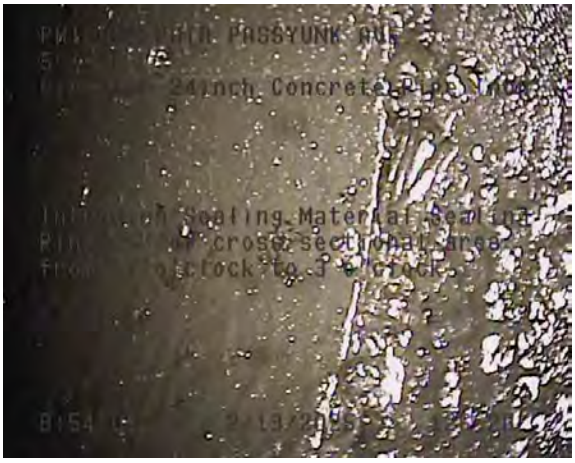


MH-5_MH-6_332025 95952 AM_FC_06.jpg, 00:03:39, 17.50ft
Fracture Circumferential from 1 o'clock to 5 o'clock

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Section Pictures - 3/3/2025 - 2/13/2025 8:45:26 AM

City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA	**PASSYUNK AVE**	**3/3/2025**	**2/13/2025 8:45:26 AM**	**3**



MH-5_MH-6_332025 95952 AM_ISSR_07.jpg, 00:06:29, 126.20ft
Intruding Sealing Material Sealing Ring, 5% of cross sectional



MH-5_MH-6_332025 95952 AM_DSC_08.jpg, 00:06:59, 130.80ft
Deposits Settled Compacted, 5% of cross sectional area from



MH-5_MH-6_332025 95952 AM_DSC_09.jpg, 00:06:59, 130.80ft
Deposits Settled Compacted, 5% of cross sectional area from



MH-5_MH-6_332025 95952 AM_ISSR_10.jpg, 00:07:37, 141.90ft
Intruding Sealing Material Sealing Ring, 5% of cross sectional



MH-5_MH-6_332025 95952 AM_TF_11.jpg, 00:08:28, 163.60ft
Tap Factory Made at 11 o'clock, dia/height: 6inch



MH-5_MH-6_332025 95952 AM_HVV_12.jpg, 00:12:47, 278.40ft
Hole Void Visible from 11 o'clock to 1 o'clock

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Section Pictures - 3/3/2025 - 2/13/2025 8:45:26 AM

City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA	**PASSYUNK AVE**	**3/3/2025**	**2/13/2025 8:45:26 AM**	**3**



MH-5_MH-6_332025 95952 AM_DSC_13.jpg, 00:15:43, 383.60ft
Deposits Settled Compacted, 60% of cross sectional area from



MH-5_MH-6_332025 95952 AM_MSA_14.jpg, 00:15:56, 383.60ft
Miscellaneous Survey Abandoned



MH-5_MH-6_332025 95952 AM_MSA_15.jpg, 00:15:56, 383.60ft
Miscellaneous Survey Abandoned

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
2/17/2025			**Kendell Jones-Hardy**	**P0051492-122024**	**2/17/2025 11:31:38 AM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Light Cleaning	**Upstream**		**22.8 '**	**22.8 '**

City:	**PHILADELPHIA, PA**	Drainage Area:		Upstream MH:	**MH-1**
Street:	**PASSYUNK AVE**	Media Label:	**DT**	Up Rim to Invert:	**0.0**
Location Code:		Flow Control:		Downstream MH:	**MH-2**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Other**	Total gallons used:	**0.0**
Pipe size:	**24 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Not Known**	Purpose:	**Routine Assessment**	Joints failed:	**0**
Lining Method:		Owner:	**Philadephia**		
Additional Info:					



1:173	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / MH-2	00:00:00	MH-1_MH-2_2172025 120032	
	0.0	MWL	Water Level, 5% of the vertical dimension	00:02:12	MH-1_MH-2_2172025 120032	
	19.3	IDJ	Infiltration Dripper Joint from 11 o'clock to 2 o'clock, within 8 inch	00:04:08	MH-1_MH-2_2172025 120032	M3
	22.8	AMH	Manhole / MH-1	00:04:46	MH-1_MH-2_2172025 120032	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	3100	3100	0.0	3.0	3.0	0.0	3.0	3.0

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Section Pictures - 2/17/2025 - 2/17/2025 11:31:38 AM

City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA, PA	**PASSYUNK AVE**	**2/17/2025**	**2/17/2025 11:31:38 AM**	**4**



MH-1_MH-2_2172025 120032 PM_AMH_16.jpg, 00:00:00, 0.00ft
Manhole



MH-1_MH-2_2172025 120032 PM_MWL_17.jpg, 00:02:12, 0.00ft
Water Level, 5% of the vertical dimension



MH-1_MH-2_2172025 120032 PM_IDJ_18.jpg, 00:04:08, 19.30ft
Infiltration Dripper Joint from 11 o'clock to 2 o'clock, within 8



MH-1_MH-2_2172025 120032 PM_AMH_19.jpg, 00:04:46, 22.80ft
Manhole

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
2/17/2025			**Kendell Jones-Hardy**	**P0051492-122024**	**2/17/2025 12:20:21 PM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Light Cleaning	**Downstream**		**14.8 '**	**14.8 '**

City:	**PHILADELPHIA, PA**	Drainage Area:		Upstream MH:	**MH-2**
Street:	**PASSYUNK AVE**	Media Label:	**DT**	Up Rim to Invert:	**0.0**
Location Code:		Flow Control:		Downstream MH:	**MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Other**	Total gallons used:	**0.0**
Pipe size:	**24 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Not Known**	Purpose:	**Routine Assessment**	Joints failed:	**0**
Lining Method:		Owner:	**Philadephia**		
Additional Info:					



1:112	Distance		Code	Observation	Counter	Photo	Grade
	0.0		AMH	Manhole / MH-2	00:00:00		
	0.0		MWL	Water Level, 5% of the vertical dimension	00:00:21	MH-2_MH-3_2172025 122113	
	6.0	S01	MWLS	Miscellaneous Water Level, Sag, 15% of the vertical dimension, Start	00:01:21	MH-2_MH-3_2172025 122113	
	14.2		B	Broken from 11 o'clock to 1 o'clock, within 8 inch	00:02:30	MH-2_MH-3_2172025 122113	S4
	14.8	F01	MWLS	Miscellaneous Water Level, Sag, 15% of the vertical dimension, Finish	00:03:08		S2
	14.8		AMH	Manhole / MH-3	00:03:15	MH-2_MH-3_2172025 122113	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4122	0000	4122	8.0	0.0	8.0	2.7	0.0	2.7

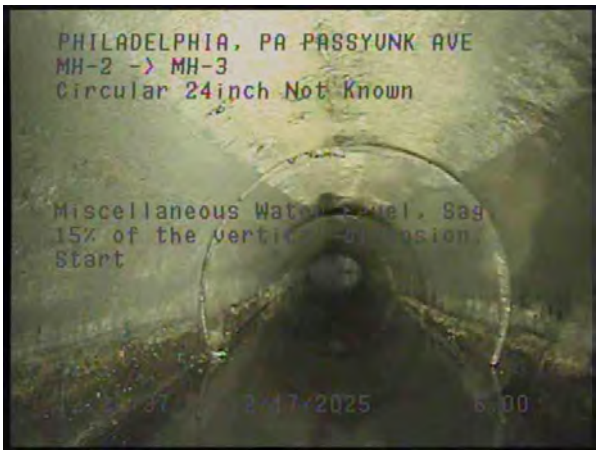
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Section Pictures - 2/17/2025 - 2/17/2025 12:20:21 PM

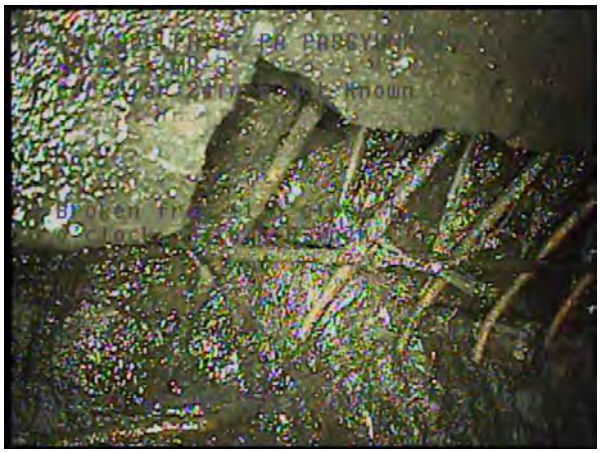
City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA, PA	**PASSYUNK AVE**	**2/17/2025**	**2/17/2025 12:20:21 PM**	**5**



MH-2_MH-3_2172025 122113 PM_MWL_20.jpg, 00:00:21, 0.00ft
Water Level, 5% of the vertical dimension



MH-2_MH-3_2172025 122113 PM_MWLS_21.jpg, 00:01:21, 6.00ft
Miscellaneous Water Level, Sag, 15% of the vertical



MH-2_MH-3_2172025 122113 PM_B_22.jpg, 00:02:30, 14.20ft
Broken from 11 o'clock to 1 o'clock, within 8 inch



MH-2_MH-3_2172025 122113 PM_AMH_23.jpg, 00:03:15, 14.80ft
Manhole

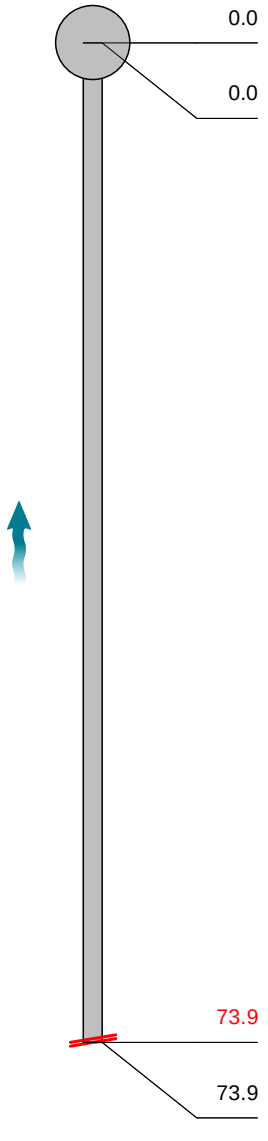
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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
2/17/2025			**Kendell Jones-Hardy**	**P0051492-122024**	**2/17/2025 12:55:22 PM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	**Upstream**		**73.9 '**	**73.9 '**

City:	**PHILADELPHIA, PA**	Drainage Area:		Upstream MH:	**MH-5**
Street:	**PASSYUNK AVE**	Media Label:	**DT**	Up Rim to Invert:	**0.0**
Location Code:		Flow Control:		Downstream MH:	**MH-4**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Other**	Total gallons used:	**0.0**
Pipe size:	**24 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Not Known**	Purpose:	**Routine Assessment**	Joints failed:	**0**
Lining Method:		Owner:	**Philadephia**		
Additional Info:	**MSA; OBSTRUCTION IN LINE (MASONRY)**				



1:558	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / MH-4	00:00:00		
	0.0	MWL	Water Level, 5% of the vertical dimension	00:00:46	MH-5_MH-4_2172025 10831	
	73.9	OBB	Obstruction Brick or Masonry, 80% of cross sectional area from 12 o'clock to 12 o'clock / UNKNOWN MASONRY IN LINE	00:03:46	MH-5_MH-4_2172025 10831	M5
	73.9	MSA	Miscellaneous Survey Abandoned / MASONRY IN THE LINE UNABLE TO CONTINUE	00:04:33	MH-5_MH-4_2172025 10831	

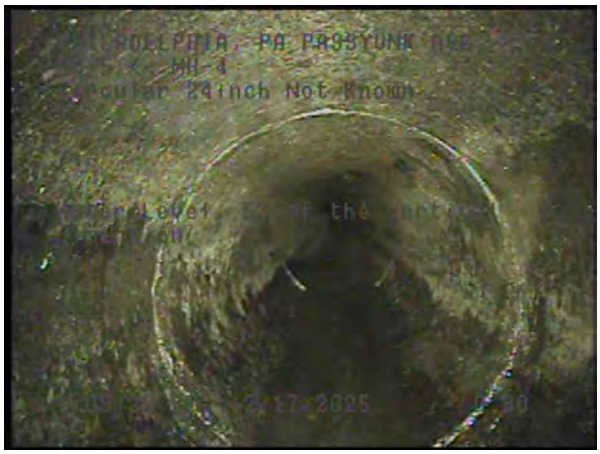
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	5100	5100	0.0	5.0	5.0	0.0	5.0	5.0

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Section Pictures - 2/17/2025 - 2/17/2025 12:55:22 PM

City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA, PA	**PASSYUNK AVE**	**2/17/2025**	**2/17/2025 12:55:22 PM**	**6**



MH-5_MH-4_2172025 10831 PM_MWL_24.jpg, 00:00:46, 0.00ft
Water Level, 5% of the vertical dimension



MH-5_MH-4_2172025 10831 PM_OBB_25.jpg, 00:03:46, 73.90ft
Obstruction Brick or Masonry, 80% of cross sectional area



MH-5_MH-4_2172025 10831 PM_MSA_26.jpg, 00:04:33, 73.90ft
Miscellaneous Survey Abandoned

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Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
2/17/2025			**Kendell Jones-Hardy**	**P0051492-122024**	**2/17/2025 1:33:46 PM**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	Heavy Cleaning	**Downstream**		**140.7 '**	**140.7 '**

City:	**PHILADELPHIA, PA**	Drainage Area:		Upstream MH:	**MH-4**
Street:	**PASSYUNK AVE**	Media Label:	**DT**	Up Rim to Invert:	**0.0**
Location Code:		Flow Control:		Downstream MH:	**MH-3**
Location Details:		Sheet Number:		Down Rim to Invert:	**0.0**
Pipe shape:	**Circular**	Sewer Use:	**Other**	Total gallons used:	**0.0**
Pipe size:	**24 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Not Known**	Purpose:	**Routine Assessment**	Joints failed:	**0**
Lining Method:		Owner:	**Philadephia**		

Additional Info:



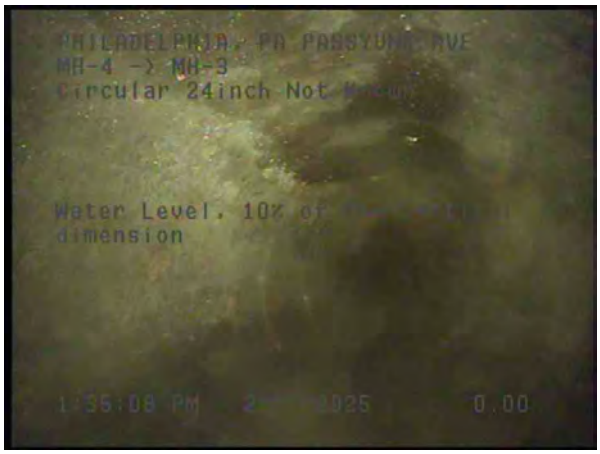
1:1062	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / MH-4	00:00:00		
	0.0	MWL	Water Level, 10% of the vertical dimension	00:00:39	MH-4_MH-3_2172025 13427	
	10.4	IDB	Infiltration Dripper Barrel from 11 o'clock to 1 o'clock, within 8 inch	00:01:27	MH-4_MH-3_2172025 13427	M3
	140.7	AMH	Manhole / MH-3	00:05:32	MH-4_MH-3_2172025 13427	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	3100	3100	0.0	3.0	3.0	0.0	3.0	3.0

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Section Pictures - 2/17/2025 - 2/17/2025 1:33:46 PM

City	Street	Date	Lateral Segment Reference	Section No.
PHILADELPHIA, PA	**PASSYUNK AVE**	**2/17/2025**	**2/17/2025 1:33:46 PM**	**7**



MH-4_MH-3_2172025 13427 PM_MWL_27.jpg, 00:00:39, 0.00ft
Water Level, 10% of the vertical dimension



MH-4_MH-3_2172025 13427 PM_IDB_28.jpg, 00:01:27, 10.40ft
Infiltration Dripper Barrel from 11 o'clock to 1 o'clock, within 8



MH-4_MH-3_2172025 13427 PM_AMH_29.jpg, 00:05:32, 140.70ft
Manhole

Appendix D

Monitoring Well Information

LOG of BORING and MONITORING WELL CONSTRUCTION DETAILS

Project : Chevron/Philadelphia Refinery

Project No. 113-909-032

Date M.W. completed 2/24/86

Supervising D & M Engineer/Geologist Dave Wagner

Boring/Well No. - C64

Location -	Chevron Refinery
Driller -	Drill Consult
Drilling Completed -	2/24/86
Type of Rig -	Hollow Stem Auger

CONSTRUCTION DATA

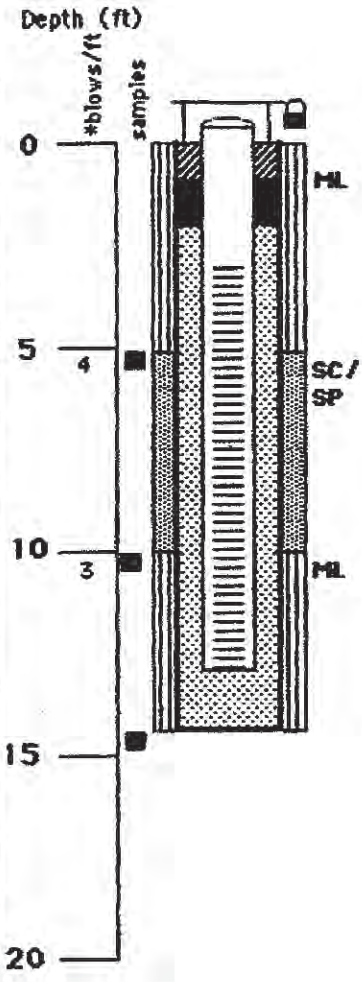
Borehole Diam. -	7"
Borehole Depth -	14'6"
Casing/Screen Type -	PVC
Casing Diam. -	4"
Casing Depth -	13'
Screen Setting -	3' - 13'
Slot Width -	0.02"
Type of Seal -	Bentonite
Type of Filterpack -	#2 Sand
Type of Grout -	Cement/Bentonite

MEASUREMENTS (NGVD)

Top of Casing Elevation -	10.21'
Static Water Level Elevtation -	3.72'
Date Measured -	1/13/87
Surface Elevation -	8.40'

TEST DATA

Pump Type -	
Depth to Intake (ft) -	
Satic Water Level (ft) -	
Pumping Water Level (ft) -	
Drawdown (ft) -	
Length of Test (Hrs) -	



Notes:

* Blows taken using a 140 lb hammer falling 30 inches.

** All soils classified by visual inspection.

WELL CONSTRUCTION KEY

Filter Pack

Bentonite Seal

Cement Grout

DAMES & MOORE

LOG of BORING and MONITORING WELL CONSTRUCTION DETAILS

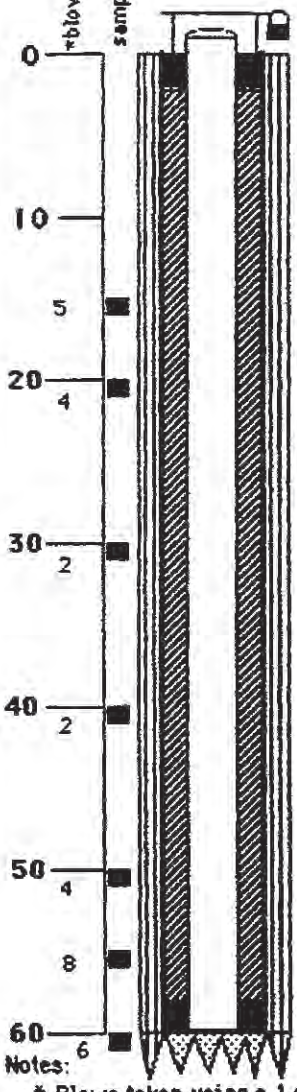
Project : Chevron/Philadelphia Refinery

Boring/Well No. - C65D

Project No. 113-950-032

Date M.W. completed 11/11/86

Supervising D & M Geologist David Wagner



Description
ML Silt with trace to little fine to coarse sand, trace fine gravel, black, moist; strong petroleum odor; brick fragments
Silt with little clay, medium gray, soft, moist; organics
SHELBY TUBE taken from 25' to 27'
Trace mica
Decreasing density; very soft
Increasing density; soft
Decreasing clay; trace clay and trace fine sand
Increasing sand; little fine sand, stratified

CONSTRUCTION DATA	
Borehole Diam. -	10"
Borehole Depth -	75'
Casing/Screen Type -	PVC
Casing Diam. -	4"
Casing Depth -	75'
Screen Setting -	65' - 75'
Slot Width -	0.02"
Type of Seal -	Bentonite
Type of Filterpack -	#2 Sand
Type of Grout -	Bentonite

MEASUREMENTS(NGVD)	
Top of Casing Elevation -	11.96'
Static Water Level Elevation -	-2.16'
Date Measured -	12/22/86
Surface Elevation -	9.94'

TEST DATA	
Pump Type -	
Depth to Intake (ft) -	
Satic Water Level (ft) -	
Pumping Water Level (ft) -	
Drawdown (ft) -	
Length of Test (Hrs) -	

WELL CONSTRUCTION KEY

- FILTER PACK
- BENTONITE SEAL
- BENTONITE GROUT
- CAVE IN MATERIAL
- CONCRETE

Notes:

* Blows taken using a 140 lb hammer falling 30 inches.

** All soils classified by visual inspection.

DAMES & MOORE

LOG of BORING and MONITORING WELL CONSTRUCTION DETAILS

Project : Chevron/Philadelphia Refinery

Boring/Well No. - C65D (Cont.)

Project No. 113-950-032

Date M.W. completed 11/12/86

Supervising D & M Geologist David Wagner

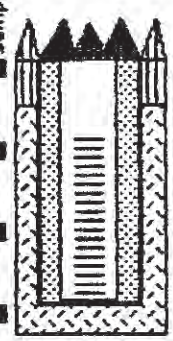
Location - Chevron Refinery

Driller - Lambert, Inc.

Drilling Completed - 11/12/86

Type of Rig - Hollow Stem Auger

Depth (ft)	*blows/ft	samples	Description
60	6		ML 1" interbeds of fine to coarse sand from 60' to 62'
	94		SW Fine to coarse sand with little fine gravel, trace to little clay, trace silt, brownish-gray, medium dense, saturated
70	25		
	32,75/3"		Decreasing clay; no clay
80			
90			



WELL CONSTRUCTION KEY

- FILTER PACK
- BENTONITE SEAL
- BENTONITE GROUT
- CAVE IN MATERIAL
- CONCRETE

Notes:

* Blows taken using a 140 lb hammer falling 30 inches.

** All soils classified by visual inspection.

DAMES & MOORE

LOG of BORING and MONITORING WELL CONSTRUCTION DETAILS

Project : Chevron/Philadelphia Refinery

Project No. 113-909-032

Date M.W. completed 2/25/86

Supervising D & M Engineer/Geologist Blake Moyer, Jr.

Boring/Well No. - C65

Location -	Chevron Refinery
Driller -	Drill Consult
Drilling Completed -	2/25/86
Type of Rig -	Hollow Stem Auger

CONSTRUCTION DATA

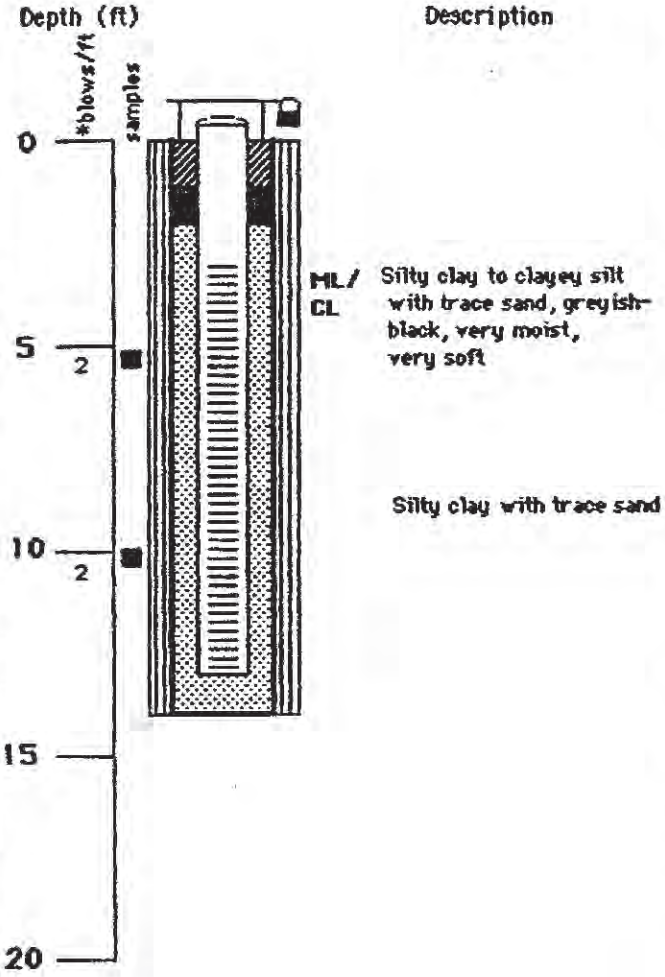
Borehole Diam. -	7"
Borehole Depth -	14'
Casing/Screen Type -	PVC
Casing Diam. -	4"
Casing Depth -	13'
Screen Setting -	3' - 13'
Slot Width -	0.02"
Type of Seal -	Bentonite
Type of Filterpack -	#2 Sand
Type of Grout -	Cement/Bentonite

MEASUREMENTS (NGVD)

Top of Casing Elevation -	13.33'
Static Water Level Elevation -	Not Available
Date Measured -	1/15/87
Surface Elevation -	9.70'

TEST DATA

Pump Type -	
Depth to Intake (ft) -	
Satic Water Level (ft) -	
Pumping Water Level (ft) -	
Drawdown (ft) -	
Length of Test (Hrs) -	



Notes:

* Blows taken using a 140 lb hammer falling 30 inches.

** All soils classified by visual inspection.

WELL CONSTRUCTION KEY

Filter Pack

Bentonite Seal

Cement Grout

DAMES & MOORE

LOG of BORING and MONITORING WELL CONSTRUCTION DETAILS

Project : Chevron/Philadelphia Refinery

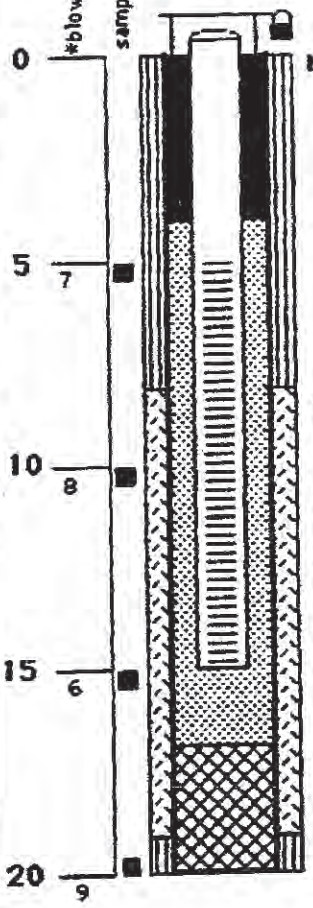
Boring/Well No. - C97

Project No. 113-950-032

Date M.W. completed 10/23/86

Supervising D & M Geologist David Wagner

Location -	Chevron Refinery
Driller -	Lambert, Inc.
Drilling Completed -	10/23/86
Type of Rig -	Hollow Stem Auger
CONSTRUCTION DATA	
Borehole Diam. -	10"
Borehole Depth -	20'
Casing/Screen Type -	PVC
Casing Diam. -	4"
Casing Depth -	15'
Screen Setting -	5' - 15'
Slot Width -	0.02"
Type of Seal -	Bentonite
Type of Filterpack -	#2 Sand
Type of Grout -	
MEASUREMENTS(NGVD)	
Top of Casing Elevation -	13.07'
Static Water Level Elevation -	3.17'
Date Measured -	1/14/87
Surface Elevation -	9.68'
TEST DATA	
Pump Type -	
Depth to Intake (ft) -	
Satic Water Level (ft) -	
Pumping Water Level (ft) -	
Drawdown (ft) -	
Length of Test (Hrs) -	



ML	Silt with little to some clay, little fine gravel, trace fine to coarse sand, blackish - brown, soft, slightly moist to moist; brick fragments; petroleum odor
SW	Fine to coarse sand with some fine gravel, little silt, little clay, blackish - gray and brown, loose, saturated; brick fragments; strong petroleum odor; sheen on water
ML	Silt with some clay, blackish-gray, soft, very moist; organics; petroleum odor

WELL CONSTRUCTION KEY

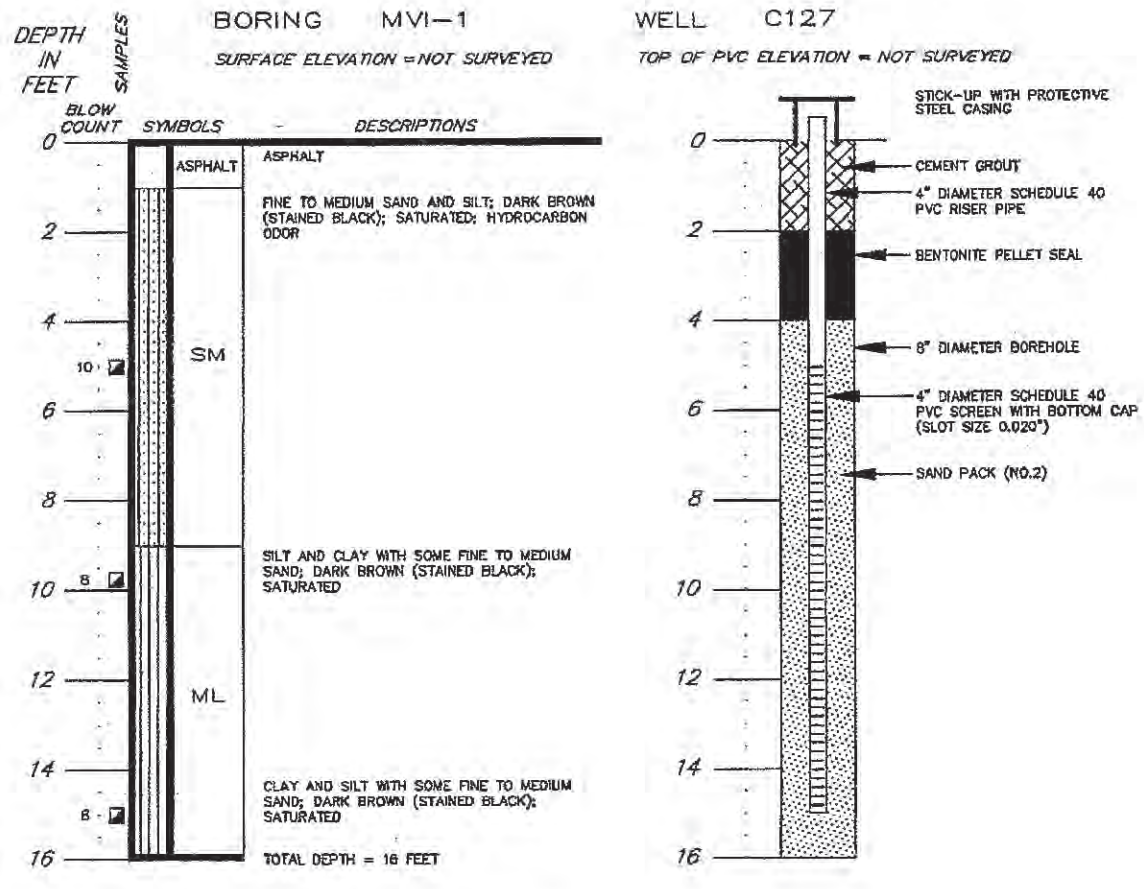
- FILTER PACK
- BENTONITE SEAL
- CONCRETE
- CAVE IN MATERIAL

Notes:

* Blows taken using a 140 lb hammer falling 30 inches.

** All soils classified by visual inspection.

DAMES & MOORE



EXPLANATION:

2-FOOT SPLIT-SPOON SAMPLE COLLECTED FROM THIS INTERVAL

NOTES:

1. BORING ADVANCED WITH A DRILL RIG AND SPLIT-SPOON SAMPLER ON 8/14/92 BY MARCOR DRILLING OF EXTON, PENNSYLVANIA.
2. BORING TERMINATED AT 16 FEET ON 8/14/92.
3. MONITORING WELL C127 INSTALLED ON 8/14/92.
4. MONITORING WELL C127 DEVELOPED ON 8/20/92.
5. SAMPLES WERE COLLECTED AT THIS SOIL BORING LOCATION WITH A 3-INCH STAINLESS STEEL SPLIT-SPOON SAMPLER.
6. A "BLOW-COUNT" REFERS TO THE NUMBER OF BLOWS REQUIRED TO DRIVE A STANDARD SPLIT-SPOON SAMPLER A DISTANCE OF ONE FOOT (UNLESS OTHERWISE NOTED) USING A 140 lb. HAMMER FALLING 30 INCHES.
7. DEPTH TO WATER MEASURED TO BE 8.24 FEET ON 9/3/92.

LOG OF SOIL BORING AND MONITORING WELL DETAIL CHEVRON REFINERY PHILADELPHIA, PENNSYLVANIA

DAMES & MOORE

(3) CHEV92\TG-MW1 10/26/92 08:04

MONITORING WELL LOG: C-142

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Parratt Wolff**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Shaun Sykes**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**6/3/2010**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**14'**	ELEVATION:	**N/A**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
				Hand cleared to 8'		
	0.0		20% recovery - Dark brown, sandy silt, with gravel, brick, glass fill, dry, no odor.		Bentonite 0-2'	
	8.7		Fill to 8' - Gravel w/ lots of brick, asphalt, concrete block, etc.		Sand 2-14"	
-5					4' PVC Riser	
	6.7		100% recovery - Dark brown/gray/black sandy silt, slightly micaceous, mixed gravel			
	8.6				10' PVC Screen	
-10	269		50% recovery - Black sandy silt with clay, very moist, strong odor, organic material (wood), sheen on spoon.			
	312					
	27.6		100% recovery - Same as above			
	6.4			Hollow stem auger terminal depth = 14'		

MONITORING WELL LOG: C-143

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Parratt Wolff**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Shaun Sykes**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**6/3/2010**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**14'**	ELEVATION:	**N/A**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0				Hand cleared to 8'		
	45.0		20% recovery - Light brown/tan, silty sand, gravel (1.5') Dark brown, sandy silt and gravel, dry, wood and brick fill			
	76.7					
			Cleared to 8' - sandy gravel fill w/ many brick, asphalt, large blocks, etc. Water to 5' during clearing.			
-5					4' PVC Riser	
	-		0% recovery - Wet		Bentonite 0-2'	
	-				Sand 2-14"	
-10	65.4		25% recovery - Black, sand and mixed gravels, wet, strong odor, sheen on spoon			
	52.1					
	30.7		100% recovery - Same as above, some clay content			
	23.4			Hollow stem auger terminal depth = 14'		

MONITORING WELL LOG: C-144 D

PROJECT:	Sunoco-Philadelphia Refinery	DRILLING CO.:	ECDI
SITE LOCATION:	AOI-7	DRILLING METHOD:	Hollow Stem Auger & Mud Rotary
JOB NO.:		SAMPLING METHOD:	Split Spoon
LOGGED BY:	Tiffani Doerr/Shaun Sikes	SCREEN/RISER DIAMETER:	4-inch
DATES DRILLED:	6/28/10-7/9/10	WELLBORE DIAMETER:	6.25"
TOTAL DEPTH:	78'	ELEVATION:	NA

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0			Cleared to 8' - dark brown to black stained sandy gravel fill w/ lots of brick, wood and other fill. Water to ~4' during clearing.	Hand cleared to 8'		
-5						
-10	11.7		(BC=3-2-1-1) Black silty CLAY, soft, moist, sl odors, stained.		Grout/bentonite slurry (0'-59')	
	11.4					
	0.0		(BC=3-2-1-2) Dk gray CLAY w/silt and organic material ~10%, no odors.			
	0.0					
	0.0		(BC=1-1-2-1) Same as above.			
-15	0.0					
	0.0		(BC=1-2-2-2) 16" Recovery - same as above.			
	0.0					
	0.7		(BC=1-2-1-1) 20" Recovery - same as above.			
	0.0					
-20	0.0		(BC=WOH/1'-1-1) 4" Recvoery - same as above			
	0.0					
	0.0		(BC=WOH/6"-1-1-1) Gray silty clay with 20-30% organics			

MONITORING WELL LOG: C-144 D

Aquaterra Technologies, Inc.

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
	0.0		(grasses).			
	0.0		(BC=1-1-3-3) Same as above - less organics.			
-25	0.0					
	0.0		(BC=WOH/1'-1-1) Same as above.			
	0.0					
	0.0					
-30	0.0		(BC=WOH/2') Same as above - no organics and addition of mica flakes in last 6" (note clay does not feel as soft as blow counts indicate)			
	0.0					
-35	0.0		(BC=WOH/2') 12" Recovery - Gray CLAY, no organics, trace mica flakes.			
	0.0					
-40	0.0		(BC=WOH/2') 18" Recovery - gray clay with thin very fine light gray sand laminations. (minimal up to <1/4" spacing)			
	0.0					
-45	0.0		(BC=WOH/1'-1-1) Same as above.			
	0.0					
-50	0.0		(BC=WOH/2') No recovery - Rock frag in tip of spoon.			
	0.0					

MONITORING WELL LOG: C-144 D

Aquaterra Technologies, Inc.

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
-55	0.0		(BC=WOH/2') Same as above - last 9" has no layering, just gray fine sandy clay.			
	0.0				#00 Sand (59'-61')	
-60	0.0		(BC=8-5-5-7) 18" Recovery - medium stiff, dark gray/black CLAY, some organics, trace think lenses of fine sand.	Mud rotary terminal depth = 78'	#1 Sand (61'-78')	
	0.0		Reddish brown, orange fine-coarse SAND at 61.5'-62'. Some gravel in bottom of spoon.		Screen (63'-78')	
-65			(BC=18-14-6-5) No Recovery. Choppy drilling from 62-65' (sand/gravel)			
-70	0.0		(BC=5-4-3-3) Top 4" dark gray fine-med SAND. Rest is dk gray/black med stiff silty CLAY, some organics, trace fine-med sand lenses, micaceous.			
	0.0		Hard drilling - 73'-75' (gravels)			
-75	0.0		(BC=14-23-90-61) 20" Recovery - gray-brown med-coarse SAND and fine-coarse sub-round GRAVEL			
	0.0		Black and white weathered Schist at 76'.			

MONITORING WELL LOG: C-145

PROJECT:	**Sunoco-Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**S. Sykes**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**8/9/10**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**15'**	ELEVATION:	**N/A**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0				Hand cleared to 8'		
					Bentonite 2-3'	
			Gravel, fill, brick, water @ 6'			
-5					5' PVC Riser	
	798		Dark brown/gray sand and gravel, trace clay, wet, strong odor		Sand 3-15"	
	1012					
-10	1203		Same as above, increased clay content		10' PVC Screen	
	1172					
	986		Same as above			
	898					
	932		Same as above	Hollow stem auger terminal depth = 15'		
-15						

MONITORING WELL LOG: C-146

PROJECT:	**Sunoco-Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**S. Sykes**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**8/10/10**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**15'**	ELEVATION:	**N/A**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0				Hand cleared to 12'		
					Bentonite 2-3'	
			Gravel, sandy silt, fill, brick, water @ 5-6', dark brown/ gray sandy clay w/ gravel			
-5					5' PVC Riser	
			Dark gray/black sandy clay w/ gravel, wet, strong odor, SPH		Sand 3-15"	
-10					10' PVC Screen	
	1362		Same as above			
	1410					
	1322		Same as above	Hollow stem auger terminal depth = 15'		
-15						

MONITORING WELL LOG: C-147

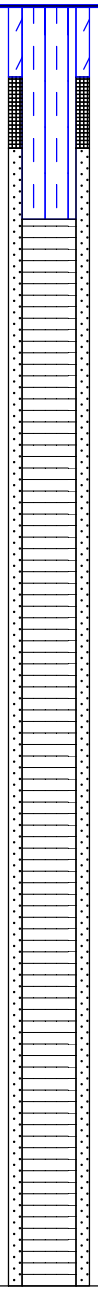
PROJECT:	**Sunoco-Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**S. Sykes**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**8/10/10**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**15'**	ELEVATION:	**N/A**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0				Hand cleared to 12'		
					Bentonite 2-3'	
			Gravel, sandy silt, fill, brick, cobbles, water @ 5-6', dark brown sandy silt, some clay			
-5					5' PVC Riser	
			Dark gray/black silty/sandy clay, wet, strong odor, SPH		Sand 3-15"	
-10					10' PVC Screen	
	610		Same as above			
	723					
	702		Same as above	Hollow stem auger terminal depth = 15'		
-15						

MONITORING WELL LOG: C-148

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**6" Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Tiffani Doerr**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**23 May 2011**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**18'**	ELEVATION:	**-**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0					Bentonite 1-2'	
					Sand 2-18'	
					3' PVC Riser	
-5				Location cleared to 10', backfilled with sand		
					15' PVC Screen	
-10						
-15						



MONITORING WELL LOG: C-149

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**6" Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Tiffani Doerr**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**23 May 2011**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**11'**	ELEVATION:	**-**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
-5			(10-11')Backfill	Location cleared to 10', backfilled with sand	Bentonite 1-2' Sand 3-11' 4' PVC Riser 7' PVC Screen	
-10						

MONITORING WELL LOG: C-160

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**6" Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Tiffani Doerr**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**7 September 2011**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**10'**	ELEVATION:	**-**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0						
					Sand 0-10'	
-5				Location cleared to 10', backfilled with sand	10' PVC Screen	
				Well set to 10'		
-10						

MONITORING WELL LOG: C-161

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7**	DRILLING METHOD:	**6" Hollow Stem Auger**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Tiffani Doerr**	SCREEN/RISER DIAMETER:	**4"**
DATES DRILLED:	**7 September 2011**	WELLBORE DIAMETER:	**6"**
TOTAL DEPTH:	**10'**	ELEVATION:	**-**

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0						
					Sand 0-10'	
-5				Location cleared to 10', backfilled with sand	10' PVC Screen	
				Well set to 10'		
-10						

MONITORING WELL LOG: C-169

PROJECT:	**Sunoco - Philadelphia Refinery**	DRILLING CO.:	**Total Quality Drilling**
SITE LOCATION:	**AOI-7 (Girard Point)**	DRILLING METHOD:	**Mud Rotary**
JOB NO.:		SAMPLING METHOD:	**Split Spoon**
LOGGED BY:	**Tiffani Doerr**	SCREEN/RISER DIAMETER:	**6"**
DATES DRILLED:	**23 February 2012**	WELLBORE DIAMETER:	**9.5"**
TOTAL DEPTH:	**25'**	ELEVATION:	**-**

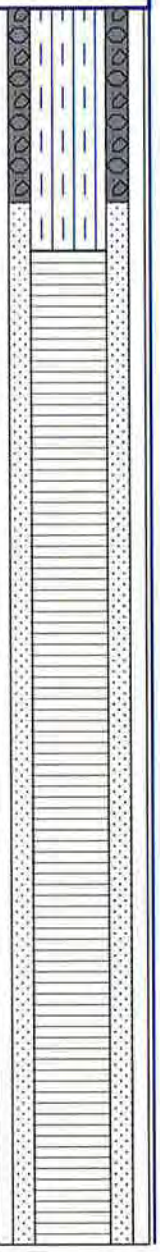
Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0				* Solid 12" PVC riser installed to 10' around well. Could not be removeved - grouted in place by Sunoco personnel.		
-5					PVC Riser 0-5'	
-10			Cleared to 10' via air knife/vac truck and backfilled with sand			
	1.6		(11-13') 2" Recovery - wet, black and gray sandy clay w/ cinders and few fine gravels - FILL, odors			
-15	0.0		(13-15') 2" Recovery - fill - black cinders, terra cotta frag (glazed on one side so not pipe), slag			
			(15-17') 1" Recovery - fill - glass, rock frags			
			(17-19') No Recovery			
-20			(19-21') No Recovery		PVC Screen 5-25'	
			(23-25') 12" Recovery - Top 8" - Dark gray and brown gravelly clay with sand, slag and cinders, fill - Bottom 4" - Clay with some sand and fine gravel, light gray-brown, 1/2" ball white sandy clay			
	0.0					
-25						

RW-804

Aquaterra Technologies, Inc

MONITORING WELL LOG: C-170

PROJECT:	Sunoco - Philadelphia Refinery	DRILLING CO.:	Total Quality Drilling
SITE LOCATION:	AOI-7 (Girard Point)	DRILLING METHOD:	Mud Rotary
JOB NO.:		SAMPLING METHOD:	None
LOGGED BY:	None	SCREEN/RISER DIAMETER:	6"
DATES DRILLED:	March 2012	WELLBORE DIAMETER:	9.5"
TOTAL DEPTH:	25.5'	ELEVATION:	-

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
-5			*Installed approx. 10' south of C-169. No spoons or observations collected. See C-169 log for reference.		PVC Riser 0-5'	
-10						
-15						
-20					PVC Screen 5-25.5'	
-25						

Dames & Moore, Inc.

Log of Monitoring Well WP14-2

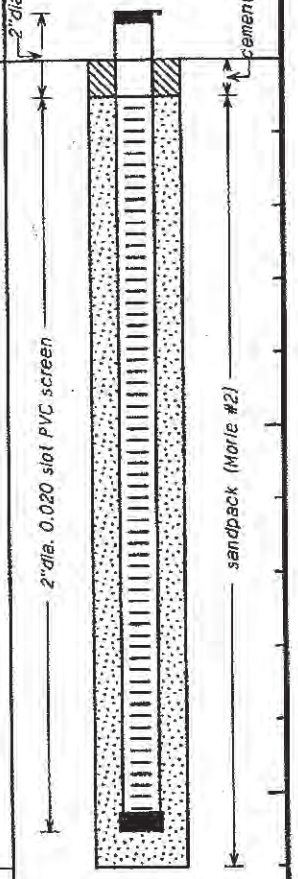
PROJECT: *Chevron USA, Incorporated*	LOCATION: *Philadelphia, Pennsylvania*
PROJECT NO.: *16000-443*	SURFACE ELEVATION: *11.37/10.98 TOC elevation*
DATE STARTED: *05/27/93*	INITIAL H2o LEVEL: *~5.50 ft. TOC*
DATE FINISHED: *05/27/93*	FINAL H2o LEVEL: *5.43 on 7/7/93 ft. TOC*
DRILLING METHOD: *6in. Hollow Stem Auger*	TOTAL DEPTH: *10.5 Feet*
DRILLING COMPANY: *MARCOR of PA*	GEOLOGIST: *Dan Sirkis*

DEPTH feet	SAMPLE NO.	BLOWS/FT.	PID (ppm) VALUES	PID (ppm) PROFILE 0 1000	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
5	X	27	1156			FM	Fill Material: fine sand, silt, and gravel mix; micaceous; medium dense; brown to dark brown; moist to wet; hydrocarbon odor; no visible free-phase hydrocarbon; brick present
10	X	16	400				End of Boring at 11.0 feet
15							

NOTES:

1. Samples were collected at the 4.0 to 6.0 and 9.0 to 11.0 foot intervals with a 2-inch split-spoon sampler.
2. A "blow count" refers to the number of blows required to drive standard split-spoon sampler a distance of one-foot using a 140 pound hammer falling 30 inches.
3. Free-phase hydrocarbon was not encountered.

WELL DIAGRAM



Appendix E

Groundwater Sampling Field Forms

terraphase engineering

Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-142

Date:	3/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	8.23
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	16.19
Volume Units:	mL	Pump Intake (ft bmp)	9	Water Column (ft)	7.96000
Purge Start Time:	3:30 PM	Screen Interval (ft bmp):	11-16’	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/12/2025	COC:	
Sample Time:	4:15 PM	Analysis:	
Sample ID:	C-142-250312	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
15:30	200		8.85	12.27	6.89	421	46	2	5.4	
15:35	200		8.8	12.02	6.93	434	26	2.11	4	
15:40	200		9.2	11.85	7.09	443	3	5.41	0.7	
15:45	200		9.3	13.15	7.12	433	3	5.01	0.6	
15:50	200		9.4	14.35	7.15	422	4	5.25	0.6	
15:56	200		9.5	15.14	7.18	425	4	5.29	0.6	
16:00	200		9.5	15.62	7.20	419	4	5.75	0.6	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-146

Date:	3/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	3.26
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	12.89
Volume Units:	mL	Pump Intake (ft bmp)	10	Water Column (ft)	9.63000
Purge Start Time:	2:25 PM	Screen Interval (ft bmp):	7-12’	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/12/2025	COC:	
Sample Time:	3:00 PM	Analysis:	
Sample ID:	C-146-250312	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
14:25	200		3.55	12.79	6.55	385	-35	1.84	38.0	
14:30	200		3.65	12.05	6.61	383	-42	0.27	21.8	
14:35	200		3.65	11.83	6.60	384	-44	0.18	16.9	
14:40	200		3.9	11.56	6.54	386	-45	0.06	17.3	
14:45	200		3.95	11.53	6.58	387	-49	0.02	19.4	
14:50	200		4	11.49	6.63	389	-50	0.02	20.5	
14:55	200		4.1	11.46	6.68	391	-50	0.02	21.2	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-148

Date:	3/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	5.5
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	20.1
Volume Units:	mL	Pump Intake (ft bmp)	15.1	Water Column (ft)	14.60000
Purge Start Time:	11:45 AM	Screen Interval (ft bmp):	10-20	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/12/2025	COC:	
Sample Time:	12:30 PM	Analysis:	
Sample ID:	C-148-250312	Bottles:	
Duplicate Sample ID:	C-148-250312D	Odor:	
Duplicate Sample Time:	12:45 PM	Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
11:45	200		5.5	11.62	7.16	923	-99	0.65	41.2	
11:50	200		5.7	11.41	7.17	923	-105	0.42	41.6	
11:55	200		5.8	11.08	7.16	923	-112	0.20	46.9	
12:00	200		5.75	10.93	7.17	924	-115	0.16	40.4	
12:05	200		5.8	10.85	7.15	925	-118	0.16	29.6	
12:10	200		5.8	10.77	7.15	927	-119	0.16	29.3	
12:15	200		5.65	10.75	7.15	929	-121	0.17	28.2	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-150

Date:	03/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	4.48
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	25
Volume Units:	mL	Pump Intake (ft bmp)	20	Water Column (ft)	20.52
Purge Start Time:	12:40	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	03/12/2025	COC:	
Sample Time:	13:30	Analysis:	
Sample ID:	C-150-250312	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
12:50	200		4.67	13.21	7.13	379	-272	1.77	18.7	
12:55	200		4.67	12.72	7.13	364	-274	1.36	13.8	
13:00	200		4.76	12.66	7.13	363	-277	1.18	12.9	
13:05	200		4.77	12.61	7.13	363	-277	1.16	12.2	
13:10	200		4.8	12.52	7.12	363	-276	1.13	11.7	
13:15	200		4.81	12.48	7.11	363	-282	1.26	11.6	
13:19	200		4.81	12.44	7.11	363	-283	1.19	11.4	
13:25	200		4.82	12.44	7.11	363	-284	1.15	10.9	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box			X	
Sleeve around the well box in good condition			X	
Remarks				Stickup well.

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-153

Date:	3/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	4.99
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	20
Volume Units:	mL	Pump Intake (ft bmp)	15	Water Column (ft)	15.01000
Purge Start Time:	8:50 AM	Screen Interval (ft bmp):	10-20’	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/12/2025	COC:	
Sample Time:	9:30 AM	Analysis:	
Sample ID:	C-153-250312	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
09:20	200		6.17	11.32	7	189	-123	8.01	18.8	
8:50	200	0	5.45	11.32	6.98	194	-127	9.48	49.0	
8:55	200		5.8	11.41	7.03	192	-143	6.58	34.8	
9:00	200		5.95	11.40	7.02	192	-144	6.37	34.1	
9:05	200		6.1	11.43	7.02	191	-143	5.81	24.3	
9:10	200		6.15	11.37	6.98	190	-137	3.70	19.9	
9:15	200		6.17	11.37	6.99	190	-133	8.08	19.6	
9:25	200		6.17	11.30	7.01	187	-124	7.84	18.9	
9:30	200		6.17	11.31	7.03	187	-127	7.79	18.6	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-155

Date:	3/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	5.65
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	24.21
Volume Units:	mL	Pump Intake (ft bmp)	20	Water Column (ft)	18.56000
Purge Start Time:	10:40 AM	Screen Interval (ft bmp):	24-14	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/12/2025	COC:	
Sample Time:	11:30 AM	Analysis:	
Sample ID:	C-155-250312	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
10:40	200	0	5.65	13.65	6.96	995	-35	2.57	48.4	
10:45	200		5.78	14.07	6.50	985	-43	0.77	29.4	
10:50	200		6.00	14.20	6.93	982	-50	0.34	19.1	
10:55	200		6.1	14.16	6.97	982	-52	0.29	20.0	
11:00	200		6.23	14.14	7.09	981	-54	0.28	19.2	
11:05	200		6.6	14.05	6.99	981	-53	0.27	19.3	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-97

Date:	03/12/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):		Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)		Water Column (ft)	
Purge Start Time:		Screen Interval (ft bmp):	5-15	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	03/12/2025	COC:	
Sample Time:	15:30	Analysis:	
Sample ID:	C-97-250312	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
14:35	200		7.56	13.94	7.25	1003	-200	1.88	15.4	
14:40	200		7.81	13.56	7.23	1003	-218	1.07	11.2	
14:45	200		8.05	13.28	7.21	1003	-229	0.86	10.8	
14:50	200		8.16	13.10	7.17	1003	-231	0.8	11.3	
14:55	200		8.24	13.08	7.14	1003	-233	0.76	10.5	
15:00	200		8.29	12.90	7.09	1004	-235	0.73	9.6	
15:05	200		8.25	13.03	7.02	1004	-237	0.68	8.2	
15:10	200		8.25	13.12	6.98	1005	-245	0.62	7.9	
15:14	200		8.25	13.08	6.94	1005	-247	0.61	7.4	
15:20	200		8.25	12.97	6.90	1006	-250	0.58	6.8	
15:25	200		8.26	12.98	6.87	1007	-250	0.58	6.9	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box			X	
Sleeve around the well box in good condition			X	
Remarks				Stick up well along road.

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-166

Date:	3/13/2025	Casing Material:	PVC	Depth to Water (ft bmp):	4.03
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	5.14
Volume Units:	mL	Pump Intake (ft bmp)	4	Water Column (ft)	1.11000
Purge Start Time:	12:40 PM	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/13/2025	COC:	
Sample Time:	1:30 PM	Analysis:	
Sample ID:	C-166-250313	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
12:40	200		4.4	9.89	7.08	292	-105	0.66	26.3	
12:45	200		4.55	9.95	6.86	293	-108	0.64	26.9	
12:50	200		4.55	10.06	6.84	327	-114	0.55	29.7	
12:55	200		4.33	10.11	6.83	344	-117	0.50	28.8	
13:00	200		4.31	10.21	6.83	340	-118	0.48	29.0	
13:05	200		4.3	10.21	6.84	346	-121	0.46	29.0	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-169

Date:	3/13/2025	Casing Material:	PVC	Depth to Water (ft bmp):	3.85
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	24.68
Volume Units:	mL	Pump Intake (ft bmp)	15	Water Column (ft)	20.83000
Purge Start Time:	10:00 AM	Screen Interval (ft bmp):	14-25’	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/13/2025	COC:	
Sample Time:	11:00 AM	Analysis:	
Sample ID:	C-169-250313	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
10:00	200		5.8	10.86	6.50	388	-158	1.38	10.0	
10:05	200		5.91	10.77	6.53	376	-181	1.11	8.5	
10:10	200		5.95	10.89	6.53	369	-189	0.90	9.0	
10:15	200		6.0	10.92	6.55	368	-198	0.91	8.2	
10:20	200		5.95	10.96	6.55	369	-204	0.92	8.2	
10:25	200		5.95	10.98	6.57	369	-206	0.97	8.0	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-64

Date:	3/13/2025	Casing Material:		Depth to Water (ft bmp):	5.06
Purge Method:		Casing Diameter (in):		Well Depth (ft bmp)	13.99
Volume Units:		Pump Intake (ft bmp)		Water Column (ft)	8.93000
Purge Start Time:		Screen Interval (ft bmp):		Water Quality Meter:	
Comments:					

Sampling Summary

Sample Date:	3/13/2025	COC:	
Sample Time:	12:00 PM	Analysis:	
Sample ID:	C-64-250313	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
11:15	200		5.9	10.48	6.94	101	-114	1.96	20.4	
11:20	200		6.1	10.46	6.95	100	-116	0.96	19.8	
11:25	200		6.1	10.61	6.96	101	-118	0.71	14.7	
11:30	200		6.15	10.61	6.95	101	-118	0.70	15.2	
11:35	200		6.25	10.60	6.96	100	-118	0.66	14.0	
11:40	200		6.3	10.71	6.95	103	-122	0.69	15.0	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-65

Date:	3/13/2025	Casing Material:	PVC	Depth to Water (ft bmp):	6.79
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	16.33
Volume Units:	mL	Pump Intake (ft bmp)	8	Water Column (ft)	9.54000
Purge Start Time:	8:45 AM	Screen Interval (ft bmp):	11-16’	Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	3/13/2025	COC:	
Sample Time:	9:30 AM	Analysis:	
Sample ID:	C-65-250313	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	N/A

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
08:50	200		8.8	10.81	6.84	732	-50	2.10	20.5	
09:00	200		8.9	10.87	6.91	737	-59	0.71	13.2	
09:10	200		9.0	11.00	6.91	739	-62	1.04	11.0	
09:15	200		9.1	11.02	6.91	740	-63	1.07	10.6	
09:20	200		9.15	11.06	6.92	741	-63	1.06	11.3	
8:45	200		8.3	10.80	6.83	732	-49	2.06	23.2	
8:55	200		8.85	10.87	6.90	736	-58	0.8	14.3	
9:05	200		8.95	10.96	6.92	739	-62	1.35	11.5	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-152

Date:	03/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	4.57
Purge Method:	Low Flow - Peristaltic Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	22.51
Volume Units:	mL	Pump Intake (ft bmp)	15	Water Column (ft)	17.94
Purge Start Time:	08:30	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	03/14/2025	COC:	
Sample Time:	09:10	Analysis:	
Sample ID:	C-152-250314	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
08:31	200		0	8.75	6.12	1540	-94	5.08	2.9	
08:36	200		0	9.30	6.39	1510	-120	2.05	2.2	
08:41	200		0	9.34	6.45	1500	-127	2.05	2.3	
08:46	200		0	9.52	6.48	1500	-132	2.28	2.4	
08:50	200		0	9.46	6.49	1500	-134	2.01	2.3	
08:56	200		0	9.54	6.50	1500	-137	1.63	2.5	
09:00	200		0	9.50	6.51	1490	-139	1.57	2.3	
09:06	200		0	9.51	6.52	1480	-141	1.58	2.5	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Round 12
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition		X		

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-161

Date:	03/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	4.41
Purge Method:	Low Flow - Peristaltic Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	13.3
Volume Units:	mL	Pump Intake (ft bmp)	7	Water Column (ft)	8.89
Purge Start Time:	08:30	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	03/14/2025	COC:	
Sample Time:	09:45	Analysis:	
Sample ID:	C-161-250314	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
08:30	200		0	9.52	5.63	1000	-60	1.48	40.4	
08:35	200		0	9.76	5.93	1010	-87	0.74	29.1	
08:40	200		0	9.82	6.05	1020	-96	0.55	24.1	
08:45	200		0	9.88	6.11	1030	-101	0.45	23.6	
08:50	200		0	9.93	6.16	1040	-105	0.36	23.2	
08:55	200		0	9.93	6.21	1060	-109	0.24	22.0	
09:00	200		0	9.97	6.24	1070	-112	0.20	21.4	
09:05	200		0	9.98	6.27	1080	-115	0.14	20.3	
09:10	200		0	10.02	6.30	1100	-118	0.09	20.1	
09:16	200		0	10.05	6.31	1100	-119	0.07	19.7	
09:20	200		0	10.05	6.32	1110	-120	0.06	19.1	
09:26	200		0	10.07	6.33	1130	-122	0.03	18.6	
09:30	200		0	10.05	6.34	1150	-123	0.02	17.6	
09:35	200		0	10.09	6.34	1160	-124	0.01	17.9	
09:40	200		0	10.11	6.35	1170	-125	0	17.3	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Round 12
Well secured on initial inspection		X		
Is well ID visible?	X			

Item	Yes	No	NA	Notes
Water in the well box		X		
Sleeve around the well box in good condition		X		

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-142

Date:	04/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	Gallons	Pump Intake (ft bmp)	9.0	Water Column (ft)	
Purge Start Time:	13:27	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	04/14/2025	COC:	
Sample Time:	14:30	Analysis:	
Sample ID:	C-142-250414	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
13:30	250		5.09	15.25	7.51	373	-37	10.27	16.6	
13:35	250		5.62	14.04	7.41	372	77	6.21	3.9	
13:41	250		6.06	13.75	7.39	373	37	5.47	2.5	
13:45	250		6.14	13.55	7.38	374	13	4.76	0.2	
13:51	250		6.23	13.50	7.37	375	4	4.40	0.5	
13:54	250		6.31	13.45	7.36	375	-9	4.15	0.5	
13:59	250		6.45	13.27	7.35	376	-21	3.74	0.5	
14:05	250		6.52	13.26	7.33	377	-27	3.43	0.5	
14:10	250		6.55	13.25	7.3	380	-36	3.08	0.3	
14:15	250		6.55	13.14	7.26	384	-39	2.73	0.5	
14:20	250		6.63	13.04	7.18	389	-41	2.66	0.5	
14:25	250		6.68	12.96	7.19	389	-40	2.62	0.5	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				No lock on the well

Item	Yes	No	NA	Notes
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-148

Date:	4/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	15.1	Water Column (ft)	-4.10000
Purge Start Time:	14:20	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/14/2025	COC:	
Sample Time:	15:00	Analysis:	
Sample ID:	C-148-250414	Bottles:	
Duplicate Sample ID:	C-148-250414D	Odor:	
Duplicate Sample Time:	15:05	Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
14:20	200	0	4.1							
14:22				18.58	7.02	663	-91	1.06	21.2	
14:25	200		4.12	18.03	7	668	-101	0.54	18.7	
14:30	200		4.13	17.26	7	682	-114	0.13	20.6	
14:35	200		4.15	17.05	7.03	684	-125	0	20.3	
14:40	200		4.2	17.3	7.02	687	-128	0	19.7	
14:45	200		4.3	17.32	7.04	689	-133	0	19.8	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-152

Date:	4/15/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - Peristaltic Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	8	Water Column (ft)	
Purge Start Time:	10:17	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/15/2025	COC:	
Sample Time:	10:45	Analysis:	
Sample ID:	C-152-250415	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
10:20	200		0	11.37	6.56	837	-47	0.58	21	
10:25	200		0	11.51	6.59	840	-63	0	19.9	
10:30	200		0	11.51	6.6	843	-67	0	20	
10:35	200		0	11.45	6.51	845	-71	0	20	
10:40	200		0	11.49	6.62	844	-73	0	20.2	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Flush Mount
Well secured on initial inspection		X		
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition		X		
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				No bolts. Lots of sediment build up in well box.
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-153

Date:	4/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	15	Water Column (ft)	-3.50000
Purge Start Time:	12:55	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/14/2025	COC:	
Sample Time:	13:30	Analysis:	
Sample ID:	C-153-250414	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
12:55	200	0	3.65	14.6	6.91	911	-147	1.49	46.7	
13:00	200		3.65	13.52	6.91	936	-164	0.98	41.5	
13:05	200		3.69	13.15	6.98	940	-176	0.8	30.5	
13:10	200		3.76	13.2	7.01	939	-184	0	28.9	
13:15	200		3.75	13.09	7.02	938	-184	0	25.4	
13:20	200		3.81	12.95	7.01	937	-185	0	25.8	
13:25	200		3.8	12.89	7.02	932	-186	0	23.7	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-155

Date:	04/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	20	Water Column (ft)	
Purge Start Time:	11:48	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	04/14/2025	COC:	
Sample Time:	12:45	Analysis:	
Sample ID:	C-155-250414	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
11:50	200		4.25	14.08	7.04	938	-48	0.85	14.4	
11:55	200		4.28	14.01	7.03	939	-56	0.45	16.4	
11:59	200		4.31	13.94	7.04	938	-64	0.10	16.6	
12:04	200		4.33	13.95	7.02	937	-69	0	17.1	
12:10	200		4.35	13.95	7.03	937	-73	0	14.8	
12:15	200		4.36	13.94	7.03	937	-74	0.0	17.6	
12:20	200		4.38	13.92	7.03	936	-75	0	17.0	
12:24	200		4.38	13.97	7.02	936	-76	0	11.6	
12:29	200		4.38	13.98	7.03	934	-76	0.0	9.2	
12:34	200		4.38	13.97	7.02	934	-73	0	9	
12:40	200		4.42	14.01	7.02	933	-70	0	9.2	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-161

Date:	4/15/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - Peristaltic Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	8	Water Column (ft)	
Purge Start Time:	08:44	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/15/2025	COC:	
Sample Time:	09:50	Analysis:	
Sample ID:	C-161-250415	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
09:16	200		0	13.8	6.46	470	-103	0.32	38.2	
09:20	200		0	13.73	6.47	504	-106	0.21	36.5	
09:34	200		0	13.73	6.51	615	-113	0	33.9	
8:50	200		0	14.97	6.14	190	-26	0.6	53	
8:55	200		0	14.53	6.3	218	-64	0.29	49.5	
9:00	200		0	14.22	6.35	277	-80	0.2	46.1	
9:05	200		0	13.98	6.4	345	-91	0.24	43.6	
9:10	200		0	13.9	6.43	400	-97	0.3	41.4	
9:25	200		0	13.71	6.49	538	-108	0	36	
9:30	200		0	13.69	6.49	587	-110	0	34.7	
9:40	200		0	13.73	6.51	628	-113	0	33	
9:45	200		0	13.74	6.52	632	-114	0	31.1	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Flush Mount
Well secured on initial inspection		X		
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				No bolts on well.

Item	Yes	No	NA	Notes
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-166

Date:	4/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	5	Water Column (ft)	-1.90000
Purge Start Time:	09:50	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/14/2025	COC:	
Sample Time:	10:35	Analysis:	
Sample ID:	C-166-250414	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
09:55	200		2.15	10.42	6.58	148	53	0.3	33.8	
10:00	200		2.2	10.63	6.79	140	-14	0.11	30.2	
10:05	200		2.25	10.86	6.85	143	-50	0.05	29.3	
10:10	200		2.2	11.21	6.89	142	-70	0.07	29	
10:15	200		2.21	11.95	6.91	142	-81	0.09	27.5	
10:20	200		2.25	12.25	6.91	145	-85	0.09	29.6	
10:25	200		2.23	12.94	6.93	143	-89	0.09	28.4	
9:50	200	0	1.9	10.35	6.4	150	81	0.82	35.4	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Flush Mount
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-169

Date:	4/15/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	6	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	20	Water Column (ft)	
Purge Start Time:	11:44	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/15/2025	COC:	
Sample Time:	12:50	Analysis:	
Sample ID:	C-169-250415	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
11:45	250		1.89	13.29	6.87	99	-43	2.47	52.8	
11:50	250		1.94	12.87	6.76	95	-42	8.22	35.4	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Flush Mount
Well secured on initial inspection		X		
Is well ID visible?		X		
Water in the well box		X		
Sleeve around the well box in good condition		X		
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-64

Date:	4/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	8	Water Column (ft)	
Purge Start Time:	11:15	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/14/2025	COC:	
Sample Time:	11:55	Analysis:	
Sample ID:	C-64-250414	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
11:15	200	0	4.45	12.81	6.96	582	-154	1.23	8.3	
11:20	200		4.5	12.85	6.96	585	-154	1.14	8.8	
11:25	200		4.55	12.73	6.96	589	-158	1.06	7.3	
11:30	200		4.5	12.4	7.06	602	-174	0.59	11.3	
11:35	200		4.55	12.37	7.08	603	-177	0.58	11.2	
11:40	200		4.6	12.3	7.06	604	-178	0.55	11.9	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-65

Date:	04/14/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	8	Water Column (ft)	
Purge Start Time:	09:42	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	04/14/2025	COC:	
Sample Time:	11:12	Analysis:	
Sample ID:	C-65-250414	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
09:45	250		4.41	10.21	6.82	882	251	46.3	12.6	
09:50	250		4.41	10.37	7.14	876	153	3.99	9.8	
09:56	250		5.20	10.41	7.21	884	112	2.37	8.6	
10:00	250		5.43	10.46	7.24	892	95	2.94	8.5	
10:04	250		5.43	10.66	7.25	898	78	3.18	12.7	
10:10	250		5.83	10.78	7.27	919	61	3.16	12.2	
10:14	250		5.84	10.82	7.27	924	58	3.85	7.0	
10:20	250		5.84	10.9	7.29	940	53	3.50	18.5	
10:24	250		5.86	10.97	7.29	954	50	3.85	6.3	
10:29	250		6.17	11.01	7.31	981	45	2.25	5.5	
10:34	250		6.17	10.95	7.32	1001	38	4.15	5.3	
10:39	250		6.28	11.01	7.33	1003	30	3.87	5.2	
10:44	250		6.28	11.05	7.35	1005	17	3.23	3.3	
10:49	250		6.37	11.07	7.35	1007	4	2.96	4.3	
10:55	250		6.37	11.06	7.36	1009	1	1.47	4.6	
11:00	250		6.42	11.03	7.36	1010	-2	1.43	4.8	
11:05	250		6.44	11.04	7.37	1010	-2	1.45	4.7	
11:10	250		6.52	11.02	7.37	1011	-2	1.42	4.5	

Well Integrity Checklist

Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition		X		
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				Stickup outer casing bent.
Remarks				N/A

Photos

terraphase engineering

Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-97

Date:	04/21/2025	Casing Material:	PVC	Depth to Water (ft bmp):	
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	10	Water Column (ft)	
Purge Start Time:	14:58	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	04/21/2025	COC:	
Sample Time:	1:28 PM	Analysis:	
Sample ID:		Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:	1:28 PM	Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
15:05	250		5.91	14.85	7.38	943	-132	0.55	4.8	
15:10	250		6.10	14.40	7.36	953	-149	0.16	3.9	
15:15	250		6.15	14.36	7.34	953	-155	0.07	3.8	
15:20	250		6.24	14.35	7.33	951	-160	0.0	3.7	
15:25	250		6.32	14.37	7.31	949	-165	0	4	
15:30	250		6.35	14.40	7.30	946	-169	0	3.9	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection		X		
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-146

Date:	4/15/2025	Casing Material:	PVC	Depth to Water (ft bmp):	1.3
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	10	Water Column (ft)	-1.30000
Purge Start Time:	09:00	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/15/2025	COC:	
Sample Time:	09:45	Analysis:	
Sample ID:	C-146-250415	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
09:10	200		1.34	11.88	6.64	284	-131	0.38	12.5	
09:15	200		1.35	11.83	6.63	274	-130	0.34	14.8	
09:20	200		1.38	11.78	6.69	251	-135	0.36	14.1	
09:25	200		1.4	11.74	6.73	250	-136	0.35	13.8	
09:30	200		1.45	11.7	6.69	255	-136	0.34	13.4	
9:00	200	0	1.25	12.15	6.47	289	-103	0.75	11.8	
9:05	200		1.35	11.89	6.6	285	-124	0.43	12	
9:35	200		1.45	11.71	6.56	254	-134	0.35	13.1	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Flush Mount
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

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Groundwater Monitoring Field Data Form

Site: PESRM- Act 2 Investigations
3144 Passyunk Avenue, Philadelphia,
Pennsylvania19145

Project No.: P044.001

C-150

Date:	4/15/2025	Casing Material:	PVC	Depth to Water (ft bmp):	3.05
Purge Method:	Low Flow - QED Bladder Pump	Casing Diameter (in):	4	Well Depth (ft bmp)	
Volume Units:	mL	Pump Intake (ft bmp)	20	Water Column (ft)	-3.05000
Purge Start Time:	10:30	Screen Interval (ft bmp):		Water Quality Meter:	Horiba
Comments:					

Sampling Summary

Sample Date:	4/15/2025	COC:	
Sample Time:	11:15	Analysis:	
Sample ID:	C-150-250415	Bottles:	
Duplicate Sample ID:		Odor:	
Duplicate Sample Time:		Remarks:	

Field Stabilization Parameters

Time	Flow Rate	Cuml Volume	DTW (ft bmp)	Temp (C)	pH	Conductivity (us/cm)	ORP (mV)	Disssolved Oxygen (mg/l)	Turbidity	Remarks
Historical Range:										
10:30	200	0	3.07	13.15	6.61	210	-68	2.53	11.6	
10:35	200		3.1	12.8	6.71	209	-92	0.95	8.4	
10:40	200		3.15	12.63	6.8	209	-108	0.8	9.2	
10:45	200		3.19	12.51	6.83	209	-121	2.35	13.5	
10:50	200		3.21	12.5	6.87	208	-124	2.1	13.8	
10:55	200		3.25	12.49	6.87	208	-128	1.85	14.1	
11:00	200		3.3	12.47	6.89	208	-132	1.7	14.5	
11:05	200		3.2	12.48	6.9	207	-134	1.71	15.4	

Well Integrity Checklist

Item	Yes	No	NA	Notes
Type of Well Head				Stick Up
Well secured on initial inspection	X			
Is well ID visible?	X			
Water in the well box		X		
Sleeve around the well box in good condition	X			
Any cleanup performed(explain)				N/A
Any repairs/replacement(explain)				N/A
Remarks				N/A

Photos

Appendix F

Laboratory Analytical Reports

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Terraphase Engineering Inc.

BDH Philadelphia Refinery, PA

P044.001.003 PO#P044.001.003

SGS Job Number: JE7435

Sampling Date: 03/14/25



Report to:

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Total number of pages in report: 56

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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SGS North America Inc.

Sample Summary

Terraphase Engineering Inc.

Job No: JE7435

BDH Philadelphia Refinery, PA
Project No: P044.001.003 PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies:							
Organics ND = Not detected above the MDL							
JE7435-1	03/14/25	09:45	SC	03/14/25	AQ	Ground Water	C-161-250314
JE7435-1F	03/14/25	09:45	SC	03/14/25	AQ	Groundwater Filtered	C-161-250314
JE7435-2	03/14/25	09:10	SC	03/14/25	AQ	Ground Water	C-152-250314
JE7435-2F	03/14/25	09:10	SC	03/14/25	AQ	Groundwater Filtered	C-152-250314
JE7435-3	03/14/25	09:00	SC	03/14/25	AQ	Field Blank Water	FB-250314-3
JE7435-3F	03/14/25	09:00	SC	03/14/25	AQ	Field Blank Filtered	FB-250314-3
JE7435-4	03/14/25	07:00	SC	03/14/25	AQ	Trip Blank Water	TB-250314-3

Summary of Hits

Job Number: JE7435
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/14/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE7435-1	**C-161-250314**					
Benzene [a]		2.1	1.3	1.1	ug/l	SW846 8260D
Ethylbenzene [a]		13.0	2.5	1.5	ug/l	SW846 8260D
Isopropylbenzene [a]		92.0	2.5	1.6	ug/l	SW846 8260D
1,2,4-Trimethylbenzene [a]		97.1	5.0	2.5	ug/l	SW846 8260D
1,3,5-Trimethylbenzene [a]		24.5	5.0	2.5	ug/l	SW846 8260D
Xylene (total) [a]		25.3	2.5	1.5	ug/l	SW846 8260D
Anthracene		0.414	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.138	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0475	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0674	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.183	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.565	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.469	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.329	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7435-1F	**C-161-250314**					
No hits reported in this sample.						
JE7435-2	**C-152-250314**					
Benzene [a]		4.3	2.5	2.1	ug/l	SW846 8260D
Isopropylbenzene [a]		92.1	5.0	3.2	ug/l	SW846 8260D
1,2,4-Trimethylbenzene [a]		10.6	10	5.0	ug/l	SW846 8260D
Anthracene		0.392	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0725	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0254 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.104	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.605	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.281	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.372	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7435-2F	**C-152-250314**					
No hits reported in this sample.						
JE7435-3	**FB-250314-3**					
Naphthalene		0.0474 J	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7435-3F	**FB-250314-3**					
No hits reported in this sample.						

Summary of Hits

Job Number: JE7435
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/14/25

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

JE7435-4 **TB-250314-3**

No hits reported in this sample.

(a) Dilution required due to high concentration of non-target compound.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	C-161-250314		
Lab Sample ID:	JE7435-1	**Date Sampled:**	03/14/25
Matrix:	AQ - Ground Water	**Date Received:**	03/14/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2T17827.D	2.5	03/18/25 13:50	CF	n/a	n/a	V2T450
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2.1	1.3	1.1	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.5	1.5	ug/l	
100-41-4	Ethylbenzene	13.0	2.5	1.5	ug/l	
98-82-8	Isopropylbenzene	92.0	2.5	1.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.5	1.3	ug/l	
108-88-3	Toluene	ND	2.5	1.2	ug/l	
95-63-6	1,2,4-Trimethylbenzene	97.1	5.0	2.5	ug/l	
108-67-8	1,3,5-Trimethylbenzene	24.5	5.0	2.5	ug/l	
1330-20-7	Xylene (total)	25.3	2.5	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	86%		80-120%
2037-26-5	Toluene-D8	95%		80-120%
460-00-4	4-Bromofluorobenzene	91%		82-114%

(a) Dilution required due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-161-250314		
Lab Sample ID:	JE7435-1	**Date Sampled:**	03/14/25
Matrix:	AQ - Ground Water	**Date Received:**	03/14/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P101349.D	1	03/20/25 15:46	RS	03/19/25 09:00	OP62148A	E5P4853
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.414	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.138	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0475	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0674	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.183	0.080	0.040	ug/l	
86-73-7	Fluorene	0.565	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.469	0.080	0.040	ug/l	
129-00-0	Pyrene	0.329	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	31%		15-110%
4165-62-2	Phenol-d5	24%		12-110%
118-79-6	2,4,6-Tribromophenol	36%		32-143%
4165-60-0	Nitrobenzene-d5	58%		29-124%
321-60-8	2-Fluorobiphenyl	23%		23-122%
1718-51-0	Terphenyl-d14	57%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-161-250314
Lab Sample ID: JE7435-1
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/14/25
Date Received: 03/14/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54040.D	1	03/20/25 11:41	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	113%		38-210%
3017-95-6	2-Bromo-1-chloropropane	105%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-161-250314		
Lab Sample ID:	JE7435-1F	**Date Sampled:**	03/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/14/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-152-250314		
Lab Sample ID:	JE7435-2	**Date Sampled:**	03/14/25
Matrix:	AQ - Ground Water	**Date Received:**	03/14/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1T17828.D	5	03/18/25 14:03	CF	n/a	n/a	V1T450
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	4.3	2.5	2.1	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	5.0	3.0	ug/l	
98-82-8	Isopropylbenzene	92.1	5.0	3.2	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	2.5	ug/l	
108-88-3	Toluene	ND	5.0	2.5	ug/l	
95-63-6	1,2,4-Trimethylbenzene	10.6	10	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	10	5.0	ug/l	
1330-20-7	Xylene (total)	ND	5.0	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	86%		80-120%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	91%		82-114%

(a) Dilution required due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-152-250314		
Lab Sample ID:	JE7435-2	**Date Sampled:**	03/14/25
Matrix:	AQ - Ground Water	**Date Received:**	03/14/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P101350.D	1	03/20/25 16:11	RS	03/19/25 09:00	OP62148A	E5P4853
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.392	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0725	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0254	0.040	0.024	ug/l	J
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.104	0.080	0.040	ug/l	
86-73-7	Fluorene	0.605	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.281	0.080	0.040	ug/l	
129-00-0	Pyrene	0.372	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		15-110%
4165-62-2	Phenol-d5	29%		12-110%
118-79-6	2,4,6-Tribromophenol	46%		32-143%
4165-60-0	Nitrobenzene-d5	63%		29-124%
321-60-8	2-Fluorobiphenyl	29%		23-122%
1718-51-0	Terphenyl-d14	67%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-152-250314
Lab Sample ID: JE7435-2
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/14/25
Date Received: 03/14/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54041.D	1	03/20/25 11:58	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	108%		38-210%
3017-95-6	2-Bromo-1-chloropropane	99%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-152-250314		
Lab Sample ID:	JE7435-2F	**Date Sampled:**	03/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/14/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FB-250314-3		
Lab Sample ID:	JE7435-3	**Date Sampled:**	03/14/25
Matrix:	AQ - Field Blank Water	**Date Received:**	03/14/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S013224.D	1	03/18/25 01:43	ED	n/a	n/a	V1S349
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	121% [a]		80-120%
17060-07-0	1,2-Dichloroethane-D4	103%		80-120%
2037-26-5	Toluene-D8	88%		80-120%
460-00-4	4-Bromofluorobenzene	90%		82-114%

(a) High surrogate recovery and no associated positive reported in this sample.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250314-3		
Lab Sample ID:	JE7435-3	**Date Sampled:**	03/14/25
Matrix:	AQ - Field Blank Water	**Date Received:**	03/14/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P101351.D	1	03/20/25 16:36	RS	03/19/25 09:00	OP62148A	E5P4853
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.0474	0.080	0.040	ug/l	J
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	29%		15-110%
4165-62-2	Phenol-d5	21%		12-110%
118-79-6	2,4,6-Tribromophenol	71%		32-143%
4165-60-0	Nitrobenzene-d5	46%		29-124%
321-60-8	2-Fluorobiphenyl	47%		23-122%
1718-51-0	Terphenyl-d14	58%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-250314-3
Lab Sample ID: JE7435-3
Matrix: AQ - Field Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/14/25
Date Received: 03/14/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54042.D	1	03/20/25 12:15	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	119%		38-210%
3017-95-6	2-Bromo-1-chloropropane	115%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250314-3		
Lab Sample ID:	JE7435-3F	**Date Sampled:**	03/14/25
Matrix:	AQ - Field Blank Filtered	**Date Received:**	03/14/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TB-250314-3		
Lab Sample ID:	JE7435-4	**Date Sampled:**	03/14/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/14/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S013225.D	1	03/18/25 02:09	ED	n/a	n/a	V1S349
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	125% [a]		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	88%		80-120%
460-00-4	4-Bromofluorobenzene	90%		82-114%

(a) High surrogate recovery and no associated positive reported in this sample.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-250314-3
Lab Sample ID: JE7435-4
Matrix: AQ - Trip Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/14/25
Date Received: 03/14/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54043.D	1	03/20/25 12:32	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	119%		38-210%
3017-95-6	2-Bromo-1-chloropropane	114%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

GW
FB
TB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

Page 1 of 1

FED-EX Tracking #:
Bottle Order Control #: VP 035525-134
SGS Quote #:
SGS Job #: JE7435

Client / Reporting Information

Company Name: Terraphase Engineering
Street Address: 100 Canal Pointe Blvd
City: Princeton State: NJ Zip:
Project Contact: Nick Scala E-mail: @terraphase.com
Phone #: 609-236-8171
Sampler(s) Name(s): S. Chubb Phone #:

Project Information

Project Name: BDH-No. 3 Separator
Street:
City: Phila. State: PA
Project #: P044.001.003
Client Purchase Order #: P044.001.003
Project Manager:

Billing Information (If different from Report to)

Company Name: same as client
Street Address:
City: State: Zip:
Attention:

Analysis Requested

Site specific VOCs - 8260
Site specific SVOCs 8270
Lead - Dissolved

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MS/MSD (Y or N)	Collection Date	Collection Time	Sampled by	Grab (G) / Comp (C)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	None	DI Water	MeOH	EnCore	pH Check (Lab Use Only)	LAB USE ONLY
1F	C-161-250314		3/14/25	0945	SC	G	GW	8	5		1		2				X X X	
2F	C-152-250314			0910		G	GW	8	5		1		2				X X X	
3F	FB-250314-3			0900		FB	FB	8	5		1		2				X X X	
4	TB-250314-3			700		TB	TB	2	2								X	

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [x] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

standard TEI TAT

All data available via SGS Engage * Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [x] EDD Format equis

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Rav data

Comments / Special Instructions

-send EDD to EDD@terraphase.com
•2x250ml 8270 ND

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By	Date / Time	Received By
1	TEI	3/14/25 1200	Marcus Turner
2	Marcus Turner	3/14/25 1732	[illegible] 3/14/25 1732
3	[illegible]	3/14/25 1845	IR 50 2.8
4			
5			Jamin

Custody Seal #: Intact / Not Intact / Absent
Therm ID: IR 50 2.8
On Ice: ☐ Cooler Temp. °C: SGS Courier PU

EHSA-QAC-0023-06 Rev.Date:9/24/2024

Initial Assessment: AR 3/14
Label Verification:

SGS Sample Receipt Summary

Job Number: JE7435 **Client:** TERRAPHASE ENGINEERING INC. **Project:** BDH PHILADELPHIA REFINERY, PA

Date / Time Received: 3/14/2025 6:40:00 PM **Delivery Method:** SGS COURIER **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE7435: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1S349-MB	1S013219.D	1	03/17/25	ED	n/a	n/a	V1S349

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-3, JE7435-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	119%	80-120%
17060-07-0	1,2-Dichloroethane-D4	107%	80-120%
2037-26-5	Toluene-D8	90%	80-120%
460-00-4	4-Bromofluorobenzene	89%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2T450-MB	2T17823.D	1	03/18/25	CF	n/a	n/a	V2T450

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	105%	80-120%
17060-07-0	1,2-Dichloroethane-D4	94%	80-120%
2037-26-5	Toluene-D8	98%	80-120%
460-00-4	4-Bromofluorobenzene	88%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1T450-MB	1T17824.D	1	03/18/25	CF	n/a	n/a	V1T450

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	80-120%
17060-07-0	1,2-Dichloroethane-D4	92%	80-120%
2037-26-5	Toluene-D8	97%	80-120%
460-00-4	4-Bromofluorobenzene	89%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1S349-BS	1S013217.D	1	03/17/25	ED	n/a	n/a	V1S349

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-3, JE7435-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	51.2	102	80-115
107-06-2	1,2-Dichloroethane	50	55.5	111	73-117
100-41-4	Ethylbenzene	50	42.4	85	78-116
98-82-8	Isopropylbenzene	50	42.5	85	78-121
1634-04-4	Methyl Tert Butyl Ether	50	50.4	101	76-123
108-88-3	Toluene	50	41.8	84	79-116
95-63-6	1,2,4-Trimethylbenzene	50	40.9	82	78-120
108-67-8	1,3,5-Trimethylbenzene	50	41.3	83	77-120
1330-20-7	Xylene (total)	150	127	85	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	109%	80-120%
17060-07-0	1,2-Dichloroethane-D4	99%	80-120%
2037-26-5	Toluene-D8	88%	80-120%
460-00-4	4-Bromofluorobenzene	90%	82-114%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1T450-BS	1T17820.D	1	03/18/25	CF	n/a	n/a	V1T450

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	48.8	98	80-115
107-06-2	1,2-Dichloroethane	50	45.1	90	73-117
100-41-4	Ethylbenzene	50	45.2	90	78-116
98-82-8	Isopropylbenzene	50	46.1	92	78-121
1634-04-4	Methyl Tert Butyl Ether	50	51.1	102	76-123
108-88-3	Toluene	50	44.3	89	79-116
95-63-6	1,2,4-Trimethylbenzene	50	47.0	94	78-120
108-67-8	1,3,5-Trimethylbenzene	50	45.3	91	77-120
1330-20-7	Xylene (total)	150	141	94	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	90%	80-120%
2037-26-5	Toluene-D8	97%	80-120%
460-00-4	4-Bromofluorobenzene	90%	82-114%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2T450-BS	2T17821.D	1	03/18/25	CF	n/a	n/a	V2T450

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	47.8	96	80-115
107-06-2	1,2-Dichloroethane	50	45.1	90	73-117
100-41-4	Ethylbenzene	50	46.4	93	78-116
98-82-8	Isopropylbenzene	50	47.6	95	78-121
1634-04-4	Methyl Tert Butyl Ether	50	49.7	99	76-123
108-88-3	Toluene	50	44.7	89	79-116
95-63-6	1,2,4-Trimethylbenzene	50	46.2	92	78-120
108-67-8	1,3,5-Trimethylbenzene	50	46.2	92	77-120
1330-20-7	Xylene (total)	150	143	95	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	80-120%
17060-07-0	1,2-Dichloroethane-D4	91%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	89%	82-114%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE7435-2MS	1S013221.D	25	03/18/25	ED	n/a	n/a	V1S349
JE7435-2MSD	1S013222.D	25	03/18/25	ED	n/a	n/a	V1S349
JE7435-2 [a]	1S013220.D	25	03/18/25	ED	n/a	n/a	V1S349

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-3, JE7435-4

CAS No.	Compound	JE7435-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		1250	1320	106	1250	1270	102	4	49-137/12
107-06-2	1,2-Dichloroethane	ND		1250	1410	113	1250	1360	109	4	66-120/13
100-41-4	Ethylbenzene	ND		1250	1180	94	1250	1150	92	3	37-144/12
98-82-8	Isopropylbenzene	87.9		1250	1290	96	1250	1250	93	3	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		1250	1220	98	1250	1200	96	2	66-124/12
108-88-3	Toluene	ND		1250	1150	92	1250	1120	90	3	46-139/12
95-63-6	1,2,4-Trimethylbenzene	ND		1250	1140	91	1250	1110	89	3	39-147/13
108-67-8	1,3,5-Trimethylbenzene	ND		1250	1160	93	1250	1110	89	4	56-136/14
1330-20-7	Xylene (total)	ND		3750	3530	94	3750	3440	92	3	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE7435-2	Limits
1868-53-7	Dibromofluoromethane	111%	109%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%	99%		80-120%
2037-26-5	Toluene-D8	88%	89%		80-120%
460-00-4	4-Bromofluorobenzene	92%	89%		82-114%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE7487-4MS	1T17836.D	5	03/18/25	CF	n/a	n/a	V1T450
JE7487-4MSD	1T17838.D	5	03/18/25	CF	n/a	n/a	V1T450
JE7487-4 [a]	1T17834.D	5	03/18/25	CF	n/a	n/a	V1T450

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-2

CAS No.	Compound	JE7487-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		250	254	102	250	250	100	2	49-137/12
107-06-2	1,2-Dichloroethane	ND		250	234	94	250	228	91	3	66-120/13
100-41-4	Ethylbenzene	14.1		250	254	96	250	246	93	3	37-144/12
98-82-8	Isopropylbenzene	ND		250	246	98	250	240	96	2	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		250	262	105	250	258	103	2	66-124/12
108-88-3	Toluene	28.1		250	263	94	250	258	92	2	46-139/12
95-63-6	1,2,4-Trimethylbenzene	26.7		250	280	101	250	274	99	2	39-147/13
108-67-8	1,3,5-Trimethylbenzene	12.0		250	250	95	250	243	92	3	56-136/14
1330-20-7	Xylene (total)	204		750	959	101	750	939	98	2	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE7487-4	Limits
1868-53-7	Dibromofluoromethane	96%	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	87%	90%		80-120%
2037-26-5	Toluene-D8	99%	98%		80-120%
460-00-4	4-Bromofluorobenzene	88%	90%		82-114%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE7548-4MS	2T17837.D	25	03/18/25	CF	n/a	n/a	V2T450
JE7548-4MSD	2T17839.D	25	03/18/25	CF	n/a	n/a	V2T450
JE7548-4 [a]	2T17835.D	25	03/18/25	CF	n/a	n/a	V2T450

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7435-1

CAS No.	Compound	JE7548-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		1250	1230	98	1250	1220	98	1	49-137/12
107-06-2	1,2-Dichloroethane	ND		1250	1140	91	1250	1120	90	2	66-120/13
100-41-4	Ethylbenzene	937		1250	2050	89	1250	2040	88	0	37-144/12
98-82-8	Isopropylbenzene	84.9		1250	1280	96	1250	1280	96	0	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		1250	1240	99	1250	1250	100	1	66-124/12
108-88-3	Toluene	2390		1250	3310	74	1250	3270	70	1	46-139/12
95-63-6	1,2,4-Trimethylbenzene	1580		1250	2680	88	1250	2660	86	1	39-147/13
108-67-8	1,3,5-Trimethylbenzene	464		1250	1610	92	1250	1600	91	1	56-136/14
1330-20-7	Xylene (total)	4840		3750	8070	86	3750	8020	85	1	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE7548-4	Limits
1868-53-7	Dibromofluoromethane	98%	98%	99%	80-120%
17060-07-0	1,2-Dichloroethane-D4	90%	87%	91%	80-120%
2037-26-5	Toluene-D8	96%	97%	99%	80-120%
460-00-4	4-Bromofluorobenzene	89%	88%	89%	82-114%

(a) Preliminary Data.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V1S335-BFB
Lab File ID: 1S012462.D
Instrument ID: GCMS1S
Injection Date: 02/27/25
Injection Time: 15:14

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	24620	17.8		Pass
75	30.0 - 80.0% of mass 95	65813	47.5		Pass
95	Base peak, 100% relative abundance	138536	100.0		Pass
96	5.0 - 9.0% of mass 95	8915	6.44		Pass
173	Less than 2.0% of mass 174	1311	0.95	(1.03) [a]	Pass
174	50.0 - 120.0% of mass 95	126944	91.6		Pass
175	5.0 - 9.0% of mass 174	9897	7.14	(7.80) [a]	Pass
176	95.0 - 101.0% of mass 174	123731	89.3	(97.5) [a]	Pass
177	5.0 - 9.0% of mass 176	8035	5.80	(6.49) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1S335-IC335	1S012464.D	02/27/25	15:54	00:40	Initial cal 0.2
V1S335-IC335	1S012466.D	02/27/25	16:21	01:07	Initial cal 0.5
V1S335-IC335	1S012468.D	02/27/25	16:47	01:33	Initial cal 1
V1S335-IC335	1S012470.D	02/27/25	17:14	02:00	Initial cal 2
V1S335-IC335	1S012472.D	02/27/25	17:41	02:27	Initial cal 4
V1S335-IC335	1S012474.D	02/27/25	18:07	02:53	Initial cal 8
V1S335-IC335	1S012476.D	02/27/25	18:34	03:20	Initial cal 20
V1S335-ICC335	1S012478.D	02/27/25	19:01	03:47	Initial cal 50
V1S335-IC335	1S012480.D	02/27/25	19:27	04:13	Initial cal 100
V1S335-IC335	1S012482.D	02/27/25	19:54	04:40	Initial cal 200
V1S335-ICV335	1S012488.D	02/27/25	21:14	06:00	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V1S335-BFB2
Lab File ID: 1S012494.D
Instrument ID: GCMS1S
Injection Date: 02/28/25
Injection Time: 15:25

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	21704	17.9		Pass
75	30.0 - 80.0% of mass 95	56144	46.4		Pass
95	Base peak, 100% relative abundance	121128	100.0		Pass
96	5.0 - 9.0% of mass 95	7911	6.53		Pass
173	Less than 2.0% of mass 174	1197	0.99	(1.11) [a]	Pass
174	50.0 - 120.0% of mass 95	107472	88.7		Pass
175	5.0 - 9.0% of mass 174	8030	6.63	(7.47) [a]	Pass
176	95.0 - 101.0% of mass 174	106491	87.9	(99.1) [a]	Pass
177	5.0 - 9.0% of mass 176	6673	5.51	(6.27) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1S335-ICV335	1S012496.D	02/28/25	15:51	00:26	Initial cal verification 50
V1S335-ICV335	1S012498.D	02/28/25	16:18	00:53	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V1T415-BFB
Lab File ID: 1T16191.D
Instrument ID: GCMS1T
Injection Date: 01/30/25
Injection Time: 15:35

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	41285	20.1		Pass
75	30.0 - 80.0% of mass 95	108048	52.5		Pass
95	Base peak, 100% relative abundance	205741	100.0		Pass
96	5.0 - 9.0% of mass 95	14303	6.95		Pass
173	Less than 2.0% of mass 174	1631	0.79	(1.08) [a]	Pass
174	50.0 - 120.0% of mass 95	150381	73.1		Pass
175	5.0 - 9.0% of mass 174	11537	5.61	(7.67) [a]	Pass
176	95.0 - 101.0% of mass 174	146725	71.3	(97.6) [a]	Pass
177	5.0 - 9.0% of mass 176	9915	4.82	(6.76) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1T415-IC415	1T16193.D	01/30/25	16:40	01:05	Initial cal 0.2
V1T415-IC415	1T16195.D	01/30/25	17:07	01:32	Initial cal 0.5
V1T415-IC415	1T16197.D	01/30/25	17:35	02:00	Initial cal 1
V1T415-IC415	1T16199.D	01/30/25	18:02	02:27	Initial cal 2
V1T415-IC415	1T16201.D	01/30/25	18:30	02:55	Initial cal 4
V1T415-IC415	1T16203.D	01/30/25	18:57	03:22	Initial cal 8
V1T415-IC415	1T16205.D	01/30/25	19:24	03:49	Initial cal 20
V1T415-ICC415	1T16207.D	01/30/25	19:52	04:17	Initial cal 50
V1T415-IC415	1T16209.D	01/30/25	20:19	04:44	Initial cal 100
V1T415-IC415	1T16211.D	01/30/25	20:47	05:12	Initial cal 200
V1T415-ICV415	1T16217.D	01/30/25	22:09	06:34	Initial cal verification 50
V1T415-ICV415	1T16219.D	01/30/25	22:36	07:01	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V1T415-BFB2
Lab File ID: 1T16225.D
Instrument ID: GCMS1T
Injection Date: 02/03/25
Injection Time: 13:37

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	46525	19.9		Pass
75	30.0 - 80.0% of mass 95	123008	52.6		Pass
95	Base peak, 100% relative abundance	233813	100.0		Pass
96	5.0 - 9.0% of mass 95	15834	6.77		Pass
173	Less than 2.0% of mass 174	1703	0.73	(0.98) [a]	Pass
174	50.0 - 120.0% of mass 95	174061	74.4		Pass
175	5.0 - 9.0% of mass 174	13396	5.73	(7.70) [a]	Pass
176	95.0 - 101.0% of mass 174	170600	73.0	(98.0) [a]	Pass
177	5.0 - 9.0% of mass 176	10985	4.70	(6.44) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1T415-ICV415	1T16227.D	02/03/25	14:04	00:27	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V2T415-BFB
Lab File ID: 2T16192.D
Instrument ID: GCMS2T
Injection Date: 01/30/25
Injection Time: 15:49

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	38395	20.2		Pass
75	30.0 - 80.0% of mass 95	100835	53.0		Pass
95	Base peak, 100% relative abundance	190432	100.0		Pass
96	5.0 - 9.0% of mass 95	13223	6.94		Pass
173	Less than 2.0% of mass 174	896	0.47	(0.65) [a]	Pass
174	50.0 - 120.0% of mass 95	138208	72.6		Pass
175	5.0 - 9.0% of mass 174	10635	5.58	(7.69) [a]	Pass
176	95.0 - 101.0% of mass 174	133581	70.1	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	8816	4.63	(6.60) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2T415-IC415	2T16194.D	01/30/25	16:54	01:05	Initial cal 0.2
V2T415-IC415	2T16196.D	01/30/25	17:21	01:32	Initial cal 0.5
V2T415-IC415	2T16198.D	01/30/25	17:48	01:59	Initial cal 1
V2T415-IC415	2T16200.D	01/30/25	18:16	02:27	Initial cal 2
V2T415-IC415	2T16202.D	01/30/25	18:43	02:54	Initial cal 4
V2T415-IC415	2T16204.D	01/30/25	19:11	03:22	Initial cal 8
V2T415-IC415	2T16206.D	01/30/25	19:38	03:49	Initial cal 20
V2T415-ICC415	2T16208.D	01/30/25	20:06	04:17	Initial cal 50
V2T415-IC415	2T16210.D	01/30/25	20:33	04:44	Initial cal 100
V2T415-IC415	2T16212.D	01/30/25	21:00	05:11	Initial cal 200
V2T415-ICV415	2T16218.D	01/30/25	22:23	06:34	Initial cal verification 50
V2T415-ICV415	2T16220.D	01/30/25	22:50	07:01	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V2T415-BFB2
Lab File ID: 2T16224.D
Instrument ID: GCMS2T
Injection Date: 02/03/25
Injection Time: 13:23

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	46624	19.7		Pass
75	30.0 - 80.0% of mass 95	121779	51.4		Pass
95	Base peak, 100% relative abundance	236928	100.0		Pass
96	5.0 - 9.0% of mass 95	15765	6.65		Pass
173	Less than 2.0% of mass 174	1374	0.58	(0.78) [a]	Pass
174	50.0 - 120.0% of mass 95	175896	74.2		Pass
175	5.0 - 9.0% of mass 174	13068	5.52	(7.43) [a]	Pass
176	95.0 - 101.0% of mass 174	168040	70.9	(95.5) [a]	Pass
177	5.0 - 9.0% of mass 176	11232	4.74	(6.68) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2T415-ICV415	2T16228.D	02/03/25	14:18	00:55	Initial cal verification 50

Surrogate Recovery Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8260D **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE7435-1	2T17827.D	98	86	95	91
JE7435-2	1T17828.D	100	86	94	91
JE7435-2	1S013220.D				
JE7435-3	1S013224.D	121* [a]	103	88	90
JE7435-4	1S013225.D	125* [a]	108	88	90
JE7435-2MS	1S013221.D	111	99	88	92
JE7435-2MSD	1S013222.D	109	99	89	89
JE7487-4MS	1T17836.D	96	87	99	88
JE7487-4MSD	1T17838.D	98	90	98	90
JE7548-4MS	2T17837.D	98	90	96	89
JE7548-4MSD	2T17839.D	98	87	97	88
V1S349-BS	1S013217.D	109	99	88	90
V1S349-MB	1S013219.D	119	107	90	89
V1T450-BS	1T17820.D	102	90	97	90
V1T450-MB	1T17824.D	107	92	97	89
V2T450-BS	2T17821.D	100	91	99	89
V2T450-MB	2T17823.D	105	94	98	88

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	80-120%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	82-114%

(a) High surrogate recovery and no associated positive reported in this sample.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62148A-MB1	5P101345.D	1	03/20/25	RS	03/19/25	OP62148A	E5P4853

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7435-1, JE7435-2, JE7435-3

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	2%* [a]	15-110%
4165-62-2	Phenol-d5	5%* [a]	12-110%
118-79-6	2,4,6-Tribromophenol	0%* [a]	32-143%
4165-60-0	Nitrobenzene-d5	36%	29-124%
321-60-8	2-Fluorobiphenyl	36%	23-122%
1718-51-0	Terphenyl-d14	50%	22-130%

(a) Outside of in house control limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62148A-BS12	5P101347.D	1	03/20/25	RS	03/19/25	OP62148A	E5P4853
OP62148A-BSD12	5P101348.D	1	03/20/25	RS	03/19/25	OP62148A	E5P4853

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7435-1, JE7435-2, JE7435-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	0.8	0.559	70	0.590	74	5	40-125/32
56-55-3	Benzo(a)anthracene	0.8	0.787	98	0.782	98	1	38-132/31
50-32-8	Benzo(a)pyrene	0.8	0.619	77	0.585	73	6	31-110/37
205-99-2	Benzo(b)fluoranthene	0.8	0.718	90	0.779	97	8	31-113/37
191-24-2	Benzo(g,h,i)perylene	0.8	0.831	104	0.709	89	16	18-110/54
218-01-9	Chrysene	0.8	0.687	86	0.678	85	1	43-119/33
86-73-7	Fluorene	0.8	0.481	60	0.495	62	3	42-123/34
91-20-3	Naphthalene	0.8	0.500	63	0.514	64	3	30-114/40
85-01-8	Phenanthrene	0.8	0.498	62	0.531	66	6	45-125/31
129-00-0	Pyrene	0.8	0.615	77	0.650	81	6	48-125/29

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	37%	38%	15-110%
4165-62-2	Phenol-d5	26%	27%	12-110%
118-79-6	2,4,6-Tribromophenol	73%	79%	32-143%
4165-60-0	Nitrobenzene-d5	54%	53%	29-124%
321-60-8	2-Fluorobiphenyl	50%	50%	23-122%
1718-51-0	Terphenyl-d14	72%	73%	22-130%

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	E5P4749-DFTPP	**Injection Date:**	11/05/24
Lab File ID:	5P99134.D	**Injection Time:**	08:01
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	12529	37.7		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	13322	40.0		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	15244	45.8		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	33277	100.0		Pass
199	5.0 - 9.0% of mass 198	2355	7.08		Pass
275	10.0 - 30.0% of mass 198	7280	21.9		Pass
365	1.0 - 100.0% of mass 198	793	2.38		Pass
441	Present, but less than mass 443	3251	9.77	(76.1) [b]	Pass
442	40.0 - 100.0% of mass 198	20551	61.8		Pass
443	17.0 - 23.0% of mass 442	4270	12.8	(20.8) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P4749-ICC4749	5P99152.D	11/05/24	14:23	06:22	Initial cal 0.2
E5P4749-IC4749	5P99153.D	11/05/24	14:47	06:46	Initial cal 0.002
E5P4749-IC4749	5P99154.D	11/05/24	15:12	07:11	Initial cal 0.004
E5P4749-IC4749	5P99155.D	11/05/24	15:36	07:35	Initial cal 0.01
E5P4749-IC4749	5P99156.D	11/05/24	16:01	08:00	Initial cal 0.02
E5P4749-IC4749	5P99157.D	11/05/24	16:25	08:24	Initial cal 0.04
E5P4749-IC4749	5P99158.D	11/05/24	16:50	08:49	Initial cal 0.1
E5P4749-IC4749	5P99159.D	11/05/24	17:14	09:13	Initial cal 0.5
E5P4749-IC4749	5P99160.D	11/05/24	17:39	09:38	Initial cal 1
E5P4749-ICV4749	5P99161.D	11/05/24	18:03	10:02	Initial cal verification 0.2
E5P4749-ICV4749	5P99162.D	11/05/24	18:28	10:27	Initial cal verification 1

Instrument Performance Check (DFTPP)

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	E5P4750-DFTPP	**Injection Date:**	11/06/24
Lab File ID:	5P99163.D	**Injection Time:**	09:22
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	11888	37.9		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	13382	42.6		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	14226	45.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	31392	100.0		Pass
199	5.0 - 9.0% of mass 198	2087	6.65		Pass
275	10.0 - 30.0% of mass 198	5832	18.6		Pass
365	1.0 - 100.0% of mass 198	633	2.02		Pass
441	Present, but less than mass 443	2828	9.01	(79.7) [b]	Pass
442	40.0 - 100.0% of mass 198	17226	54.9		Pass
443	17.0 - 23.0% of mass 442	3549	11.3	(20.6) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P4750-ICV4749	5P99164.D	11/06/24	09:37	00:15	Initial cal verification 0.2
E5P4751-CC4749	5P99165.D	11/06/24	12:44	03:22	Continuing cal 0.2
ZZZZZZ	5P99167.D	11/06/24	14:40	05:18	(unrelated sample)

Surrogate Recovery Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8270E BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE7435-1	5P101349.D	31	24	36	58	23	57
JE7435-2	5P101350.D	41	29	46	63	29	67
JE7435-3	5P101351.D	29	21	71	46	47	58
OP62148A-BS12	5P101347.D	37	26	73	54	50	72
OP62148A-BSD125	P101348.D	38	27	79	53	50	73
OP62148A-MB1	5P101345.D	2* [a]	5* [a]	0* [a]	36	36	50

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	12-110%
S3 = 2,4,6-Tribromophenol	32-143%
S4 = Nitrobenzene-d5	29-124%
S5 = 2-Fluorobiphenyl	23-122%
S6 = Terphenyl-d14	22-130%

(a) Outside of in house control limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62121-MB1	7G54037.D	1	03/20/25	RK	03/18/25	OP62121	G7G1877

The QC reported here applies to the following samples: **Method:** SW846-8011

JE7435-1, JE7435-2, JE7435-3, JE7435-4

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries		Limits
3017-95-6	2-Bromo-1-chloropropane	109%	38-210%
3017-95-6	2-Bromo-1-chloropropane	109%	38-210%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62121-BS1	7G54038.D	1	03/20/25	RK	03/18/25	OP62121	G7G1877
OP62121-BSD	7G54039.D	1	03/20/25	RK	03/18/25	OP62121	G7G1877

The QC reported here applies to the following samples: **Method:** SW846-8011

JE7435-1, JE7435-2, JE7435-3, JE7435-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	0.476	0.62	130	0.67	135	3	51-171/21

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3017-95-6	2-Bromo-1-chloropropane	109%	110%	38-210%
3017-95-6	2-Bromo-1-chloropropane	103%	101%	38-210%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE7435
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846-8011 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE7435-1	7G54040.D	113	105
JE7435-2	7G54041.D	108	99
JE7435-3	7G54042.D	119	115
JE7435-4	7G54043.D	119	114
OP62121-BS1	7G54038.D	109	103
OP62121-BSD	7G54039.D	110	101
OP62121-MB1	7G54037.D	109	109

Surrogate Compounds	Recovery Limits
S1 = 2-Bromo-1-chloropropane	38-210%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE7435
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241 Methods: SW846 6020B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/17/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.83	32		
Antimony	4.0	.17	1.7		
Arsenic	1.0	.05	.39		
Barium	2.0	.018	.73		
Beryllium	1.0	.01	.15		
Boron	50	1.7	14		
Cadmium	1.0	.02	.17		
Calcium	500	7.2	200		
Chromium	2.0	.036	.62		
Cobalt	1.0	.006	.17		
Copper	4.0	.048	1.9		
Iron	50	.47	19		
Lead	1.0	.016	.52	0.066	<1.0
Magnesium	500	.38	46		
Manganese	2.0	.024	.63		
Molybdenum	2.0	.034	.45		
Nickel	2.0	.034	.95		
Potassium	500	1.6	68		
Selenium	1.0	.088	.55		
Silver	1.0	.008	.16		
Sodium	500	3	470		
Strontium	10	.028	2.4		
Thallium	1.0	.004	.17		
Tin	10	.082	2.6		
Titanium	2.0	.22	1.6		
Vanadium	2.0	.026	1.8		
Zinc	10	.16	5.4		

Associated samples MP53241: JE7435-1F, JE7435-2F, JE7435-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JE7435
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 03/17/25

Metal	JE7452-1 Original	MS	Spikelot MP6020AQ3%	Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	0.045	76.1	80	95.1	75-125
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP53241: JE7435-1F, JE7435-2F, JE7435-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JE7435
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241 Methods: SW846 6020B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/17/25

Metal	JE7452-1 Original	MSD	Spikelot MP6020AQ3%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	0.045	78.1	80	97.6	2.6	20
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP53241: JE7435-1F, JE7435-2F, JE7435-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE7435
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 03/17/25

Metal	BSP Result	Spikelot MP6020AQ3%	Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	75.1	80	93.9	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP53241: JE7435-1F, JE7435-2F, JE7435-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE7435
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241 Methods: SW846 6020B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/17/25

Metal	JE7452-1 Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	0.0446	0.00	100.0(a)	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP53241: JE7435-1F, JE7435-2F, JE7435-3F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

Terraphase Engineering Inc.

BDH Philadelphia Refinery, PA

P044.001.003; PO#P044.001.003

SGS Job Number: JE7507

Sampling Dates: 03/12/25 - 03/13/25



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Total number of pages in report: **106**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

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SGS North America Inc.

Sample Summary

Terraphase Engineering Inc.

Job No: JE7507

BDH Philadelphia Refinery, PA
Project No: P044.001.003; PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
JE7507-1	03/12/25	11:30	MM	03/13/25	AQ	Ground Water	C-155-250312
JE7507-1F	03/12/25	11:30	MM	03/13/25	AQ	Groundwater Filtered	C-155-250312
JE7507-2	03/12/25	09:30	MM	03/13/25	AQ	Ground Water	C-153-250312
JE7507-2F	03/12/25	09:30	MM	03/13/25	AQ	Groundwater Filtered	C-153-250312
JE7507-3	03/12/25	12:30	MM	03/13/25	AQ	Ground Water	C-148-250312
JE7507-3F	03/12/25	12:30	MM	03/13/25	AQ	Groundwater Filtered	C-148-250312
JE7507-4	03/12/25	12:45	MM	03/13/25	AQ	Ground Water	C-148-250312D
JE7507-4F	03/12/25	12:45	MM	03/13/25	AQ	Groundwater Filtered	C-148-250312D
JE7507-5	03/12/25	13:30	SC	03/13/25	AQ	Ground Water	C-150-250312
JE7507-5F	03/12/25	13:30	SC	03/13/25	AQ	Groundwater Filtered	C-150-250312
JE7507-6	03/12/25	07:00	SC	03/13/25	AQ	Trip Blank Water	TB-250312-1
JE7507-7	03/12/25	15:10	SC	03/13/25	AQ	Field Blank Water	FB-250312-1

Sample Summary
(continued)

Terraphase Engineering Inc.

Job No: JE7507

BDH Philadelphia Refinery, PA
Project No: P044.001.003; PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE7507-7F	03/12/25	15:10	SC	03/13/25	AQ	Field Blank Filtered	FB-250312-1
JE7507-8	03/12/25	15:30	SC	03/13/25	AQ	Ground Water	C-97-250312
JE7507-8F	03/12/25	15:30	SC	03/13/25	AQ	Groundwater Filtered	C-97-250312
JE7507-9	03/12/25	15:00	MM	03/13/25	AQ	Ground Water	C-146-250312
JE7507-9F	03/12/25	15:00	MM	03/13/25	AQ	Groundwater Filtered	C-146-250312
JE7507-10	03/12/25	16:15	MM	03/13/25	AQ	Ground Water	C-142-250312
JE7507-10F	03/12/25	16:15	MM	03/13/25	AQ	Groundwater Filtered	C-142-250312
JE7507-11	03/13/25	11:00	MM	03/13/25	AQ	Ground Water	C-169-250313
JE7507-11F	03/13/25	11:00	MM	03/13/25	AQ	Groundwater Filtered	C-169-250313
JE7507-12	03/13/25	09:30	MM	03/13/25	AQ	Ground Water	C-65-250313
JE7507-12F	03/13/25	09:30	MM	03/13/25	AQ	Groundwater Filtered	C-65-250313
JE7507-13	03/13/25	12:00	MM	03/13/25	AQ	Ground Water	C-64-250313
JE7507-13F	03/13/25	12:00	MM	03/13/25	AQ	Groundwater Filtered	C-64-250313

Sample Summary
(continued)

Terraphase Engineering Inc.

Job No: JE7507

BDH Philadelphia Refinery, PA
Project No: P044.001.003; PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JE7507-14	03/13/25	13:30	MM	03/13/25	AQ	Ground Water	C-166-250313
JE7507-14F	03/13/25	13:30	MM	03/13/25	AQ	Groundwater Filtered	C-166-250313
JE7507-15	03/13/25	07:00	SC	03/13/25	AQ	Trip Blank Water	TB-250313-2
JE7507-16	03/13/25	12:45	SC	03/13/25	AQ	Field Blank Water	FB-250313-2
JE7507-16F	03/13/25	12:45	SC	03/13/25	AQ	Field Blank Filtered	FB-250313-2

Summary of Hits

Job Number: JE7507
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/12/25 thru 03/13/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE7507-1	**C-155-250312**					
Benzo(b)fluoranthene		0.0325 J	0.040	0.024	ug/l	SW846 8270E BY SIM
JE7507-1F	**C-155-250312**					
No hits reported in this sample.						
JE7507-2	**C-153-250312**					
Benzo(a)pyrene		0.0480	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0497	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [a]		0.180	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.222	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-2F	**C-153-250312**					
No hits reported in this sample.						
JE7507-3	**C-148-250312**					
Benzene [b]		117	2.0	1.7	ug/l	SW846 8260D
Isopropylbenzene [b]		20.1	4.0	2.6	ug/l	SW846 8260D
Toluene [b]		14.8	4.0	2.0	ug/l	SW846 8260D
Xylene (total) [b]		17.7	4.0	2.4	ug/l	SW846 8260D
Benzo(a)anthracene		0.155	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0300 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0432	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.0501 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.329	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-3F	**C-148-250312**					
No hits reported in this sample.						
JE7507-4	**C-148-250312D**					
Benzene [b]		113	2.0	1.7	ug/l	SW846 8260D
Isopropylbenzene [b]		18.7	4.0	2.6	ug/l	SW846 8260D
Toluene [b]		14.0	4.0	2.0	ug/l	SW846 8260D
Xylene (total) [b]		16.2	4.0	2.4	ug/l	SW846 8260D
Benzo(b)fluoranthene		0.0242 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Pyrene		0.175	0.080	0.040	ug/l	SW846 8270E BY SIM

Summary of Hits

Job Number: JE7507
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/12/25 thru 03/13/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE7507-4F	**C-148-250312D**					
No hits reported in this sample.						
JE7507-5	**C-150-250312**					
Benzene [b]		60.6	1.3	1.1	ug/l	SW846 8260D
Isopropylbenzene [b]		8.0	2.5	1.6	ug/l	SW846 8260D
Toluene [b]		2.2 J	2.5	1.2	ug/l	SW846 8260D
Anthracene		0.201	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0838	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0962	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.113	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [a]		0.0494 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.160	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.140	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.525	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-5F	**C-150-250312**					
No hits reported in this sample.						
JE7507-6	**TB-250312-1**					
No hits reported in this sample.						
JE7507-7	**FB-250312-1**					
No hits reported in this sample.						
JE7507-7F	**FB-250312-1**					
No hits reported in this sample.						
JE7507-8	**C-97-250312**					
Benzene		0.83	0.50	0.43	ug/l	SW846 8260D
Isopropylbenzene		8.8	1.0	0.65	ug/l	SW846 8260D
Xylene (total)		1.0	1.0	0.59	ug/l	SW846 8260D
Anthracene		0.185	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.180	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.167	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.202	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [c]		0.0981	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.222	0.080	0.040	ug/l	SW846 8270E BY SIM

Summary of Hits

Job Number: JE7507
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/12/25 thru 03/13/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Fluorene		0.349	0.080	0.040	ug/l	SW846 8270E BY SIM
Naphthalene		0.186	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.282	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		1.29	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-8F	**C-97-250312**					
No hits reported in this sample.						
JE7507-9	**C-146-250312**					
Isopropylbenzene		1.2	1.0	0.65	ug/l	SW846 8260D
Anthracene		0.0489 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0308 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.107	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.117	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [c]		0.0744 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.102	0.080	0.040	ug/l	SW846 8270E BY SIM
Naphthalene		0.0860	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.220	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-9F	**C-146-250312**					
No hits reported in this sample.						
JE7507-10	**C-142-250312**					
Anthracene		0.0625 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0244 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0681	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0446	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [a]		0.194	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.0448 J	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-10F	**C-142-250312**					
No hits reported in this sample.						
JE7507-11	**C-169-250313**					
Benzene		1.9	0.50	0.43	ug/l	SW846 8260D
Ethylbenzene		2.1	1.0	0.60	ug/l	SW846 8260D
Isopropylbenzene		29.5	1.0	0.65	ug/l	SW846 8260D
1,2,4-Trimethylbenzene		2.6	2.0	1.0	ug/l	SW846 8260D
Xylene (total)		1.8	1.0	0.59	ug/l	SW846 8260D

Summary of Hits

Job Number: JE7507
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/12/25 thru 03/13/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Anthracene		0.0633 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.0904	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-11F	**C-169-250313**					
No hits reported in this sample.						
JE7507-12	**C-65-250313**					
Anthracene		0.0586 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.0453 J	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-12F	**C-65-250313**					
No hits reported in this sample.						
JE7507-13	**C-64-250313**					
Isopropylbenzene [b]		5.9	5.0	3.2	ug/l	SW846 8260D
Anthracene		0.198	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.119	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.116	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.115	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [c]		0.181	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.275	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.526	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.204	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.588	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-13F	**C-64-250313**					
No hits reported in this sample.						
JE7507-14	**C-166-250313**					
Benzo(a)pyrene		0.0397 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0459	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [c]		0.0422 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.166	0.080	0.040	ug/l	SW846 8270E BY SIM
JE7507-14F	**C-166-250313**					
Lead		2.5	1.0		ug/l	SW846 6020B

Summary of Hits

Job Number: JE7507
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 03/12/25 thru 03/13/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method

JE7507-15 **TB-250313-2**

No hits reported in this sample.

JE7507-16 **FB-250313-2**

No hits reported in this sample.

JE7507-16F **FB-250313-2**

No hits reported in this sample.

(a) Associated CCV outside of control limits high.
(b) Dilution required due to high concentration of non-target compound.
(c) Associated CCV outside of control limits high. Estimated value, due to corresponding failure in the batch associated CCV.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	C-155-250312		
Lab Sample ID:	JE7507-1	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1E190905.D	1	03/19/25 02:54	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene [a]	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	103%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-155-250312		
Lab Sample ID:	JE7507-1	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172247.D	1	03/19/25 15:21	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0325	0.040	0.024	ug/l	J
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		15-110%
4165-62-2	Phenol-d5	43%		12-110%
118-79-6	2,4,6-Tribromophenol	97%		32-143%
4165-60-0	Nitrobenzene-d5	89%		29-124%
321-60-8	2-Fluorobiphenyl	80%		23-122%
1718-51-0	Terphenyl-d14	75%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-155-250312
Lab Sample ID: JE7507-1
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54044.D	1	03/20/25 12:49	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	38 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.018	0.015	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	120%		38-210%
3017-95-6	2-Bromo-1-chloropropane	112%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-155-250312		
Lab Sample ID:	JE7507-1F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-153-250312		
Lab Sample ID:	JE7507-2	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1E190893.D	5	03/19/25 00:12	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	2.5	2.1	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	5.0	3.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	3.2	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	2.5	ug/l	
108-88-3	Toluene	ND	5.0	2.5	ug/l	
95-63-6	1,2,4-Trimethylbenzene [b]	ND	10	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	10	5.0	ug/l	
1330-20-7	Xylene (total)	ND	5.0	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	101%		82-114%

(a) Dilution required due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-153-250312		
Lab Sample ID:	JE7507-2	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172248.D	1	03/19/25 15:45	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0480	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0497	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.180	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.222	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		15-110%
4165-62-2	Phenol-d5	34%		12-110%
118-79-6	2,4,6-Tribromophenol	42%		32-143%
4165-60-0	Nitrobenzene-d5	85%		29-124%
321-60-8	2-Fluorobiphenyl	36%		23-122%
1718-51-0	Terphenyl-d14	58%		22-130%

(a) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-153-250312
Lab Sample ID: JE7507-2
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54045.D	1	03/20/25 13:07	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	113%		38-210%
3017-95-6	2-Bromo-1-chloropropane	99%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-153-250312		
Lab Sample ID:	JE7507-2F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-148-250312		
Lab Sample ID:	JE7507-3	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1E190891.D	4	03/18/25 23:45	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	117	2.0	1.7	ug/l	
107-06-2	1,2-Dichloroethane	ND	4.0	2.4	ug/l	
100-41-4	Ethylbenzene	ND	4.0	2.4	ug/l	
98-82-8	Isopropylbenzene	20.1	4.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	4.0	2.0	ug/l	
108-88-3	Toluene	14.8	4.0	2.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene [b]	ND	8.0	4.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	8.0	4.0	ug/l	
1330-20-7	Xylene (total)	17.7	4.0	2.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	102%		82-114%

(a) Dilution required due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250312		
Lab Sample ID:	JE7507-3	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172249.D	1	03/19/25 16:10	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.155	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0300	0.040	0.024	ug/l	J
205-99-2	Benzo(b)fluoranthene	0.0432	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.0501	0.080	0.040	ug/l	J
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.329	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		15-110%
4165-62-2	Phenol-d5	30%		12-110%
118-79-6	2,4,6-Tribromophenol	78%		32-143%
4165-60-0	Nitrobenzene-d5	81%		29-124%
321-60-8	2-Fluorobiphenyl	68%		23-122%
1718-51-0	Terphenyl-d14	64%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-148-250312
Lab Sample ID: JE7507-3
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54048.D	1	03/20/25 13:58	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	115%		38-210%
3017-95-6	2-Bromo-1-chloropropane	93%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250312		
Lab Sample ID:	JE7507-3F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-148-250312D		
Lab Sample ID:	JE7507-4	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2E190892.D	4	03/18/25 23:59	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	113	2.0	1.7	ug/l	
107-06-2	1,2-Dichloroethane	ND	4.0	2.4	ug/l	
100-41-4	Ethylbenzene	ND	4.0	2.4	ug/l	
98-82-8	Isopropylbenzene	18.7	4.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	4.0	2.0	ug/l	
108-88-3	Toluene	14.0	4.0	2.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	8.0	4.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	8.0	4.0	ug/l	
1330-20-7	Xylene (total)	16.2	4.0	2.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

(a) Dilution required due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250312D		
Lab Sample ID:	JE7507-4	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172250.D	1	03/19/25 16:35	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0242	0.040	0.024	ug/l	J
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.175	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	30%		15-110%
4165-62-2	Phenol-d5	25%		12-110%
118-79-6	2,4,6-Tribromophenol	70%		32-143%
4165-60-0	Nitrobenzene-d5	71%		29-124%
321-60-8	2-Fluorobiphenyl	57%		23-122%
1718-51-0	Terphenyl-d14	43%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250312D		
Lab Sample ID:	JE7507-4	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54049.D	1	03/20/25 14:16	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	38 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	115%		38-210%
3017-95-6	2-Bromo-1-chloropropane	112%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250312D		
Lab Sample ID:	JE7507-4F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-150-250312		
Lab Sample ID:	JE7507-5	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1E190923.D	2.5	03/19/25 06:57	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	60.6	1.3	1.1	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.5	1.5	ug/l	
100-41-4	Ethylbenzene	ND	2.5	1.5	ug/l	
98-82-8	Isopropylbenzene	8.0	2.5	1.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	2.5	1.3	ug/l	
108-88-3	Toluene	2.2	2.5	1.2	ug/l	J
95-63-6	1,2,4-Trimethylbenzene [b]	ND	5.0	2.5	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	2.5	ug/l	
1330-20-7	Xylene (total)	ND	2.5	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	95%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

(a) Dilution required due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-150-250312		
Lab Sample ID:	JE7507-5	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172251.D	1	03/19/25 16:59	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.201	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0838	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0962	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.113	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0494	0.080	0.040	ug/l	J
218-01-9	Chrysene	0.160	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.140	0.080	0.040	ug/l	
129-00-0	Pyrene	0.525	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		15-110%
4165-62-2	Phenol-d5	36%		12-110%
118-79-6	2,4,6-Tribromophenol	101%		32-143%
4165-60-0	Nitrobenzene-d5	91%		29-124%
321-60-8	2-Fluorobiphenyl	86%		23-122%
1718-51-0	Terphenyl-d14	91%		22-130%

(a) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-150-250312
Lab Sample ID: JE7507-5
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54050.D	1	03/20/25 14:33	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	102%		38-210%
3017-95-6	2-Bromo-1-chloropropane	105%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-150-250312		
Lab Sample ID:	JE7507-5F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TB-250312-1		
Lab Sample ID:	JE7507-6	**Date Sampled:**	03/12/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1E190901.D	1	03/19/25 02:00	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene [a]	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-250312-1
Lab Sample ID: JE7507-6
Matrix: AQ - Trip Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54051.D	1	03/20/25 14:50	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	109%		38-210%
3017-95-6	2-Bromo-1-chloropropane	104%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250312-1		
Lab Sample ID:	JE7507-7	**Date Sampled:**	03/12/25
Matrix:	AQ - Field Blank Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E190902.D	1	03/19/25 02:14	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-250312-1
Lab Sample ID: JE7507-7
Matrix: AQ - Field Blank Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172252.D	1	03/19/25 17:25	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		15-110%
4165-62-2	Phenol-d5	42%		12-110%
118-79-6	2,4,6-Tribromophenol	90%		32-143%
4165-60-0	Nitrobenzene-d5	86%		29-124%
321-60-8	2-Fluorobiphenyl	87%		23-122%
1718-51-0	Terphenyl-d14	130%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-250312-1
Lab Sample ID: JE7507-7
Matrix: AQ - Field Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54052.D	1	03/20/25 15:07	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%
3017-95-6	2-Bromo-1-chloropropane	104%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250312-1		
Lab Sample ID:	JE7507-7F	**Date Sampled:**	03/12/25
Matrix:	AQ - Field Blank Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-97-250312		
Lab Sample ID:	JE7507-8	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E190906.D	1	03/19/25 03:08	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.83	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	8.8	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.0	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	93%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-97-250312
Lab Sample ID: JE7507-8
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172253.D	1	03/19/25 17:49	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.185	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.180	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.167	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.202	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0981	0.080	0.040	ug/l	
218-01-9	Chrysene	0.222	0.080	0.040	ug/l	
86-73-7	Fluorene	0.349	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.186	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.282	0.080	0.040	ug/l	
129-00-0	Pyrene	1.29	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		15-110%
4165-62-2	Phenol-d5	41%		12-110%
118-79-6	2,4,6-Tribromophenol	70%		32-143%
4165-60-0	Nitrobenzene-d5	90%		29-124%
321-60-8	2-Fluorobiphenyl	60%		23-122%
1718-51-0	Terphenyl-d14	67%		22-130%

(a) Associated CCV outside of control limits high. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-97-250312		
Lab Sample ID:	JE7507-8	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54053.D	1	03/20/25 15:24	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%
3017-95-6	2-Bromo-1-chloropropane	98%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-97-250312		
Lab Sample ID:	JE7507-8F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-146-250312		
Lab Sample ID:	JE7507-9	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1E190907.D	1	03/19/25 03:21	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	1.2	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene [a]	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	95%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-146-250312
Lab Sample ID: JE7507-9
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/12/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172254.D	1	03/19/25 18:15	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0489	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	0.0308	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	0.107	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.117	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0744	0.080	0.040	ug/l	J
218-01-9	Chrysene	0.102	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.0860	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.220	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		15-110%
4165-62-2	Phenol-d5	38%		12-110%
118-79-6	2,4,6-Tribromophenol	75%		32-143%
4165-60-0	Nitrobenzene-d5	80%		29-124%
321-60-8	2-Fluorobiphenyl	63%		23-122%
1718-51-0	Terphenyl-d14	79%		22-130%

(a) Associated CCV outside of control limits high. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-146-250312		
Lab Sample ID:	JE7507-9	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54054.D	1	03/20/25 15:41	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	113%		38-210%
3017-95-6	2-Bromo-1-chloropropane	101%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-146-250312		
Lab Sample ID:	JE7507-9F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-142-250312		
Lab Sample ID:	JE7507-10	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E190908.D	1	03/19/25 03:35	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-142-250312		
Lab Sample ID:	JE7507-10	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172255.D	1	03/19/25 18:39	AO	03/18/25 15:00	OP62146A	EZ8525
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0625	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	0.0244	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	0.0681	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0446	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.194	0.080	0.040	ug/l	
218-01-9	Chrysene	0.0448	0.080	0.040	ug/l	J
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		15-110%
4165-62-2	Phenol-d5	36%		12-110%
118-79-6	2,4,6-Tribromophenol	83%		32-143%
4165-60-0	Nitrobenzene-d5	75%		29-124%
321-60-8	2-Fluorobiphenyl	81%		23-122%
1718-51-0	Terphenyl-d14	76%		22-130%

(a) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-142-250312		
Lab Sample ID:	JE7507-10	**Date Sampled:**	03/12/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54055.D	1	03/20/25 15:59	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	118%		38-210%
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-142-250312		
Lab Sample ID:	JE7507-10F	**Date Sampled:**	03/12/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-169-250313		
Lab Sample ID:	JE7507-11	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E190922.D	1	03/19/25 06:44	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.9	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	2.1	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	29.5	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	2.6	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.8	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	92%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-169-250313
Lab Sample ID: JE7507-11
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/13/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172275.D	1	03/20/25 14:10	RS	03/19/25 09:00	OP62148A	EZ8526
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0633	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.0904	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		15-110%
4165-62-2	Phenol-d5	26%		12-110%
118-79-6	2,4,6-Tribromophenol	76%		32-143%
4165-60-0	Nitrobenzene-d5	62%		29-124%
321-60-8	2-Fluorobiphenyl	56%		23-122%
1718-51-0	Terphenyl-d14	70%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-169-250313		
Lab Sample ID:	JE7507-11	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54056.D	1	03/20/25 16:16	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	111%		38-210%
3017-95-6	2-Bromo-1-chloropropane	101%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-169-250313		
Lab Sample ID:	JE7507-11F	**Date Sampled:**	03/13/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-65-250313		
Lab Sample ID:	JE7507-12	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1E190909.D	1	03/19/25 03:48	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene [a]	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	96%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-65-250313		
Lab Sample ID:	JE7507-12	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172276.D	1	03/20/25 14:35	RS	03/19/25 09:00	OP62148A	EZ8526
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0586	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.0453	0.080	0.040	ug/l	J
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		15-110%
4165-62-2	Phenol-d5	34%		12-110%
118-79-6	2,4,6-Tribromophenol	64%		32-143%
4165-60-0	Nitrobenzene-d5	62%		29-124%
321-60-8	2-Fluorobiphenyl	58%		23-122%
1718-51-0	Terphenyl-d14	58%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-65-250313
Lab Sample ID: JE7507-12
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/13/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54059.D	1	03/20/25 17:08	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	113%		38-210%
3017-95-6	2-Bromo-1-chloropropane	103%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-65-250313		
Lab Sample ID:	JE7507-12F	**Date Sampled:**	03/13/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-64-250313		
Lab Sample ID:	JE7507-13	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2E190894.D	5	03/19/25 00:26	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	2.5	2.1	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	5.0	3.0	ug/l	
98-82-8	Isopropylbenzene	5.9	5.0	3.2	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	2.5	ug/l	
108-88-3	Toluene	ND	5.0	2.5	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	10	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	10	5.0	ug/l	
1330-20-7	Xylene (total)	ND	5.0	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	96%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	102%		82-114%

(a) Dilution required due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-64-250313
Lab Sample ID: JE7507-13
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/13/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172277.D	1	03/20/25 14:59	RS	03/19/25 09:00	OP62148A	EZ8526
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.198	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.119	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.116	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.115	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.181	0.080	0.040	ug/l	
218-01-9	Chrysene	0.275	0.080	0.040	ug/l	
86-73-7	Fluorene	0.526	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.204	0.080	0.040	ug/l	
129-00-0	Pyrene	0.588	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		15-110%
4165-62-2	Phenol-d5	43%		12-110%
118-79-6	2,4,6-Tribromophenol	70%		32-143%
4165-60-0	Nitrobenzene-d5	79%		29-124%
321-60-8	2-Fluorobiphenyl	70%		23-122%
1718-51-0	Terphenyl-d14	76%		22-130%

(a) Associated CCV outside of control limits high. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-64-250313		
Lab Sample ID:	JE7507-13	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54060.D	1	03/20/25 17:25	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	109%		38-210%
3017-95-6	2-Bromo-1-chloropropane	98%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-64-250313		
Lab Sample ID:	JE7507-13F	**Date Sampled:**	03/13/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-166-250313		
Lab Sample ID:	JE7507-14	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E190910.D	1	03/19/25 04:02	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	96%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	108%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-166-250313		
Lab Sample ID:	JE7507-14	**Date Sampled:**	03/13/25
Matrix:	AQ - Ground Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172278.D	1	03/20/25 15:24	RS	03/19/25 09:00	OP62148A	EZ8526
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0397	0.040	0.024	ug/l	J
205-99-2	Benzo(b)fluoranthene	0.0459	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0422	0.080	0.040	ug/l	J
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.166	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	17%		15-110%
4165-62-2	Phenol-d5	10% [b]		12-110%
118-79-6	2,4,6-Tribromophenol	39%		32-143%
4165-60-0	Nitrobenzene-d5	45%		29-124%
321-60-8	2-Fluorobiphenyl	46%		23-122%
1718-51-0	Terphenyl-d14	44%		22-130%

(a) Associated CCV outside of control limits high. Estimated value, due to corresponding failure in the batch associated CCV.
(b) Surrogate recovery marginally exceeded the lower statistical limit.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-166-250313
Lab Sample ID: JE7507-14
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/13/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54061.D	1	03/20/25 17:42	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	110%		38-210%
3017-95-6	2-Bromo-1-chloropropane	100%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-166-250313		
Lab Sample ID:	JE7507-14F	**Date Sampled:**	03/13/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	2.5	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TB-250313-2		
Lab Sample ID:	JE7507-15	**Date Sampled:**	03/13/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1E190903.D	1	03/19/25 02:27	ED	n/a	n/a	V1E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene [a]	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound in blank spike is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TB-250313-2
Lab Sample ID: JE7507-15
Matrix: AQ - Trip Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/13/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54062.D	1	03/20/25 17:59	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	113%		38-210%
3017-95-6	2-Bromo-1-chloropropane	106%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250313-2		
Lab Sample ID:	JE7507-16	**Date Sampled:**	03/13/25
Matrix:	AQ - Field Blank Water	**Date Received:**	03/13/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E190904.D	1	03/19/25 02:41	ED	n/a	n/a	V2E8996
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250313-2		
Lab Sample ID:	JE7507-16	**Date Sampled:**	03/13/25
Matrix:	AQ - Field Blank Water	**Date Received:**	03/13/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z172279.D	1	03/20/25 15:49	RS	03/19/25 09:00	OP62148A	EZ8526
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		15-110%
4165-62-2	Phenol-d5	24%		12-110%
118-79-6	2,4,6-Tribromophenol	65%		32-143%
4165-60-0	Nitrobenzene-d5	58%		29-124%
321-60-8	2-Fluorobiphenyl	58%		23-122%
1718-51-0	Terphenyl-d14	78%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-250313-2
Lab Sample ID: JE7507-16
Matrix: AQ - Field Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 03/13/25
Date Received: 03/13/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54063.D	1	03/20/25 18:16	RK	03/18/25 06:00	OP62121	G7G1877
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	110%		38-210%
3017-95-6	2-Bromo-1-chloropropane	105%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250313-2		
Lab Sample ID:	JE7507-16F	**Date Sampled:**	03/13/25
Matrix:	AQ - Field Blank Filtered	**Date Received:**	03/13/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	03/17/25	03/18/25	LM	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58103
(2) Prep QC Batch: MP53241

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

GW
FB TB

FED-EX Tracking #
Bottle Order Control # VP-09525-M9
SGS Quote #
SGS Job # JE7507

Analysis Requested

Client / Reporting Information	Project Information	Matrix Codes
Company Name: Terraphase Engineering	Project Name: BDH - No. 3 Separator	DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank
Street Address: 100 Canal Pointe Blvd.	Street: 3144 W. Passyunk Ave	
City: Princeton, NJ State: Zip:	City: Phila., PA State:	
Project Contact: Nick.Scala@terraphase.com E-mail:	Project #: P044.001.003	
Phone #: (609) 286-8171 x92	Client Purchase Order #: P044.001.003	
Sampler(s) Name(s): S.Chubb + M.Mowrer Phone #:	Project Manager: Nick Scala	

Billing Information (if different from Report to)
Company Name: same as client
Street Address:
City: State: Zip:
Attention:

site specific VOCs - 8260
site specific SVOCs - 8270
Lead - Dissolved

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Code (Potable/Ground Water/Wastewater/Other)	Matrix	# of bottles	Number of Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	EnCore	pH Check (Lab Use Only)	LAB USE ONLY
1F	C-155-250312		3/12/25	1130	MM	G	N	GW	8	5	2	1						X X X	
2F	C-153-250312		3/12/25	0930	MM					5	2	1						X X X	
3F	C-148-250312		3/12/25	1230	MM					5	2	1						X X X	
4F	C-148-250312D		3/12/25	1245	MM					5	2	1						X X X	
5F	C-150-250312		3/12/25	1330	SC					5	2	1						X X X	
6F	TB-250312-1		3/12/25	0700	SC	TB	TB	TB	2	2								X	
7F	FB-250312-1		3/12/25	1510	SC	FB	FB	FB	8	5	2	1						X X X	
8F	C-97-250312		3/12/25	1530	SC	G	N	GW	8	5	2	1						X X X	
9F	C-146-250312		3/12/25	1500	MM	G	N	GW	8	5	2	1						X X X	
10F	C-142-250312		3/12/25	16:15	MM	G	N	GW	8	5	2	1						X X X	
11F	C-169-250313		3/13/25	1100	MM	G	N	GW	8	5	2	1						X X X	
12F	C-65-250313		3/13/25	0930	MM	G	N	GW	8	5	2	1						X X X	

Initial Assessment 3.20
Label Verification

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [X] 5 Business Days — standard
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

TEI TAT

All data available via SGS Engage * Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [X] EDD Format equis

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

-See attached sheet for analysis
-send EDD to EDD@terraphase.com
*8270 Anlyt 2x
NP

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1 TEI	3/12/25 1445	1 GSHW 3/17/25 1647	2 GSHW	3/13/25 1820	2 Alexandra Rodriguez
3		3	4		4
5		5	Custody Seal #	Intact / Not Intact / Absent	Therm ID: See Sample Receipt Summary — On Ice — Cooler Temp. °C

EHSA-QAC-0023-06 Rev.Date:9/24/2024

IR S2 2.0/2.4/2.6 °C

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JE7507

Client / Reporting Information

Company Name: Terraphase Engineering Inc.
Street Address: 100 Canal Pointe Blvd
City: Princeton State: NJ Zip:
Project Contact: Nick.Scala@terraphase.com E-mail:
Phone #: 609-236-8171x92
Sampler(s) Name(s): S. Chubb + M. Mourer Phone #:

Project Information

Project Name: BDH – No. 3 Separator
Street: 3144 W. Passyunk Ave
City: Phila, PA State:
Project #: P044.001.003
Client Purchase Order #: P044.001.003
Project Manager: Nick Scala

Billing Information (if different from Report to)

Company Name: same as client
Street Address:
City: State: Zip:
Attention:

Analysis Requested

Site specific VOCs (8260)
Site specific SVOCs (8270)
Lead – Dissolved

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Channeled (Y/N)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)			LAB USE ONLY
13F	C-64-250313 *	•	3/13/25	1200	MM	G	N	GW	8	5	2	1						X	X	X	
14F	C-166-250313	•		1330	MM	G	N	GW	8	5	2	1						X	X	X	
15	TB-250313-2			700	SC	TB	TB	TB	2	2								X			
16F	FB-250313-2 *	•		1245	SC	FB	FB	FB	8	5	2	1						X	X	X	

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

standard TAT
TEI

All data available via SGS Engage
* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [x] EDD Format equis

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

- see attached sheet for analysis
- send EDDs to EDD@terraphase.com

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1	TEI	3/12/25 1445	Cathwood
2	Cathwood	3/13/25 1820	
3	Relinquished by:	Date / Time:	Received By: 3/17/25 1445
4	Relinquished by:	Date / Time:	Received By: 2
5	Relinquished by:	Date / Time:	Received By: 4

Custody Seal # | Intact | Not Intact | Absent | Therm ID: | On Ice | Cooler Temp. °C | See Sample Receipt Summary

EHSA-QAC-0023-06 Rev.Date:9/24/2024

3 Coolers IR = 2.0/2.4/2.6 | SGS Courier DLV

SGS Sample Receipt Summary

Job Number: je7507 **Client:** TERRAPHASE ENGINEERING INC. **Project:** BDH PHILADELPHIA REFINERY, PA

Date / Time Received: 3/13/2025 **Delivery Method:** SGS COURIER **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0); Cooler 2: (2.4); Cooler 3: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (2.4); Cooler 2: (2.8); Cooler 3: (3.0);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	3		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE7507: Chain of Custody
Page 3 of 3

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1E8996-MB	1E190889.D	1	03/18/25	ED	n/a	n/a	V1E8996

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7507-1, JE7507-2, JE7507-3, JE7507-5, JE7507-6, JE7507-9, JE7507-12, JE7507-15

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	80-120%
17060-07-0	1,2-Dichloroethane-D4	100%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	102%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2E8996-MB	2E190890.D	1	03/18/25	ED	n/a	n/a	V2E8996

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7507-4, JE7507-7, JE7507-8, JE7507-10, JE7507-11, JE7507-13, JE7507-14, JE7507-16

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	104%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1E8996-BS	1E190885.D	1	03/18/25	ED	n/a	n/a	V1E8996

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7507-1, JE7507-2, JE7507-3, JE7507-5, JE7507-6, JE7507-9, JE7507-12, JE7507-15

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	54.9	110	80-115
107-06-2	1,2-Dichloroethane	50	52.6	105	73-117
100-41-4	Ethylbenzene	50	54.7	109	78-116
98-82-8	Isopropylbenzene	50	56.4	113	78-121
1634-04-4	Methyl Tert Butyl Ether	50	52.8	106	76-123
108-88-3	Toluene	50	53.7	107	79-116
95-63-6	1,2,4-Trimethylbenzene	50	60.9	122* [a]	78-120
108-67-8	1,3,5-Trimethylbenzene	50	59.8	120	77-120
1330-20-7	Xylene (total)	150	165	110	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	101%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	106%	82-114%

(a) High percent recovery and no associated positive reported in the QC batch.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2E8996-BS	2E190886.D	1	03/18/25	ED	n/a	n/a	V2E8996

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7507-4, JE7507-7, JE7507-8, JE7507-10, JE7507-11, JE7507-13, JE7507-14, JE7507-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	55.6	111	80-115
107-06-2	1,2-Dichloroethane	50	51.0	102	73-117
100-41-4	Ethylbenzene	50	54.6	109	78-116
98-82-8	Isopropylbenzene	50	56.9	114	78-121
1634-04-4	Methyl Tert Butyl Ether	50	53.8	108	76-123
108-88-3	Toluene	50	54.6	109	79-116
95-63-6	1,2,4-Trimethylbenzene	50	58.8	118	78-120
108-67-8	1,3,5-Trimethylbenzene	50	58.9	118	77-120
1330-20-7	Xylene (total)	150	167	111	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	93%	80-120%
2037-26-5	Toluene-D8	100%	80-120%
460-00-4	4-Bromofluorobenzene	105%	82-114%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE7507-3MS	1E190895.D	4	03/19/25	ED	n/a	n/a	V1E8996
JE7507-3MSD	1E190897.D	4	03/19/25	ED	n/a	n/a	V1E8996
JE7507-3 [a]	1E190891.D	4	03/18/25	ED	n/a	n/a	V1E8996

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7507-1, JE7507-2, JE7507-3, JE7507-5, JE7507-6, JE7507-9, JE7507-12, JE7507-15

CAS No.	Compound	JE7507-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	117		200	303	93	200	306	95	1	49-137/12
107-06-2	1,2-Dichloroethane	ND		200	200	100	200	203	102	1	66-120/13
100-41-4	Ethylbenzene	ND		200	214	107	200	218	109	2	37-144/12
98-82-8	Isopropylbenzene	20.1		200	235	107	200	240	110	2	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		200	203	102	200	212	106	4	66-124/12
108-88-3	Toluene	14.8		200	221	103	200	226	106	2	46-139/12
95-63-6	1,2,4-Trimethylbenzene	ND		200	238	119	200	239	120	0	39-147/13
108-67-8	1,3,5-Trimethylbenzene	ND		200	231	116	200	235	118	2	56-136/14
1330-20-7	Xylene (total)	17.7		600	656	106	600	671	109	2	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE7507-3	Limits
1868-53-7	Dibromofluoromethane	100%	100%	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	92%	98%	80-120%
2037-26-5	Toluene-D8	100%	99%	100%	80-120%
460-00-4	4-Bromofluorobenzene	106%	104%	102%	82-114%

(a) Dilution required due to high concentration of non-target compound.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE7507-4MS	2E190896.D	4	03/19/25	ED	n/a	n/a	V2E8996
JE7507-4MSD	2E190898.D	4	03/19/25	ED	n/a	n/a	V2E8996
JE7507-4 [a]	2E190892.D	4	03/18/25	ED	n/a	n/a	V2E8996

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE7507-4, JE7507-7, JE7507-8, JE7507-10, JE7507-11, JE7507-13, JE7507-14, JE7507-16

CAS No.	Compound	JE7507-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	113		200	308	98	200	307	97	0	49-137/12
107-06-2	1,2-Dichloroethane	ND		200	201	101	200	198	99	2	66-120/13
100-41-4	Ethylbenzene	ND		200	215	108	200	215	108	0	37-144/12
98-82-8	Isopropylbenzene	18.7		200	240	111	200	240	111	0	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		200	215	108	200	214	107	0	66-124/12
108-88-3	Toluene	14.0		200	226	106	200	224	105	1	46-139/12
95-63-6	1,2,4-Trimethylbenzene	ND		200	232	116	200	232	116	0	39-147/13
108-67-8	1,3,5-Trimethylbenzene	ND		200	229	115	200	231	116	1	56-136/14
1330-20-7	Xylene (total)	16.2		600	673	109	600	670	109	0	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE7507-4	Limits
1868-53-7	Dibromofluoromethane	100%	100%	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	95%	97%	97%	80-120%
2037-26-5	Toluene-D8	101%	100%	99%	80-120%
460-00-4	4-Bromofluorobenzene	104%	104%	104%	82-114%

(a) Dilution required due to high concentration of non-target compound.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V1E8991-BFB
Lab File ID: 1E190629.D
Instrument ID: GCMS1E
Injection Date: 03/12/25
Injection Time: 14:40

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	29264	22.8		Pass
75	30.0 - 60.0% of mass 95	68096	53.0		Pass
95	Base peak, 100% relative abundance	128576	100.0		Pass
96	5.0 - 9.0% of mass 95	8530	6.63		Pass
173	Less than 2.0% of mass 174	524	0.41	(0.49) [a]	Pass
174	50.0 - 120.0% of mass 95	107195	83.4		Pass
175	5.0 - 9.0% of mass 174	8211	6.39	(7.66) [a]	Pass
176	95.0 - 101.0% of mass 174	102179	79.5	(95.3) [a]	Pass
177	5.0 - 9.0% of mass 176	6938	5.40	(6.79) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1E8991-IC8991	1E190631.D	03/12/25	15:59	01:19	Initial cal 0.2
V1E8991-IC8991	1E190633.D	03/12/25	16:38	01:58	Initial cal 0.5
V1E8991-IC8991	1E190635.D	03/12/25	17:05	02:25	Initial cal 1
V1E8991-IC8991	1E190637.D	03/12/25	17:32	02:52	Initial cal 2
V1E8991-IC8991	1E190639.D	03/12/25	17:59	03:19	Initial cal 4
V1E8991-IC8991	1E190641.D	03/12/25	18:26	03:46	Initial cal 8
V1E8991-IC8991	1E190643.D	03/12/25	18:53	04:13	Initial cal 20
V1E8991-ICC8991	1E190645.D	03/12/25	19:20	04:40	Initial cal 50
V1E8991-IC8991	1E190647.D	03/12/25	19:48	05:08	Initial cal 100
V1E8991-IC8991	1E190649.D	03/12/25	20:15	05:35	Initial cal 200
V1E8991-ICV8991	1E190655.D	03/12/25	21:36	06:56	Initial cal verification 50
V1E8991-ICV8991	1E190657.D	03/12/25	22:03	07:23	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	V2E8991-BFB	**Injection Date:**	03/12/25
Lab File ID:	2E190630.D	**Injection Time:**	14:53
Instrument ID:	GCMS2E		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	27629	21.7		Pass
75	30.0 - 60.0% of mass 95	64381	50.5		Pass
95	Base peak, 100% relative abundance	127395	100.0		Pass
96	5.0 - 9.0% of mass 95	8730	6.85		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	108320	85.0		Pass
175	5.0 - 9.0% of mass 174	8264	6.49	(7.63) [a]	Pass
176	95.0 - 101.0% of mass 174	103277	81.1	(95.3) [a]	Pass
177	5.0 - 9.0% of mass 176	6492	5.10	(6.29) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2E8991-IC8991	2E190632.D	03/12/25	16:13	01:20	Initial cal 0.2
V2E8991-IC8991	2E190634.D	03/12/25	16:52	01:59	Initial cal 0.5
V2E8991-IC8991	2E190636.D	03/12/25	17:19	02:26	Initial cal 1
V2E8991-IC8991	2E190638.D	03/12/25	17:46	02:53	Initial cal 2
V2E8991-IC8991	2E190640.D	03/12/25	18:13	03:20	Initial cal 4
V2E8991-IC8991	2E190642.D	03/12/25	18:40	03:47	Initial cal 8
V2E8991-IC8991	2E190644.D	03/12/25	19:07	04:14	Initial cal 20
V2E8991-ICC8991	2E190646.D	03/12/25	19:34	04:41	Initial cal 50
V2E8991-IC8991	2E190648.D	03/12/25	20:01	05:08	Initial cal 100
V2E8991-IC8991	2E190650.D	03/12/25	20:28	05:35	Initial cal 200
V2E8991-ICV8991	2E190656.D	03/12/25	21:49	06:56	Initial cal verification 50
V2E8991-ICV8991	2E190658.D	03/12/25	22:16	07:23	Initial cal verification 50

Surrogate Recovery Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8260D **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE7507-1	1E190905.D	104	98	100	103
JE7507-2	1E190893.D	103	97	101	101
JE7507-3	1E190891.D	103	98	100	102
JE7507-4	2E190892.D	103	97	99	104
JE7507-5	1E190923.D	101	95	99	104
JE7507-6	1E190901.D	105	99	99	105
JE7507-7	2E190902.D	104	100	98	105
JE7507-8	2E190906.D	100	93	101	105
JE7507-9	1E190907.D	101	95	101	104
JE7507-10	2E190908.D	104	101	98	104
JE7507-11	2E190922.D	100	92	101	105
JE7507-12	1E190909.D	101	96	100	104
JE7507-13	2E190894.D	101	96	100	102
JE7507-14	2E190910.D	102	96	98	108
JE7507-15	1E190903.D	103	100	99	104
JE7507-16	2E190904.D	106	100	98	105
JE7507-3MS	1E190895.D	100	97	100	106
JE7507-3MSD	1E190897.D	100	92	99	104
JE7507-4MS	2E190896.D	100	95	101	104
JE7507-4MSD	2E190898.D	100	97	100	104
V1E8996-BS	1E190885.D	104	101	99	106
V1E8996-MB	1E190889.D	107	100	99	102
V2E8996-BS	2E190886.D	102	93	100	105
V2E8996-MB	2E190890.D	107	102	99	104

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	80-120%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	82-114%

MS Semi-volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62146A-MB1	Z172239.D	1	03/19/25	AO	03/18/25	OP62146A	EZ8525

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7507-1, JE7507-2, JE7507-3, JE7507-4, JE7507-5, JE7507-7, JE7507-8, JE7507-9, JE7507-10

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	13%	12-110%
118-79-6	2,4,6-Tribromophenol	135%	32-143%
4165-60-0	Nitrobenzene-d5	76%	29-124%
321-60-8	2-Fluorobiphenyl	126%*	23-122%
1718-51-0	Terphenyl-d14	0%*	22-130%

Method Blank Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62148A-MB1	5P101345.D	1	03/20/25	RS	03/19/25	OP62148A	E5P4853

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7507-11, JE7507-12, JE7507-13, JE7507-14, JE7507-16

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	2%* [a]	15-110%
4165-62-2	Phenol-d5	5%* [a]	12-110%
118-79-6	2,4,6-Tribromophenol	0%* [a]	32-143%
4165-60-0	Nitrobenzene-d5	36%	29-124%
321-60-8	2-Fluorobiphenyl	36%	23-122%
1718-51-0	Terphenyl-d14	50%	22-130%

(a) Outside of in house control limits.

Blank Spike Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62146A-BS12	Z172240.D	1	03/19/25	AO	03/18/25	OP62146A	EZ8525

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7507-1, JE7507-2, JE7507-3, JE7507-4, JE7507-5, JE7507-7, JE7507-8, JE7507-9, JE7507-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
120-12-7	Anthracene	0.8	0.592	74	40-125
56-55-3	Benzo(a)anthracene	0.8	0.533	67	38-132
50-32-8	Benzo(a)pyrene	0.8	0.450	56	31-110
205-99-2	Benzo(b)fluoranthene	0.8	0.476	60	31-113
191-24-2	Benzo(g,h,i)perylene	0.8	0.604	76	18-110
218-01-9	Chrysene	0.8	0.578	72	43-119
86-73-7	Fluorene	0.8	0.585	73	42-123
91-20-3	Naphthalene	0.8	0.465	58	30-114
85-01-8	Phenanthrene	0.8	0.617	77	45-125
129-00-0	Pyrene	0.8	0.576	72	48-125

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	56%	15-110%
4165-62-2	Phenol-d5	47%	12-110%
118-79-6	2,4,6-Tribromophenol	83%	32-143%
4165-60-0	Nitrobenzene-d5	73%	29-124%
321-60-8	2-Fluorobiphenyl	72%	23-122%
1718-51-0	Terphenyl-d14	85%	22-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62148A-BS12	5P101347.D	1	03/20/25	RS	03/19/25	OP62148A	E5P4853
OP62148A-BSD12	5P101348.D	1	03/20/25	RS	03/19/25	OP62148A	E5P4853

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7507-11, JE7507-12, JE7507-13, JE7507-14, JE7507-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	0.8	0.559	70	0.590	74	5	40-125/32
56-55-3	Benzo(a)anthracene	0.8	0.787	98	0.782	98	1	38-132/31
50-32-8	Benzo(a)pyrene	0.8	0.619	77	0.585	73	6	31-110/37
205-99-2	Benzo(b)fluoranthene	0.8	0.718	90	0.779	97	8	31-113/37
191-24-2	Benzo(g,h,i)perylene	0.8	0.831	104	0.709	89	16	18-110/54
218-01-9	Chrysene	0.8	0.687	86	0.678	85	1	43-119/33
86-73-7	Fluorene	0.8	0.481	60	0.495	62	3	42-123/34
91-20-3	Naphthalene	0.8	0.500	63	0.514	64	3	30-114/40
85-01-8	Phenanthrene	0.8	0.498	62	0.531	66	6	45-125/31
129-00-0	Pyrene	0.8	0.615	77	0.650	81	6	48-125/29

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	37%	38%	15-110%
4165-62-2	Phenol-d5	26%	27%	12-110%
118-79-6	2,4,6-Tribromophenol	73%	79%	32-143%
4165-60-0	Nitrobenzene-d5	54%	53%	29-124%
321-60-8	2-Fluorobiphenyl	50%	50%	23-122%
1718-51-0	Terphenyl-d14	72%	73%	22-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62146A-MSA	Z172256.D	1	03/19/25	AO	03/18/25	OP62146A	EZ8525
OP62146A-MSDA	Z172257.D	1	03/19/25	AO	03/18/25	OP62146A	EZ8525
JE7496-1	Z172258.D	1	03/19/25	AO	03/18/25	OP62146A	EZ8525

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE7507-1, JE7507-2, JE7507-3, JE7507-4, JE7507-5, JE7507-7, JE7507-8, JE7507-9, JE7507-10

CAS No.	Compound	JE7496-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	ND		0.8	0.727	91	0.8	0.790	99	8	28-144/32
56-55-3	Benzo(a)anthracene	ND		0.8	0.689	86	0.8	0.792	99	14	27-144/36
50-32-8	Benzo(a)pyrene	ND		0.8	0.535	67	0.8	0.608	76	13	21-113/41
205-99-2	Benzo(b)fluoranthene	ND		0.8	0.508	64	0.8	0.585	73	14	21-123/41
191-24-2	Benzo(g,h,i)perylene	ND		0.8	0.570	71	0.8	0.596	75	4	10-113/48
218-01-9	Chrysene	ND		0.8	0.617	77	0.8	0.709	89	14	31-128/34
86-73-7	Fluorene	0.126		0.8	0.524	50	0.8	0.628	63	18	32-138/33
91-20-3	Naphthalene	ND		0.8	0.476	60	0.8	0.529	66	11	13-141/33
85-01-8	Phenanthrene	ND		0.8	0.733	92	0.8	0.854	107	15	33-139/31
129-00-0	Pyrene	0.0727	J	0.8	0.711	80	0.8	0.828	94	15	35-142/33

CAS No.	Surrogate Recoveries	MS	MSD	JE7496-1	Limits
367-12-4	2-Fluorophenol	51%	50%		15-110%
4165-62-2	Phenol-d5	36%	35%		12-110%
118-79-6	2,4,6-Tribromophenol	84%	92%		32-143%
4165-60-0	Nitrobenzene-d5	71%	72%	84%	29-124%
321-60-8	2-Fluorobiphenyl	66%	73%	82%	23-122%
1718-51-0	Terphenyl-d14	88%	93%	88%	22-130%

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	E5P4749-DFTPP	**Injection Date:**	11/05/24
Lab File ID:	5P99134.D	**Injection Time:**	08:01
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	12529	37.7		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	13322	40.0		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	15244	45.8		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	33277	100.0		Pass
199	5.0 - 9.0% of mass 198	2355	7.08		Pass
275	10.0 - 30.0% of mass 198	7280	21.9		Pass
365	1.0 - 100.0% of mass 198	793	2.38		Pass
441	Present, but less than mass 443	3251	9.77	(76.1) [b]	Pass
442	40.0 - 100.0% of mass 198	20551	61.8		Pass
443	17.0 - 23.0% of mass 442	4270	12.8	(20.8) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P4749-ICC4749	5P99152.D	11/05/24	14:23	06:22	Initial cal 0.2
E5P4749-IC4749	5P99153.D	11/05/24	14:47	06:46	Initial cal 0.002
E5P4749-IC4749	5P99154.D	11/05/24	15:12	07:11	Initial cal 0.004
E5P4749-IC4749	5P99155.D	11/05/24	15:36	07:35	Initial cal 0.01
E5P4749-IC4749	5P99156.D	11/05/24	16:01	08:00	Initial cal 0.02
E5P4749-IC4749	5P99157.D	11/05/24	16:25	08:24	Initial cal 0.04
E5P4749-IC4749	5P99158.D	11/05/24	16:50	08:49	Initial cal 0.1
E5P4749-IC4749	5P99159.D	11/05/24	17:14	09:13	Initial cal 0.5
E5P4749-IC4749	5P99160.D	11/05/24	17:39	09:38	Initial cal 1
E5P4749-ICV4749	5P99161.D	11/05/24	18:03	10:02	Initial cal verification 0.2
E5P4749-ICV4749	5P99162.D	11/05/24	18:28	10:27	Initial cal verification 1

Instrument Performance Check (DFTPP)

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	E5P4750-DFTPP	**Injection Date:**	11/06/24
Lab File ID:	5P99163.D	**Injection Time:**	09:22
Instrument ID:	GCMS5P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	11888	37.9		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	13382	42.6		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	14226	45.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	31392	100.0		Pass
199	5.0 - 9.0% of mass 198	2087	6.65		Pass
275	10.0 - 30.0% of mass 198	5832	18.6		Pass
365	1.0 - 100.0% of mass 198	633	2.02		Pass
441	Present, but less than mass 443	2828	9.01	(79.7) [b]	Pass
442	40.0 - 100.0% of mass 198	17226	54.9		Pass
443	17.0 - 23.0% of mass 442	3549	11.3	(20.6) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E5P4750-ICV4749	5P99164.D	11/06/24	09:37	00:15	Initial cal verification 0.2
E5P4751-CC4749	5P99165.D	11/06/24	12:44	03:22	Continuing cal 0.2
ZZZZZZ	5P99167.D	11/06/24	14:40	05:18	(unrelated sample)

Instrument Performance Check (DFTPP)

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: EZ8523-DFTPP
Lab File ID: Z172205.D
Instrument ID: GCMSZ
Injection Date: 03/06/25
Injection Time: 11:18

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	19684	33.9		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	26277	45.3		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	27228	46.9		Pass
197	Less than 1.0% of mass 198	154	0.27		Pass
198	Base peak, 100% relative abundance	58005	100.0		Pass
199	5.0 - 9.0% of mass 198	3696	6.37		Pass
275	10.0 - 30.0% of mass 198	13981	24.1		Pass
365	1.0 - 100.0% of mass 198	1576	2.72		Pass
441	Present, but less than mass 443	7611	13.1	(90.4) [b]	Pass
442	40.0 - 100.0% of mass 198	45267	78.0		Pass
443	17.0 - 23.0% of mass 442	8418	14.5	(18.6) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ8523-ICC8523	Z172207.D	03/06/25	11:56	00:38	Initial cal 0.2
EZ8523-IC8523	Z172208.D	03/06/25	12:21	01:03	Initial cal 0.002
EZ8523-IC8523	Z172209.D	03/06/25	12:45	01:27	Initial cal 0.004
EZ8523-IC8523	Z172210.D	03/06/25	13:11	01:53	Initial cal 0.01
EZ8523-IC8523	Z172211.D	03/06/25	13:38	02:20	Initial cal 0.02
EZ8523-IC8523	Z172212.D	03/06/25	14:03	02:45	Initial cal 0.04
EZ8523-IC8523	Z172213.D	03/06/25	14:29	03:11	Initial cal 0.1
EZ8523-IC8523	Z172214.D	03/06/25	14:54	03:36	Initial cal 0.5
EZ8523-IC8523	Z172215.D	03/06/25	15:20	04:02	Initial cal 1
EZ8523-ICV8523	Z172216.D	03/06/25	15:44	04:26	Initial cal verification 0.2
EZ8523-ICV8523	Z172217.D	03/06/25	16:09	04:51	Initial cal verification 1

Surrogate Recovery Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8270E BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE7507-1	Z172247.D	53	43	97	89	80	75
JE7507-2	Z172248.D	51	34	42	85	36	58
JE7507-3	Z172249.D	40	30	78	81	68	64
JE7507-4	Z172250.D	30	25	70	71	57	43
JE7507-5	Z172251.D	44	36	101	91	86	91
JE7507-7	Z172252.D	57	42	90	86	87	130
JE7507-8	Z172253.D	52	41	70	90	60	67
JE7507-9	Z172254.D	49	38	75	80	63	79
JE7507-10	Z172255.D	51	36	83	75	81	76
JE7507-11	Z172275.D	40	26	76	62	56	70
JE7507-12	Z172276.D	44	34	64	62	58	58
JE7507-13	Z172277.D	63	43	70	79	70	76
JE7507-14	Z172278.D	17	10* [a]	39	45	46	44
JE7507-16	Z172279.D	35	24	65	58	58	78
OP62146A-BS12	Z172240.D	56	47	83	73	72	85
OP62146A-MB1	Z172239.D	56	13	135	76	126*	0*
OP62146A-MSA	Z172256.D	51	36	84	71	66	88
OP62146A-MSDA	Z172257.D	50	35	92	72	73	93
OP62148A-BS12	5P101347.D	37	26	73	54	50	72
OP62148A-BSD12	5P101348.D	38	27	79	53	50	73
OP62148A-MB1	5P101345.D	2* [b]	5* [b]	0* [b]	36	36	50

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	12-110%
S3 = 2,4,6-Tribromophenol	32-143%
S4 = Nitrobenzene-d5	29-124%
S5 = 2-Fluorobiphenyl	23-122%
S6 = Terphenyl-d14	22-130%

(a) Surrogate recovery marginally exceeded the lower statistical limit.
(b) Outside of in house control limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62121-MB1	7G54037.D	1	03/20/25	RK	03/18/25	OP62121	G7G1877

The QC reported here applies to the following samples: **Method:** SW846-8011

JE7507-1, JE7507-2, JE7507-3, JE7507-4, JE7507-5, JE7507-6, JE7507-7, JE7507-8, JE7507-9, JE7507-10, JE7507-11, JE7507-12, JE7507-13, JE7507-14, JE7507-15, JE7507-16

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries		Limits
3017-95-6	2-Bromo-1-chloropropane	109%	38-210%
3017-95-6	2-Bromo-1-chloropropane	109%	38-210%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62121-BS1	7G54038.D	1	03/20/25	RK	03/18/25	OP62121	G7G1877
OP62121-BSD	7G54039.D	1	03/20/25	RK	03/18/25	OP62121	G7G1877

The QC reported here applies to the following samples: **Method:** SW846-8011

JE7507-1, JE7507-2, JE7507-3, JE7507-4, JE7507-5, JE7507-6, JE7507-7, JE7507-8, JE7507-9, JE7507-10, JE7507-11, JE7507-12, JE7507-13, JE7507-14, JE7507-15, JE7507-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	0.476	0.62	130	0.67	135	3	51-171/21

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3017-95-6	2-Bromo-1-chloropropane	109%	110%	38-210%
3017-95-6	2-Bromo-1-chloropropane	103%	101%	38-210%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE7507
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846-8011 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE7507-1	7G54044.D	120	112
JE7507-2	7G54045.D	113	99
JE7507-3	7G54048.D	115	93
JE7507-4	7G54049.D	115	112
JE7507-5	7G54050.D	102	105
JE7507-6	7G54051.D	109	104
JE7507-7	7G54052.D	107	104
JE7507-8	7G54053.D	107	98
JE7507-9	7G54054.D	113	101
JE7507-10	7G54055.D	118	107
JE7507-11	7G54056.D	111	101
JE7507-12	7G54059.D	113	103
JE7507-13	7G54060.D	109	98
JE7507-14	7G54061.D	110	100
JE7507-15	7G54062.D	113	106
JE7507-16	7G54063.D	110	105
OP62121-BS1	7G54038.D	109	103
OP62121-BSD	7G54039.D	110	101
OP62121-MB1	7G54037.D	109	109

Surrogate Compounds	Recovery Limits
S1 = 2-Bromo-1-chloropropane	38-210%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE7507
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 03/17/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.83	32		
Antimony	4.0	.17	1.7		
Arsenic	1.0	.05	.39		
Barium	2.0	.018	.73		
Beryllium	1.0	.01	.15		
Boron	50	1.7	14		
Cadmium	1.0	.02	.17		
Calcium	500	7.2	200		
Chromium	2.0	.036	.62		
Cobalt	1.0	.006	.17		
Copper	4.0	.048	1.9		
Iron	50	.47	19		
Lead	1.0	.016	.52	0.066	<1.0
Magnesium	500	.38	46		
Manganese	2.0	.024	.63		
Molybdenum	2.0	.034	.45		
Nickel	2.0	.034	.95		
Potassium	500	1.6	68		
Selenium	1.0	.088	.55		
Silver	1.0	.008	.16		
Sodium	500	3	470		
Strontium	10	.028	2.4		
Thallium	1.0	.004	.17		
Tin	10	.082	2.6		
Titanium	2.0	.22	1.6		
Vanadium	2.0	.026	1.8		
Zinc	10	.16	5.4		

Associated samples MP53241: JE7507-1F, JE7507-2F, JE7507-3F, JE7507-4F, JE7507-5F, JE7507-7F, JE7507-8F, JE7507-9F, JE7507-10F, JE7507-11F, JE7507-12F, JE7507-13F, JE7507-14F, JE7507-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JE7507
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 03/17/25

Metal	JE7452-1 Original	MS	Spikelot MP6020AQ3%	Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	0.045	76.1	80	95.1	75-125
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP53241: JE7507-1F, JE7507-2F, JE7507-3F, JE7507-4F, JE7507-5F, JE7507-7F, JE7507-8F, JE7507-9F, JE7507-10F, JE7507-11F, JE7507-12F, JE7507-13F, JE7507-14F, JE7507-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JE7507
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241 Methods: SW846 6020B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/17/25

Metal	JE7452-1 Original	MSD	Spikelot MP6020AQ3%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	0.045	78.1	80	97.6	2.6	20
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP53241: JE7507-1F, JE7507-2F, JE7507-3F, JE7507-4F, JE7507-5F, JE7507-7F, JE7507-8F, JE7507-9F, JE7507-10F, JE7507-11F, JE7507-12F, JE7507-13F, JE7507-14F, JE7507-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE7507
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 03/17/25

Metal	BSP Result	Spikelot MP6020AQ3%	Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	75.1	80	93.9	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP53241: JE7507-1F, JE7507-2F, JE7507-3F, JE7507-4F, JE7507-5F, JE7507-7F, JE7507-8F, JE7507-9F, JE7507-10F, JE7507-11F, JE7507-12F, JE7507-13F, JE7507-14F, JE7507-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE7507
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53241 Methods: SW846 6020B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/17/25

Metal	JE7452-1 Original	SDL 2:10	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	0.0446	0.00	100.0(a)	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP53241: JE7507-1F, JE7507-2F, JE7507-3F, JE7507-4F, JE7507-5F, JE7507-7F, JE7507-8F, JE7507-9F, JE7507-10F, JE7507-11F, JE7507-12F, JE7507-13F, JE7507-14F, JE7507-16F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Terraphase Engineering Inc.

BDH Philadelphia Refinery, PA

P044.001.003 PO#P044.001.003

SGS Job Number: JE9509

Sampling Dates: 04/14/25 - 04/15/25



Report to:

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Total number of pages in report: **117**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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SGS North America Inc.

Sample Summary

Terraphase Engineering Inc.

Job No: JE9509

BDH Philadelphia Refinery, PA
Project No: P044.001.003 PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies:							
Organics ND = Not detected above the MDL							
JE9509-1	04/14/25	14:30	SC	04/15/25	AQ	Ground Water	C-142-250414
JE9509-1F	04/14/25	14:30	SC	04/15/25	AQ	Groundwater Filtered	C-142-250414
JE9509-2	04/14/25	15:00	SC	04/15/25	AQ	Ground Water	C-148-250414
JE9509-2F	04/14/25	15:00	SC	04/15/25	AQ	Groundwater Filtered	C-148-250414
JE9509-3	04/14/25	13:30	SC	04/15/25	AQ	Ground Water	C-153-250414
JE9509-3F	04/14/25	13:30	SC	04/15/25	AQ	Groundwater Filtered	C-153-250414
JE9509-4	04/14/25	12:45	SC	04/15/25	AQ	Ground Water	C-155-250414
JE9509-4F	04/14/25	12:45	SC	04/15/25	AQ	Groundwater Filtered	C-155-250414
JE9509-5	04/14/25	10:35	SC	04/15/25	AQ	Ground Water	C-166-250414
JE9509-5F	04/14/25	10:35	SC	04/15/25	AQ	Groundwater Filtered	C-166-250414
JE9509-6	04/14/25	11:55	SC	04/15/25	AQ	Ground Water	C-64-250414
JE9509-6F	04/14/25	11:55	SC	04/15/25	AQ	Groundwater Filtered	C-64-250414

Sample Summary
(continued)

Terraphase Engineering Inc.

Job No: JE9509

BDH Philadelphia Refinery, PA
Project No: P044.001.003 PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE9509-7	04/14/25	11:12	SC	04/15/25	AQ	Ground Water	C-65-250414
JE9509-7F	04/14/25	11:12	SC	04/15/25	AQ	Groundwater Filtered	C-65-250414
JE9509-8	04/14/25	15:35	SC	04/15/25	AQ	Ground Water	C-97-250414
JE9509-8F	04/14/25	15:35	SC	04/15/25	AQ	Groundwater Filtered	C-97-250414
JE9509-9	04/14/25	12:10	SC	04/15/25	AQ	Field Blank Water	FB-250414-1
JE9509-9F	04/14/25	12:10	SC	04/15/25	AQ	Field Blank Filtered	FB-250414-1
JE9509-10	04/14/25	07:00	SC	04/15/25	AQ	Trip Blank Water	TB-250414-1
JE9509-11	04/14/25	15:05	SC	04/15/25	AQ	Ground Water	C-148-250414D
JE9509-11F	04/14/25	15:05	SC	04/15/25	AQ	Groundwater Filtered	C-148-250414D
JE9509-12	04/15/25	09:50	SC	04/15/25	AQ	Ground Water	C-161-250415
JE9509-12F	04/15/25	09:50	SC	04/15/25	AQ	Groundwater Filtered	C-161-250415
JE9509-13	04/15/25	09:45	SC	04/15/25	AQ	Ground Water	C-146-250415
JE9509-13F	04/15/25	09:45	SC	04/15/25	AQ	Groundwater Filtered	C-146-250415

Sample Summary
(continued)

Terraphase Engineering Inc.

Job No: JE9509

BDH Philadelphia Refinery, PA
Project No: P044.001.003 PO#P044.001.003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JE9509-14	04/15/25	11:15	SC	04/15/25	AQ	Ground Water	C-150-250415
JE9509-14F	04/15/25	11:15	SC	04/15/25	AQ	Groundwater Filtered	C-150-250415
JE9509-15	04/15/25	10:45	SC	04/15/25	AQ	Ground Water	C-152-250415
JE9509-15F	04/15/25	10:45	SC	04/15/25	AQ	Groundwater Filtered	C-152-250415
JE9509-16	04/15/25	12:50	SC	04/15/25	AQ	Ground Water	C-169-250415
JE9509-16F	04/15/25	12:50	SC	04/15/25	AQ	Groundwater Filtered	C-169-250415
JE9509-17	04/15/25	10:40	SC	04/15/25	AQ	Field Blank Water	FB-250415-2
JE9509-17F	04/15/25	10:40	SC	04/15/25	AQ	Field Blank Filtered	FB-250415-2

Summary of Hits

Job Number: JE9509
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 04/14/25 thru 04/15/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE9509-1	**C-142-250414**					
Anthracene		0.0421 J	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-1F	**C-142-250414**					
No hits reported in this sample.						
JE9509-2	**C-148-250414**					
Benzene		45.4	0.50	0.43	ug/l	SW846 8260D
Ethylbenzene		0.82 J	1.0	0.60	ug/l	SW846 8260D
Isopropylbenzene		29.2	1.0	0.65	ug/l	SW846 8260D
Methyl Tert Butyl Ether		0.53 J	1.0	0.51	ug/l	SW846 8260D
Toluene		4.3	1.0	0.49	ug/l	SW846 8260D
Xylene (total)		5.3	1.0	0.59	ug/l	SW846 8260D
Benzo(a)anthracene		0.0318 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0286 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0414	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.102	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.266	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-2F	**C-148-250414**					
No hits reported in this sample.						
JE9509-3	**C-153-250414**					
Benzene		1.0	0.50	0.43	ug/l	SW846 8260D
Isopropylbenzene		2.9	1.0	0.65	ug/l	SW846 8260D
Xylene (total)		1.1	1.0	0.59	ug/l	SW846 8260D
Anthracene [a]		0.188	0.16	0.080	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene [a]		0.0599 J	0.080	0.048	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene [a]		0.106	0.080	0.048	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene [a]		0.110	0.080	0.048	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [a]		0.247	0.16	0.080	ug/l	SW846 8270E BY SIM
Chrysene [a]		0.0922 J	0.16	0.080	ug/l	SW846 8270E BY SIM
Fluorene [a]		0.122 J	0.16	0.080	ug/l	SW846 8270E BY SIM
Phenanthrene [a]		0.277	0.16	0.080	ug/l	SW846 8270E BY SIM
Pyrene [a]		0.309	0.16	0.080	ug/l	SW846 8270E BY SIM
JE9509-3F	**C-153-250414**					
No hits reported in this sample.						

Summary of Hits

Job Number: JE9509
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 04/14/25 thru 04/15/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE9509-4	**C-155-250414**					
No hits reported in this sample.						
JE9509-4F	**C-155-250414**					
No hits reported in this sample.						
JE9509-5	**C-166-250414**					
Anthracene		0.129	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0322 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0450	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0852	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [b]		0.0782 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.121	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.131	0.080	0.040	ug/l	SW846 8270E BY SIM
Naphthalene		0.0931	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.164	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.214	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-5F	**C-166-250414**					
Lead		2.1	1.0		ug/l	SW846 6020B
JE9509-6	**C-64-250414**					
Isopropylbenzene [c]		5.1	5.0	3.2	ug/l	SW846 8260D
Anthracene		0.0912	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0866	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.135	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.136	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [b]		0.166	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.219	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.257	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.529	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-6F	**C-64-250414**					
No hits reported in this sample.						
JE9509-7	**C-65-250414**					
Anthracene		0.0529 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.0558 J	0.080	0.040	ug/l	SW846 8270E BY SIM

Summary of Hits

Job Number: JE9509
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 04/14/25 thru 04/15/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE9509-7F	**C-65-250414**					
No hits reported in this sample.						
JE9509-8	**C-97-250414**					
Isopropylbenzene		3.5	1.0	0.65	ug/l	SW846 8260D
Anthracene		0.131	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0715	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0860	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.115	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [b]		0.0482 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.0980	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.283	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.147	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.818	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-8F	**C-97-250414**					
No hits reported in this sample.						
JE9509-9	**FB-250414-1**					
No hits reported in this sample.						
JE9509-9F	**FB-250414-1**					
No hits reported in this sample.						
JE9509-10	**TB-250414-1**					
No hits reported in this sample.						
JE9509-11	**C-148-250414D**					
Benzene		43.2	0.50	0.43	ug/l	SW846 8260D
Ethylbenzene		0.75 J	1.0	0.60	ug/l	SW846 8260D
Isopropylbenzene		27.1	1.0	0.65	ug/l	SW846 8260D
Toluene		4.1	1.0	0.49	ug/l	SW846 8260D
Xylene (total)		4.8	1.0	0.59	ug/l	SW846 8260D
Benzo(a)anthracene		0.0281 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0268 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.0837	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.221	0.080	0.040	ug/l	SW846 8270E BY SIM

Summary of Hits

Job Number: JE9509
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 04/14/25 thru 04/15/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE9509-11F	**C-148-250414D**					
No hits reported in this sample.						
JE9509-12	**C-161-250415**					
Ethylbenzene		4.8	1.0	0.60	ug/l	SW846 8260D
Isopropylbenzene		42.1	1.0	0.65	ug/l	SW846 8260D
1,2,4-Trimethylbenzene		46.6	2.0	1.0	ug/l	SW846 8260D
1,3,5-Trimethylbenzene		16.6	2.0	1.0	ug/l	SW846 8260D
Xylene (total)		10.5	1.0	0.59	ug/l	SW846 8260D
Anthracene		0.161	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.126	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.109	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.142	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [b]		0.0555 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.195	0.080	0.040	ug/l	SW846 8270E BY SIM
Naphthalene		0.0976	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.0447 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.526	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-12F	**C-161-250415**					
No hits reported in this sample.						
JE9509-13	**C-146-250415**					
Isopropylbenzene		2.6	1.0	0.65	ug/l	SW846 8260D
Anthracene		0.106	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0610	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.107	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.122	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(g,h,i)perylene [b]		0.0635 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Chrysene		0.172	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.0452 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.0634 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.780	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-13F	**C-146-250415**					
No hits reported in this sample.						

Summary of Hits

Job Number: JE9509
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 04/14/25 thru 04/15/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE9509-14	**C-150-250415**					
Benzene		8.5	0.50	0.43	ug/l	SW846 8260D
Isopropylbenzene		6.6	1.0	0.65	ug/l	SW846 8260D
Toluene		0.96 J	1.0	0.49	ug/l	SW846 8260D
Anthracene		0.169	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0331 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0306 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0363 J	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.0626 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		1.18	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene		0.351	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.278	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-14F	**C-150-250415**					
No hits reported in this sample.						
JE9509-15	**C-152-250415**					
Benzene		0.94	0.50	0.43	ug/l	SW846 8260D
Isopropylbenzene		46.3	1.0	0.65	ug/l	SW846 8260D
1,2,4-Trimethylbenzene		13.8	2.0	1.0	ug/l	SW846 8260D
1,3,5-Trimethylbenzene		5.5	2.0	1.0	ug/l	SW846 8260D
Xylene (total)		3.7	1.0	0.59	ug/l	SW846 8260D
Anthracene		0.126	0.080	0.040	ug/l	SW846 8270E BY SIM
Benzo(a)anthracene		0.0975	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(a)pyrene		0.0470	0.040	0.024	ug/l	SW846 8270E BY SIM
Benzo(b)fluoranthene		0.0573	0.040	0.024	ug/l	SW846 8270E BY SIM
Chrysene		0.112	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene		0.104	0.080	0.040	ug/l	SW846 8270E BY SIM
Pyrene		0.480	0.080	0.040	ug/l	SW846 8270E BY SIM
JE9509-15F	**C-152-250415**					
Lead		2.6	1.0		ug/l	SW846 6020B
JE9509-16	**C-169-250415**					
Benzene		1.6	0.50	0.43	ug/l	SW846 8260D
Ethylbenzene		4.8	1.0	0.60	ug/l	SW846 8260D
Isopropylbenzene		30.4	1.0	0.65	ug/l	SW846 8260D
1,2,4-Trimethylbenzene		3.3	2.0	1.0	ug/l	SW846 8260D
Xylene (total)		7.1	1.0	0.59	ug/l	SW846 8260D
Anthracene [a]		0.0908 J	0.16	0.080	ug/l	SW846 8270E BY SIM

Summary of Hits

Job Number: JE9509
Account: Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA
Collected: 04/14/25 thru 04/15/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Naphthalene [a]		0.165	0.16	0.080	ug/l	SW846 8270E BY SIM

JE9509-16F **C-169-250415**

No hits reported in this sample.

JE9509-17 **FB-250415-2**

No hits reported in this sample.

JE9509-17F **FB-250415-2**

No hits reported in this sample.

(a) Dilution required due to matrix interference.
(b) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.
(c) Dilution required due to high concentration of non-target compound.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	C-142-250414		
Lab Sample ID:	JE9509-1	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014485.D	1	04/18/25 17:50	JN	n/a	n/a	V2S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	101%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-142-250414		
Lab Sample ID:	JE9509-1	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696296.D	1	04/19/25 14:39	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0421	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%		15-110%
4165-62-2	Phenol-d5	34%		12-110%
118-79-6	2,4,6-Tribromophenol	98%		32-143%
4165-60-0	Nitrobenzene-d5	74%		29-124%
321-60-8	2-Fluorobiphenyl	67%		23-122%
1718-51-0	Terphenyl-d14	72%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-142-250414		
Lab Sample ID:	JE9509-1	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54515.D	1	04/22/25 20:38	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%
3017-95-6	2-Bromo-1-chloropropane	103%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-142-250414		
Lab Sample ID:	JE9509-1F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-148-250414		
Lab Sample ID:	JE9509-2	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014527.D	1	04/21/25 16:36	JN	n/a	n/a	V2S381
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	45.4	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	0.82	1.0	0.60	ug/l	J
98-82-8	Isopropylbenzene	29.2	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.53	1.0	0.51	ug/l	J
108-88-3	Toluene	4.3	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	5.3	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-120%
17060-07-0	1,2-Dichloroethane-D4	109%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	103%		82-114%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414		
Lab Sample ID:	JE9509-2	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696297.D	1	04/19/25 15:06	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0318	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	0.0286	0.040	0.024	ug/l	J
205-99-2	Benzo(b)fluoranthene	0.0414	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.102	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.266	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		15-110%
4165-62-2	Phenol-d5	28%		12-110%
118-79-6	2,4,6-Tribromophenol	72%		32-143%
4165-60-0	Nitrobenzene-d5	68%		29-124%
321-60-8	2-Fluorobiphenyl	50%		23-122%
1718-51-0	Terphenyl-d14	45%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414		
Lab Sample ID:	JE9509-2	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54518.D	1	04/22/25 21:30	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	38 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.018	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%
3017-95-6	2-Bromo-1-chloropropane	103%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414		
Lab Sample ID:	JE9509-2F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-153-250414		
Lab Sample ID:	JE9509-3	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014507.D	1	04/21/25 12:17	JN	n/a	n/a	V2S381
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.0	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	2.9	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	1.1	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-153-250414		
Lab Sample ID:	JE9509-3	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4P696324.D	2	04/21/25 19:11	AC	04/17/25 17:15	OP62877A	E4P3787
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.188	0.16	0.080	ug/l	
56-55-3	Benzo(a)anthracene	0.0599	0.080	0.048	ug/l	J
50-32-8	Benzo(a)pyrene	0.106	0.080	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	0.110	0.080	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.247	0.16	0.080	ug/l	
218-01-9	Chrysene	0.0922	0.16	0.080	ug/l	J
86-73-7	Fluorene	0.122	0.16	0.080	ug/l	J
91-20-3	Naphthalene	ND	0.16	0.080	ug/l	
85-01-8	Phenanthrene	0.277	0.16	0.080	ug/l	
129-00-0	Pyrene	0.309	0.16	0.080	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		15-110%
4165-62-2	Phenol-d5	31%		12-110%
118-79-6	2,4,6-Tribromophenol	87%		32-143%
4165-60-0	Nitrobenzene-d5	73%		29-124%
321-60-8	2-Fluorobiphenyl	78%		23-122%
1718-51-0	Terphenyl-d14	67%		22-130%

(a) Dilution required due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-153-250414
Lab Sample ID: JE9509-3
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/14/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54519.D	1	04/22/25 21:47	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	104%		38-210%
3017-95-6	2-Bromo-1-chloropropane	100%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-153-250414		
Lab Sample ID:	JE9509-3F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-155-250414		
Lab Sample ID:	JE9509-4	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014477.D	1	04/18/25 16:03	JN	n/a	n/a	V2S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	111%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	106%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-155-250414		
Lab Sample ID:	JE9509-4	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696299.D	1	04/19/25 16:01	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		15-110%
4165-62-2	Phenol-d5	32%		12-110%
118-79-6	2,4,6-Tribromophenol	67%		32-143%
4165-60-0	Nitrobenzene-d5	68%		29-124%
321-60-8	2-Fluorobiphenyl	51%		23-122%
1718-51-0	Terphenyl-d14	54%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-155-250414		
Lab Sample ID:	JE9509-4	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54520.D	1	04/22/25 22:04	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	94%		38-210%
3017-95-6	2-Bromo-1-chloropropane	88%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-155-250414		
Lab Sample ID:	JE9509-4F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-166-250414		
Lab Sample ID:	JE9509-5	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014478.D	1	04/18/25 16:17	JN	n/a	n/a	V1S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	103%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-166-250414		
Lab Sample ID:	JE9509-5	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696300.D	1	04/19/25 16:28	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.129	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0322	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	0.0450	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0852	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0782	0.080	0.040	ug/l	J
218-01-9	Chrysene	0.121	0.080	0.040	ug/l	
86-73-7	Fluorene	0.131	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.0931	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.164	0.080	0.040	ug/l	
129-00-0	Pyrene	0.214	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		15-110%
4165-62-2	Phenol-d5	35%		12-110%
118-79-6	2,4,6-Tribromophenol	89%		32-143%
4165-60-0	Nitrobenzene-d5	85%		29-124%
321-60-8	2-Fluorobiphenyl	82%		23-122%
1718-51-0	Terphenyl-d14	72%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-166-250414
Lab Sample ID: JE9509-5
Matrix: AQ - Ground Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/14/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54521.D	1	04/22/25 22:21	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	102%		38-210%
3017-95-6	2-Bromo-1-chloropropane	106%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-166-250414		
Lab Sample ID:	JE9509-5F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	2.1	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-64-250414		
Lab Sample ID:	JE9509-6	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	1S014506.D	5	04/21/25 12:04	JN	n/a	n/a	V1S381
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	2.5	2.1	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	3.0	ug/l	
100-41-4	Ethylbenzene	ND	5.0	3.0	ug/l	
98-82-8	Isopropylbenzene	5.1	5.0	3.2	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	2.5	ug/l	
108-88-3	Toluene	ND	5.0	2.5	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	10	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	10	5.0	ug/l	
1330-20-7	Xylene (total)	ND	5.0	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	102%		82-114%

(a) Dilution required due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-64-250414		
Lab Sample ID:	JE9509-6	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696301.D	1	04/19/25 16:55	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0912	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0866	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.135	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.136	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.166	0.080	0.040	ug/l	
218-01-9	Chrysene	0.219	0.080	0.040	ug/l	
86-73-7	Fluorene	0.257	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.529	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		15-110%
4165-62-2	Phenol-d5	8% [b]		12-110%
118-79-6	2,4,6-Tribromophenol	67%		32-143%
4165-60-0	Nitrobenzene-d5	69%		29-124%
321-60-8	2-Fluorobiphenyl	60%		23-122%
1718-51-0	Terphenyl-d14	50%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.
(b) Outside control limits due to matrix interference as per prep log description.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-64-250414		
Lab Sample ID:	JE9509-6	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54522.D	1	04/22/25 22:38	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	108%		38-210%
3017-95-6	2-Bromo-1-chloropropane	103%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-64-250414		
Lab Sample ID:	JE9509-6F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-65-250414		
Lab Sample ID:	JE9509-7	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014479.D	1	04/18/25 16:31	JN	n/a	n/a	V2S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	107%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-65-250414
Lab Sample ID: JE9509-7
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/14/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696302.D	1	04/19/25 17:22	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0529	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.0558	0.080	0.040	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		15-110%
4165-62-2	Phenol-d5	34%		12-110%
118-79-6	2,4,6-Tribromophenol	91%		32-143%
4165-60-0	Nitrobenzene-d5	78%		29-124%
321-60-8	2-Fluorobiphenyl	75%		23-122%
1718-51-0	Terphenyl-d14	51%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-65-250414		
Lab Sample ID:	JE9509-7	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54523.D	1	04/22/25 22:55	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	105%		38-210%
3017-95-6	2-Bromo-1-chloropropane	98%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-65-250414		
Lab Sample ID:	JE9509-7F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-97-250414		
Lab Sample ID:	JE9509-8	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014468.D	1	04/18/25 13:57	JN	n/a	n/a	V1S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	3.5	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-97-250414
Lab Sample ID: JE9509-8
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/14/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696303.D	1	04/19/25 17:50	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.131	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0715	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0860	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.115	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0482	0.080	0.040	ug/l	J
218-01-9	Chrysene	0.0980	0.080	0.040	ug/l	
86-73-7	Fluorene	0.283	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.147	0.080	0.040	ug/l	
129-00-0	Pyrene	0.818	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%		15-110%
4165-62-2	Phenol-d5	33%		12-110%
118-79-6	2,4,6-Tribromophenol	86%		32-143%
4165-60-0	Nitrobenzene-d5	79%		29-124%
321-60-8	2-Fluorobiphenyl	73%		23-122%
1718-51-0	Terphenyl-d14	49%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-97-250414		
Lab Sample ID:	JE9509-8	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54524.D	1	04/22/25 23:12	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	38 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%
3017-95-6	2-Bromo-1-chloropropane	103%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-97-250414		
Lab Sample ID:	JE9509-8F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FB-250414-1		
Lab Sample ID:	JE9509-9	**Date Sampled:**	04/14/25
Matrix:	AQ - Field Blank Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014455.D	1	04/18/25 11:00	JN	n/a	n/a	V2S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-250414-1
Lab Sample ID: JE9509-9
Matrix: AQ - Field Blank Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/14/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696292.D	1	04/19/25 12:50	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	71%		15-110%
4165-62-2	Phenol-d5	49%		12-110%
118-79-6	2,4,6-Tribromophenol	125%		32-143%
4165-60-0	Nitrobenzene-d5	106%		29-124%
321-60-8	2-Fluorobiphenyl	101%		23-122%
1718-51-0	Terphenyl-d14	112%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-250414-1
Lab Sample ID: JE9509-9
Matrix: AQ - Field Blank Water
Method: SW846-8011 SW846 8011
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/14/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54525.D	1	04/22/25 23:29	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	108%		38-210%
3017-95-6	2-Bromo-1-chloropropane	109%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250414-1		
Lab Sample ID:	JE9509-9F	**Date Sampled:**	04/14/25
Matrix:	AQ - Field Blank Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TB-250414-1		
Lab Sample ID:	JE9509-10	**Date Sampled:**	04/14/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014456.D	1	04/18/25 11:14	JN	n/a	n/a	V1S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB-250414-1		
Lab Sample ID:	JE9509-10	**Date Sampled:**	04/14/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54526.D	1	04/22/25 23:47	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	109%		38-210%
3017-95-6	2-Bromo-1-chloropropane	103%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414D		
Lab Sample ID:	JE9509-11	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014508.D	1	04/21/25 12:30	JN	n/a	n/a	V1S381
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	43.2	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	0.75	1.0	0.60	ug/l	J
98-82-8	Isopropylbenzene	27.1	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	4.1	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	4.8	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	109%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414D		
Lab Sample ID:	JE9509-11	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696304.D	1	04/19/25 18:17	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0281	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0268	0.040	0.024	ug/l	J
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.0837	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.221	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%		15-110%
4165-62-2	Phenol-d5	25%		12-110%
118-79-6	2,4,6-Tribromophenol	59%		32-143%
4165-60-0	Nitrobenzene-d5	60%		29-124%
321-60-8	2-Fluorobiphenyl	42%		23-122%
1718-51-0	Terphenyl-d14	45%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414D		
Lab Sample ID:	JE9509-11	**Date Sampled:**	04/14/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54529.D	1	04/23/25 00:38	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	102%		38-210%
3017-95-6	2-Bromo-1-chloropropane	98%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-148-250414D		
Lab Sample ID:	JE9509-11F	**Date Sampled:**	04/14/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-161-250415		
Lab Sample ID:	JE9509-12	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014486.D	1	04/18/25 18:03	JN	n/a	n/a	V1S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	4.8	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	42.1	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	46.6	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	16.6	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	10.5	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	103%		80-120%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	110%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: C-161-250415
Lab Sample ID: JE9509-12
Matrix: AQ - Ground Water
Method: SW846 8270E BY SIM SW846 3510C
Project: BDH Philadelphia Refinery, PA

Date Sampled: 04/15/25
Date Received: 04/15/25
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696305.D	1	04/19/25 18:44	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.161	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.126	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.109	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.142	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0555	0.080	0.040	ug/l	J
218-01-9	Chrysene	0.195	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.0976	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.0447	0.080	0.040	ug/l	J
129-00-0	Pyrene	0.526	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		15-110%
4165-62-2	Phenol-d5	36%		12-110%
118-79-6	2,4,6-Tribromophenol	58%		32-143%
4165-60-0	Nitrobenzene-d5	79%		29-124%
321-60-8	2-Fluorobiphenyl	53%		23-122%
1718-51-0	Terphenyl-d14	73%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-161-250415		
Lab Sample ID:	JE9509-12	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54530.D	1	04/23/25 00:55	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	104%		38-210%
3017-95-6	2-Bromo-1-chloropropane	100%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-161-250415		
Lab Sample ID:	JE9509-12F	**Date Sampled:**	04/15/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-146-250415		
Lab Sample ID:	JE9509-13	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014487.D	1	04/18/25 18:16	JN	n/a	n/a	V2S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	2.6	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	110%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-146-250415		
Lab Sample ID:	JE9509-13	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696306.D	1	04/19/25 19:12	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.106	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0610	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.107	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.122	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	0.0635	0.080	0.040	ug/l	J
218-01-9	Chrysene	0.172	0.080	0.040	ug/l	
86-73-7	Fluorene	0.0452	0.080	0.040	ug/l	J
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.0634	0.080	0.040	ug/l	J
129-00-0	Pyrene	0.780	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		15-110%
4165-62-2	Phenol-d5	42%		12-110%
118-79-6	2,4,6-Tribromophenol	87%		32-143%
4165-60-0	Nitrobenzene-d5	102%		29-124%
321-60-8	2-Fluorobiphenyl	80%		23-122%
1718-51-0	Terphenyl-d14	81%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Estimated value, due to corresponding failure in the batch associated CCV.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-146-250415		
Lab Sample ID:	JE9509-13	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54531.D	1	04/23/25 01:13	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	102%		38-210%
3017-95-6	2-Bromo-1-chloropropane	98%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-146-250415		
Lab Sample ID:	JE9509-13F	**Date Sampled:**	04/15/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-150-250415		
Lab Sample ID:	JE9509-14	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014488.D	1	04/18/25 18:29	JN	n/a	n/a	V1S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	8.5	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	6.6	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	0.96	1.0	0.49	ug/l	J
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	110%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-150-250415		
Lab Sample ID:	JE9509-14	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696307.D	1	04/19/25 19:39	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.169	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0331	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	0.0306	0.040	0.024	ug/l	J
205-99-2	Benzo(b)fluoranthene	0.0363	0.040	0.024	ug/l	J
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.0626	0.080	0.040	ug/l	J
86-73-7	Fluorene	1.18	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.351	0.080	0.040	ug/l	
129-00-0	Pyrene	0.278	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		15-110%
4165-62-2	Phenol-d5	45%		12-110%
118-79-6	2,4,6-Tribromophenol	114%		32-143%
4165-60-0	Nitrobenzene-d5	112%		29-124%
321-60-8	2-Fluorobiphenyl	102%		23-122%
1718-51-0	Terphenyl-d14	76%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-150-250415		
Lab Sample ID:	JE9509-14	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54532.D	1	04/23/25 01:30	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	107%		38-210%
3017-95-6	2-Bromo-1-chloropropane	102%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-150-250415		
Lab Sample ID:	JE9509-14F	**Date Sampled:**	04/15/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-152-250415		
Lab Sample ID:	JE9509-15	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014505.D	1	04/21/25 11:51	JN	n/a	n/a	V2S381
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.94	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	46.3	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	13.8	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	5.5	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	3.7	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	95%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	108%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-152-250415		
Lab Sample ID:	JE9509-15	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696308.D	1	04/19/25 20:06	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.126	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	0.0975	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	0.0470	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	0.0573	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	0.112	0.080	0.040	ug/l	
86-73-7	Fluorene	0.104	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	0.480	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	32%		15-110%
4165-62-2	Phenol-d5	22%		12-110%
118-79-6	2,4,6-Tribromophenol	48%		32-143%
4165-60-0	Nitrobenzene-d5	56%		29-124%
321-60-8	2-Fluorobiphenyl	54%		23-122%
1718-51-0	Terphenyl-d14	67%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-152-250415		
Lab Sample ID:	JE9509-15	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54533.D	1	04/23/25 01:47	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	35 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	0.017	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	106%		38-210%
3017-95-6	2-Bromo-1-chloropropane	100%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-152-250415		
Lab Sample ID:	JE9509-15F	**Date Sampled:**	04/15/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	2.6	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	C-169-250415		
Lab Sample ID:	JE9509-16	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1S014504.D	1	04/21/25 11:38	JN	n/a	n/a	V1S381
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.6	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	4.8	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	30.4	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	3.3	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	7.1	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		80-120%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	107%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-169-250415		
Lab Sample ID:	JE9509-16	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z172551.D	2	04/22/25 20:29	AC	04/17/25 17:15	OP62877A	EZ8540
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0908	0.16	0.080	ug/l	J
56-55-3	Benzo(a)anthracene	ND	0.080	0.048	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.080	0.048	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.080	0.048	ug/l	
191-24-2	Benzo(g,h,i)perylene [b]	ND	0.16	0.080	ug/l	
218-01-9	Chrysene	ND	0.16	0.080	ug/l	
86-73-7	Fluorene	ND	0.16	0.080	ug/l	
91-20-3	Naphthalene	0.165	0.16	0.080	ug/l	
85-01-8	Phenanthrene	ND	0.16	0.080	ug/l	
129-00-0	Pyrene	ND	0.16	0.080	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		15-110%
4165-62-2	Phenol-d5	69%		12-110%
118-79-6	2,4,6-Tribromophenol	95%		32-143%
4165-60-0	Nitrobenzene-d5	96%		29-124%
321-60-8	2-Fluorobiphenyl	73%		23-122%
1718-51-0	Terphenyl-d14	82%		22-130%

(a) Dilution required due to matrix interference.
(b) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-169-250415		
Lab Sample ID:	JE9509-16	**Date Sampled:**	04/15/25
Matrix:	AQ - Ground Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54534.D	1	04/23/25 02:04	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	36 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	90%		38-210%
3017-95-6	2-Bromo-1-chloropropane	86%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	C-169-250415		
Lab Sample ID:	JE9509-16F	**Date Sampled:**	04/15/25
Matrix:	AQ - Groundwater Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 1.0	1.0	ug/l	2	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FB-250415-2		
Lab Sample ID:	JE9509-17	**Date Sampled:**	04/15/25
Matrix:	AQ - Field Blank Water	**Date Received:**	04/15/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2S014457.D	1	04/18/25 11:27	JN	n/a	n/a	V2S380
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	105%		82-114%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250415-2		
Lab Sample ID:	JE9509-17	**Date Sampled:**	04/15/25
Matrix:	AQ - Field Blank Water	**Date Received:**	04/15/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P696293.D	1	04/19/25 13:17	KLS	04/17/25 17:15	OP62877A	E4P3786
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		15-110%
4165-62-2	Phenol-d5	38%		12-110%
118-79-6	2,4,6-Tribromophenol	98%		32-143%
4165-60-0	Nitrobenzene-d5	86%		29-124%
321-60-8	2-Fluorobiphenyl	77%		23-122%
1718-51-0	Terphenyl-d14	112%		22-130%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250415-2		
Lab Sample ID:	JE9509-17	**Date Sampled:**	04/15/25
Matrix:	AQ - Field Blank Water	**Date Received:**	04/15/25
Method:	SW846-8011 SW846 8011	**Percent Solids:**	n/a
Project:	BDH Philadelphia Refinery, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7G54535.D	1	04/23/25 02:22	RK	04/22/25 10:30	OP62976	G7G1887
Run #2							

	Initial Volume	Final Volume
Run #1	37 ml	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3017-95-6	2-Bromo-1-chloropropane	111%		38-210%
3017-95-6	2-Bromo-1-chloropropane	109%		38-210%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-250415-2		
Lab Sample ID:	JE9509-17F	**Date Sampled:**	04/15/25
Matrix:	AQ - Field Blank Filtered	**Date Received:**	04/15/25
		Percent Solids:	n/a
Project:	BDH Philadelphia Refinery, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lead	< 0.50	0.50	ug/l	1	04/18/25	04/18/25	NV	SW846 6020B [1]	SW846 3010A [2]

(1) Instrument QC Batch: MA58345
(2) Prep QC Batch: MP53922

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

GW
FB
TB

JE9509

Page 1 of 2

FED-EX Tracking #:
Bottle Order Control #: FREM-VP-04825-27
SGS Quote #:
SGS Job #:

Client / Reporting Information

Company Name: Terraphase
Street Address: 100 Canal Pointe Blvd
City / State / Zip: Princeton, NJ
Project Contact / E-mail: Nick.Scala@terraphase.com
Phone #: 609-236-8171 ex. 92
Sampler(s) Name(s) / Phone #: S.Chubb & M.Mowrer SC

Project Information

Project Name: BDH - No. 3 Separator
Street:
City / State: Phila., PA
Project #: P044.001.003
Client Purchase Order #: P044.001.003
Project Manager: Nick Scala

Billing Information (If different from Report to)
Company Name: same as client
Street Address:
City / State / Zip:
Attention:

Analysis Requested

VOC Shortlist 8260
SVOC shortlist 8270
Dissolved Lead

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	# of bottles	Number of Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)	LAB USE ONLY
1	C-142-250414		4/14/25	1430	SC	G	N	GW	8	5		1		2				X X X	
2	C-148-250414			1500	MM	G				5		1		2				X X X	
3	C-153-250414			1330	MM	G				5		1		2				X X X	
4	C-155-250414			1245	SC	G				5		1		2				X X X	
5	C-166-250414			1035	MM	G				5		1		2				X X X	
	~~C-164~~ SC									5		1		2				X X X	
6	C-64-250414			1155	MM	G				5		1		2				X X X	
7	C-65-250414			1112	SC	G				5		1		2				X X X	
8	C-97-250414			1535	SC	G		↓	↓	5		1		2				X X X	
9	FB-250414-1			1210	SC	FB		FB	8	5		1		2				X X X	
10	TB-250414-1			0700	SC	TB		TB	4	4								X	
11	C-148-250414D		↓	1505	MM	G	↓	GW	8	5		1		2				X X X	

Turn Around Time (Business Days)

- [ ] 10 Business Days
- [x] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage

Approved By (SGS PM) / Date:
Standard TEI TAT

* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [x] EDD Format Equis

8270 LVI

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

X-analyze
Please send EDD to
EDD@terraphase.com

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by	Date / Time	Received By
1	Scott Chubb	4/15/25 1415	2 Robert Price
3			4
5			

	Relinquished by	Date / Time	Received By
2	Robert Price	4/15/25 1615	2 Jamie Burns
4			4

Custody Seal # ☐ Intact ☐ Not Intact ☐ Absent

Therm ID: ☐ On Ice ☐ See Sample Receipt Summary
Cooler Temp. °C: 4.0 3.6 3.5 IR-50

EHSA-QAC-0023-06 Rev.Date:9/24/2024

Initial Assessment ABA
Label Verification

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

JE9509

FED-EX Tracking # | Bottle Order Control #
SGS Quote # | SGS Job #

Client / Reporting Information

Company Name: Terraphase
Street Address: 100 Canal Pointe Blvd
City: Princeton State: NJ Zip:
Project Contact: Nicl.Scala@terraphase.com E-mail:
Phone #: 609-236-8171 ex 92
Sampler(s) Name(s): S.Chubb & M. Mowrer Phone #:

Project Information

Project Name: BDII - No 3 Separator
Street:
City: State:
Project #:
Client Purchase Order #: A049.001.002
Project Manager:

Billing Information (If different from Report to)

Company Name: Same as client
Street Address:
City: State: Zip:
Attention:

Analysis Requested

VOC shortlist 8260 (8W)
SVOC shortlist 8270
dissolved lead

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	Number of Bottles: # of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)	LAB USE ONLY
12	C-161-250415		4/15/25	950	SC	G		GW	8	5		1		2				X X X	
13	C-146-250415			945	MM	G		GW	8	5		1		2				X X X	
14	C-150-250415			1115	SC	G		GW	8	5		1		2				X X X	
15	C-152-250415			1045	SC	G		GW	8	5		1		2				X X X	
16	C-169-250415			1250	SC	G		GW	8	5		1		2				X X X	
17	FB-250415-2			1040	SC	FB		FB	8	5		1		2				X X X	

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [x] 5 Business Days — Standard
- [ ] 3 Business Days* — RUSH
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage
* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria ____
- [ ] CT RCP Criteria ____
- [ ] State Forms
- [x] EDD Format equis

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

- please send EDD to EDD@terraphase.com

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1	[signature]	4/15/25 1455	[signature]
2	[signature]	4/15/25 1652	[signature]
3			[signature]
4			
5			

Custody Seal # | Intact | Not Intact | Absent

Therm ID: | See Sample Receipt Summary | On Ice | Cooler Temp. °C

EHSA-QAC-0023-06 Rev.Date:9/24/2024

SGS Sample Receipt Summary

Job Number: JE9509 **Client:** TERRAPHASE ENGINEERING INC. **Project:** BDH PHILADELPHIA REFINERY, PA

Date / Time Received: 4/15/2025 4:25:00 PM **Delivery Method:** IMP **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (4.0); Cooler 2: (3.6); Cooler 3: (3.5);

Cooler Temps (Corrected) °C: Cooler 1: (4.4); Cooler 2: (4.0); Cooler 3: (3.9);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	3		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE9509: Chain of Custody
Page 3 of 3

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2S380-MB	2S014453.D	1	04/18/25	JN	n/a	n/a	V2S380

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-1, JE9509-4, JE9509-7, JE9509-9, JE9509-13, JE9509-17

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	103%	80-120%
2037-26-5	Toluene-D8	98%	80-120%
460-00-4	4-Bromofluorobenzene	103%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1S380-MB	1S014454.D	1	04/18/25	JN	n/a	n/a	V1S380

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-5, JE9509-8, JE9509-10, JE9509-12, JE9509-14

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	105%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	104%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2S381-MB	2S014501.D	1	04/21/25	JN	n/a	n/a	V2S381

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-2, JE9509-3, JE9509-15

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	115%	80-120%
17060-07-0	1,2-Dichloroethane-D4	112%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	102%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1S381-MB	1S014502.D	1	04/21/25	JN	n/a	n/a	V1S381

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-6, JE9509-11, JE9509-16

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	110%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	100%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1S380-BS	1S014450.D	1	04/18/25	JN	n/a	n/a	V1S380

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-5, JE9509-8, JE9509-10, JE9509-12, JE9509-14

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	42.8	86	80-115
107-06-2	1,2-Dichloroethane	50	40.9	82	73-117
100-41-4	Ethylbenzene	50	41.3	83	78-116
98-82-8	Isopropylbenzene	50	43.5	87	78-121
1634-04-4	Methyl Tert Butyl Ether	50	47.3	95	76-123
108-88-3	Toluene	50	41.8	84	79-116
95-63-6	1,2,4-Trimethylbenzene	50	44.5	89	78-120
108-67-8	1,3,5-Trimethylbenzene	50	44.8	90	77-120
1330-20-7	Xylene (total)	150	130	87	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	80-120%
17060-07-0	1,2-Dichloroethane-D4	100%	80-120%
2037-26-5	Toluene-D8	100%	80-120%
460-00-4	4-Bromofluorobenzene	106%	82-114%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2S380-BS	2S014451.D	1	04/18/25	JN	n/a	n/a	V2S380

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-1, JE9509-4, JE9509-7, JE9509-9, JE9509-13, JE9509-17

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	44.6	89	80-115
107-06-2	1,2-Dichloroethane	50	41.9	84	73-117
100-41-4	Ethylbenzene	50	42.3	85	78-116
98-82-8	Isopropylbenzene	50	45.2	90	78-121
1634-04-4	Methyl Tert Butyl Ether	50	48.9	98	76-123
108-88-3	Toluene	50	43.5	87	79-116
95-63-6	1,2,4-Trimethylbenzene	50	46.2	92	78-120
108-67-8	1,3,5-Trimethylbenzene	50	46.0	92	77-120
1330-20-7	Xylene (total)	150	131	87	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	80-120%
17060-07-0	1,2-Dichloroethane-D4	95%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	107%	82-114%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1S381-BS	1S014498.D	1	04/21/25	JN	n/a	n/a	V1S381

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-6, JE9509-11, JE9509-16

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	46.0	92	80-115
107-06-2	1,2-Dichloroethane	50	47.8	96	73-117
100-41-4	Ethylbenzene	50	44.6	89	78-116
98-82-8	Isopropylbenzene	50	47.9	96	78-121
1634-04-4	Methyl Tert Butyl Ether	50	53.6	107	76-123
108-88-3	Toluene	50	44.1	88	79-116
95-63-6	1,2,4-Trimethylbenzene	50	48.9	98	78-120
108-67-8	1,3,5-Trimethylbenzene	50	49.1	98	77-120
1330-20-7	Xylene (total)	150	139	93	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	105%	80-120%
17060-07-0	1,2-Dichloroethane-D4	106%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	107%	82-114%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2S381-BS	2S014499.D	1	04/21/25	JN	n/a	n/a	V2S381

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-2, JE9509-3, JE9509-15

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	47.6	95	80-115
107-06-2	1,2-Dichloroethane	50	48.7	97	73-117
100-41-4	Ethylbenzene	50	46.0	92	78-116
98-82-8	Isopropylbenzene	50	48.9	98	78-121
1634-04-4	Methyl Tert Butyl Ether	50	55.9	112	76-123
108-88-3	Toluene	50	46.6	93	79-116
95-63-6	1,2,4-Trimethylbenzene	50	49.2	98	78-120
108-67-8	1,3,5-Trimethylbenzene	50	48.8	98	77-120
1330-20-7	Xylene (total)	150	141	94	80-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	103%	80-120%
2037-26-5	Toluene-D8	101%	80-120%
460-00-4	4-Bromofluorobenzene	108%	82-114%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE9554-1MS	2S014461.D	4	04/18/25	JN	n/a	n/a	V2S380
JE9554-1MSD	2S014463.D	4	04/18/25	JN	n/a	n/a	V2S380
JE9554-1 [a]	2S014467.D	4	04/18/25	JN	n/a	n/a	V2S380

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-1, JE9509-4, JE9509-7, JE9509-9, JE9509-13, JE9509-17

CAS No.	Compound	JE9554-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		200	162	81	200	155	78	4	49-137/12
107-06-2	1,2-Dichloroethane	ND		200	160	80	200	150	75	6	66-120/13
100-41-4	Ethylbenzene	ND		200	157	79	200	151	76	4	37-144/12
98-82-8	Isopropylbenzene	ND		200	166	83	200	158	79	5	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		200	184	92	200	180	90	2	66-124/12
108-88-3	Toluene	ND		200	161	81	200	154	77	4	46-139/12
95-63-6	1,2,4-Trimethylbenzene	ND		200	168	84	200	166	83	1	39-147/13
108-67-8	1,3,5-Trimethylbenzene	ND		200	166	83	200	163	82	2	56-136/14
1330-20-7	Xylene (total)	ND		600	483	81	600	459	77	5	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE9554-1	Limits
1868-53-7	Dibromofluoromethane	96%	96%	101%	80-120%
17060-07-0	1,2-Dichloroethane-D4	101%	98%	107%	80-120%
2037-26-5	Toluene-D8	100%	100%	99%	80-120%
460-00-4	4-Bromofluorobenzene	107%	109%	105%	82-114%

(a) Preliminary Data.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE9474-1MS	1S014462.D	20	04/18/25	JN	n/a	n/a	V1S380
JE9474-1MSD	1S014464.D	20	04/18/25	JN	n/a	n/a	V1S380
JE9474-1 [a]	1S014458.D	20	04/18/25	JN	n/a	n/a	V1S380

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-5, JE9509-8, JE9509-10, JE9509-12, JE9509-14

CAS No.	Compound	JE9474-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		1000	765	77	1000	784	78	2	49-137/12
107-06-2	1,2-Dichloroethane	ND		1000	779	78	1000	786	79	1	66-120/13
100-41-4	Ethylbenzene	2540		1000	2630	9* [b]	1000	2650	11* [b]	1	37-144/12
98-82-8	Isopropylbenzene	133		1000	882	75	1000	880	75	0	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		1000	872	87	1000	899	90	3	66-124/12
108-88-3	Toluene	1050		1000	1560	51	1000	1610	56	3	46-139/12
95-63-6	1,2,4-Trimethylbenzene	3230		1000	3040	-19* [b]	1000	3060	-17* [b]	1	39-147/13
108-67-8	1,3,5-Trimethylbenzene	1050		1000	1520	47* [c]	1000	1510	46* [c]	1	56-136/14
1330-20-7	Xylene (total)	12200	E	3000	11300	-30* [b]	3000	11400	-27* [b]	1	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE9474-1	Limits
1868-53-7	Dibromofluoromethane	98%	101%	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	103%	104%	105%	80-120%
2037-26-5	Toluene-D8	100%	100%	101%	80-120%
460-00-4	4-Bromofluorobenzene	109%	108%	108%	82-114%

(a) Dilution required due to high concentration of target compound.
(b) Outside control limits due to high level in sample relative to spike amount.
(c) Outside control limits due to matrix interference.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE9604-14MS	2S014509.D	20	04/21/25	JN	n/a	n/a	V2S381
JE9604-14MSD	2S014511.D	20	04/21/25	JN	n/a	n/a	V2S381
JE9604-14 [a]	2S014519.D	20	04/21/25	JN	n/a	n/a	V2S381

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-2, JE9509-3, JE9509-15

CAS No.	Compound	JE9604-14 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		1000	1020	102	1000	1010	101	1	49-137/12
107-06-2	1,2-Dichloroethane	ND		1000	1050	105	1000	984	98	6	66-120/13
100-41-4	Ethylbenzene	ND		1000	975	98	1000	955	96	2	37-144/12
98-82-8	Isopropylbenzene	ND		1000	1050	105	1000	1000	100	5	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		1000	1190	119	1000	1170	117	2	66-124/12
108-88-3	Toluene	ND		1000	988	99	1000	953	95	4	46-139/12
95-63-6	1,2,4-Trimethylbenzene	ND		1000	1060	106	1000	1030	103	3	39-147/13
108-67-8	1,3,5-Trimethylbenzene	ND		1000	1050	105	1000	1020	102	3	56-136/14
1330-20-7	Xylene (total)	ND		3000	3040	101	3000	2910	97	4	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE9604-14	Limits
1868-53-7	Dibromofluoromethane	107%	106%	111%	80-120%
17060-07-0	1,2-Dichloroethane-D4	106%	100%	104%	80-120%
2037-26-5	Toluene-D8	100%	101%	98%	80-120%
460-00-4	4-Bromofluorobenzene	108%	108%	102%	82-114%

(a) Dilution required due to high concentration of target compound.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JE9509-6MS	1S014510.D	5	04/21/25	JN	n/a	n/a	V1S381
JE9509-6MSD	1S014512.D	5	04/21/25	JN	n/a	n/a	V1S381
JE9509-6 [a]	1S014506.D	5	04/21/25	JN	n/a	n/a	V1S381

The QC reported here applies to the following samples: **Method:** SW846 8260D

JE9509-6, JE9509-11, JE9509-16

CAS No.	Compound	JE9509-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		250	249	100	250	252	101	1	49-137/12
107-06-2	1,2-Dichloroethane	ND		250	253	101	250	257	103	2	66-120/13
100-41-4	Ethylbenzene	ND		250	242	97	250	243	97	0	37-144/12
98-82-8	Isopropylbenzene	5.1		250	266	104	250	261	102	2	71-126/13
1634-04-4	Methyl Tert Butyl Ether	ND		250	293	117	250	299	120	2	66-124/12
108-88-3	Toluene	ND		250	244	98	250	244	98	0	46-139/12
95-63-6	1,2,4-Trimethylbenzene	ND		250	261	104	250	258	103	1	39-147/13
108-67-8	1,3,5-Trimethylbenzene	ND		250	261	104	250	262	105	0	56-136/14
1330-20-7	Xylene (total)	ND		750	762	102	750	761	101	0	38-147/12

CAS No.	Surrogate Recoveries	MS	MSD	JE9509-6	Limits
1868-53-7	Dibromofluoromethane	107%	109%	113%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	105%	106%	80-120%
2037-26-5	Toluene-D8	104%	103%	101%	80-120%
460-00-4	4-Bromofluorobenzene	106%	107%	102%	82-114%

(a) Dilution required due to high concentration of non-target compound.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V1S355-BFB
Lab File ID: 1S013355.D
Instrument ID: GCMS1S
Injection Date: 03/24/25
Injection Time: 18:40

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	43685	21.7		Pass
75	30.0 - 60.0% of mass 95	100685	50.1		Pass
95	Base peak, 100% relative abundance	201069	100.0		Pass
96	5.0 - 9.0% of mass 95	13192	6.56		Pass
173	Less than 2.0% of mass 174	2003	1.00	(1.26) [a]	Pass
174	50.0 - 120.0% of mass 95	158664	78.9		Pass
175	5.0 - 9.0% of mass 174	12001	5.97	(7.56) [a]	Pass
176	95.0 - 101.0% of mass 174	152947	76.1	(96.4) [a]	Pass
177	5.0 - 9.0% of mass 176	10486	5.22	(6.86) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1S355-IC355	1S013357.D	03/24/25	19:40	01:00	Initial cal 0.2
V1S355-IC355	1S013359.D	03/24/25	20:06	01:26	Initial cal 0.5
V1S355-IC355	1S013361.D	03/24/25	20:33	01:53	Initial cal 1
V1S355-IC355	1S013363.D	03/24/25	20:59	02:19	Initial cal 2
V1S355-IC355	1S013365.D	03/24/25	21:25	02:45	Initial cal 4
V1S355-IC355	1S013367.D	03/24/25	21:52	03:12	Initial cal 8
V1S355-IC355	1S013369.D	03/24/25	22:18	03:38	Initial cal 20
V1S355-ICC355	1S013371.D	03/24/25	22:44	04:04	Initial cal 50
V1S355-IC355	1S013373.D	03/24/25	23:11	04:31	Initial cal 100
V1S355-IC355	1S013375.D	03/24/25	23:37	04:57	Initial cal 200
V1S355-ICV355	1S013381.D	03/25/25	00:56	06:16	Initial cal verification 50
V1S355-ICV355	1S013383.D	03/25/25	01:22	06:42	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample: V2S355-BFB
Lab File ID: 2S013356.D
Instrument ID: GCMS2S
Injection Date: 03/24/25
Injection Time: 18:53

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	42416	21.5		Pass
75	30.0 - 60.0% of mass 95	99587	50.6		Pass
95	Base peak, 100% relative abundance	196939	100.0		Pass
96	5.0 - 9.0% of mass 95	12764	6.48		Pass
173	Less than 2.0% of mass 174	1394	0.71	(0.89) [a]	Pass
174	50.0 - 120.0% of mass 95	157248	79.8		Pass
175	5.0 - 9.0% of mass 174	12170	6.18	(7.74) [a]	Pass
176	95.0 - 101.0% of mass 174	153413	77.9	(97.6) [a]	Pass
177	5.0 - 9.0% of mass 176	10157	5.16	(6.62) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V2S355-IC355	2S013358.D	03/24/25	19:53	01:00	Initial cal 0.2
V2S355-IC355	2S013360.D	03/24/25	20:20	01:27	Initial cal 0.5
V2S355-IC355	2S013362.D	03/24/25	20:46	01:53	Initial cal 1
V2S355-IC355	2S013364.D	03/24/25	21:12	02:19	Initial cal 2
V2S355-IC355	2S013366.D	03/24/25	21:38	02:45	Initial cal 4
V2S355-IC355	2S013368.D	03/24/25	22:05	03:12	Initial cal 8
V2S355-IC355	2S013370.D	03/24/25	22:31	03:38	Initial cal 20
V2S355-ICC355	2S013372.D	03/24/25	22:57	04:04	Initial cal 50
V2S355-IC355	2S013374.D	03/24/25	23:24	04:31	Initial cal 100
V2S355-IC355	2S013376.D	03/24/25	23:50	04:57	Initial cal 200
V2S355-ICV355	2S013382.D	03/25/25	01:09	06:16	Initial cal verification 50
V2S355-ICV355	2S013384.D	03/25/25	01:35	06:42	Initial cal verification 50

Surrogate Recovery Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8260D **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE9509-1	2S014485.D	105	108	99	101
JE9509-2	2S014527.D	110	109	100	103
JE9509-3	2S014507.D	111	104	102	105
JE9509-4	2S014477.D	104	111	101	106
JE9509-5	1S014478.D	100	108	100	103
JE9509-6	1S014506.D	113	106	101	102
JE9509-7	2S014479.D	103	110	100	107
JE9509-8	1S014468.D	96	105	99	105
JE9509-9	2S014455.D	105	105	101	104
JE9509-10	1S014456.D	102	106	100	104
JE9509-11	1S014508.D	106	100	100	109
JE9509-12	1S014486.D	98	103	103	110
JE9509-13	2S014487.D	101	105	101	110
JE9509-14	1S014488.D	101	106	101	110
JE9509-15	2S014505.D	102	95	102	108
JE9509-16	1S014504.D	106	101	104	107
JE9509-17	2S014457.D	103	108	100	105
JE9474-1MS	1S014462.D	98	103	100	109
JE9474-1MSD	1S014464.D	101	104	100	108
JE9509-6MS	1S014510.D	107	105	104	106
JE9509-6MSD	1S014512.D	109	105	103	107
JE9554-1MS	2S014461.D	96	101	100	107
JE9554-1MSD	2S014463.D	96	98	100	109
JE9604-14MS	2S014509.D	107	106	100	108
JE9604-14MSD	2S014511.D	106	100	101	108
V1S380-BS	1S014450.D	99	100	100	106
V1S380-MB	1S014454.D	105	105	99	104
V1S381-BS	1S014498.D	105	106	99	107
V1S381-MB	1S014502.D	110	105	99	100
V2S380-BS	2S014451.D	95	95	99	107
V2S380-MB	2S014453.D	102	103	98	103
V2S381-BS	2S014499.D	104	103	101	108
V2S381-MB	2S014501.D	115	112	99	102

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	80-120%
S3 = Toluene-D8	80-120%

Surrogate Recovery Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8260D **Matrix:** AQ

Samples and QC shown here apply to the above method

Surrogate Compounds	Recovery Limits
S4 = 4-Bromofluorobenzene	82-114%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62877A-MB1	4P696290.D	1	04/19/25	KLS	04/17/25	OP62877A	E4P3786

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE9509-1, JE9509-2, JE9509-3, JE9509-4, JE9509-5, JE9509-6, JE9509-7, JE9509-8, JE9509-9, JE9509-11, JE9509-12, JE9509-13, JE9509-14, JE9509-15, JE9509-16, JE9509-17

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	58%	15-110%
4165-62-2	Phenol-d5	40%	12-110%
118-79-6	2,4,6-Tribromophenol	80%	32-143%
4165-60-0	Nitrobenzene-d5	79%	29-124%
321-60-8	2-Fluorobiphenyl	59%	23-122%
1718-51-0	Terphenyl-d14	97%	22-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62877A-BS12	4P696320.D	1	04/21/25	AC	04/17/25	OP62877A	E4P3787
OP62877A-BSD12	4P696295.D	1	04/19/25	KLS	04/17/25	OP62877A	E4P3786

The QC reported here applies to the following samples: **Method:** SW846 8270E BY SIM

JE9509-1, JE9509-2, JE9509-3, JE9509-4, JE9509-5, JE9509-6, JE9509-7, JE9509-8, JE9509-9, JE9509-11, JE9509-12, JE9509-13, JE9509-14, JE9509-15, JE9509-16, JE9509-17

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	0.8	0.688	86	0.388	49	56* [a]	40-125/32
56-55-3	Benzo(a)anthracene	0.8	0.505	63	0.403	50	22	38-132/31
50-32-8	Benzo(a)pyrene	0.8	0.588	74	0.310	39	62* [a]	31-110/37
205-99-2	Benzo(b)fluoranthene	0.8	0.658	82	0.635	79	4	31-113/37
191-24-2	Benzo(g,h,i)perylene	0.8	0.658	82	0.324	41	68* [a]	18-110/54
218-01-9	Chrysene	0.8	0.563	70	0.533	67	5	43-119/33
86-73-7	Fluorene	0.8	0.686	86	0.520	65	28	42-123/34
91-20-3	Naphthalene	0.8	0.572	72	0.398	50	36	30-114/40
85-01-8	Phenanthrene	0.8	0.740	93	0.549	69	30	45-125/31
129-00-0	Pyrene	0.8	0.674	84	0.483	60	33* [a]	48-125/29

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	63%	49%	15-110%
4165-62-2	Phenol-d5	45%	34%	12-110%
118-79-6	2,4,6-Tribromophenol	84%	76%	32-143%
4165-60-0	Nitrobenzene-d5	88%	76%	29-124%
321-60-8	2-Fluorobiphenyl	90%	52%	23-122%
1718-51-0	Terphenyl-d14	90%	107%	22-130%

(a) Analytical precision exceeds in-house control limits.

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	E4P3777-DFTPP	**Injection Date:**	04/10/25
Lab File ID:	4P696043.D	**Injection Time:**	10:36
Instrument ID:	GCMS4P		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	27185	50.2		Pass
68	Less than 2.0% of mass 69	47	0.09	(0.20) [a]	Pass
69	Mass 69 relative abundance	23885	44.1		Pass
70	Less than 2.0% of mass 69	88	0.16	(0.37) [a]	Pass
127	40.0 - 60.0% of mass 198	25402	46.9		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	54139	100.0		Pass
199	5.0 - 9.0% of mass 198	3618	6.68		Pass
275	10.0 - 30.0% of mass 198	10525	19.4		Pass
365	1.0 - 100.0% of mass 198	1186	2.19		Pass
441	Present, but less than mass 443	4230	7.81	(85.3) [b]	Pass
442	40.0 - 100.0% of mass 198	25885	47.8		Pass
443	17.0 - 23.0% of mass 442	4959	9.16	(19.2) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
E4P3777-IC3777	4P696044.D	04/10/25	10:51	00:15	Initial cal 0.002
E4P3777-IC3777	4P696045.D	04/10/25	11:21	00:45	Initial cal 0.004
E4P3777-IC3777	4P696046.D	04/10/25	11:50	01:14	Initial cal 0.01
E4P3777-IC3777	4P696047.D	04/10/25	12:20	01:44	Initial cal 0.02
E4P3777-IC3777	4P696048.D	04/10/25	12:52	02:16	Initial cal 0.04
E4P3777-IC3777	4P696049.D	04/10/25	13:23	02:47	Initial cal 0.1
E4P3777-ICC3777	4P696050.D	04/10/25	13:53	03:17	Initial cal 0.2
E4P3777-IC3777	4P696051.D	04/10/25	14:21	03:45	Initial cal 0.5
E4P3777-IC3777	4P696052.D	04/10/25	14:49	04:13	Initial cal 1
E4P3777-IC3777	4P696053.D	04/10/25	15:16	04:40	Initial cal 2
E4P3777-ICV3777	4P696054.D	04/10/25	15:43	05:07	Initial cal verification 0.2
E4P3777-ICV3777	4P696055.D	04/10/25	16:11	05:35	Initial cal verification 1
E4P3777-ICV3777	4P696057.D	04/11/25	09:22	22:46	Initial cal verification 0.5
E4P3778-CC3777	4P696059.D	04/11/25	10:31	23:55	Continuing cal 0.2
E4P3778-CC3777	4P696061.D	04/11/25	11:29	24:53	Continuing cal 0.01

Instrument Performance Check (DFTPP)

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	EZ8537-DFTPP	**Injection Date:**	04/16/25
Lab File ID:	Z172494.D	**Injection Time:**	17:10
Instrument ID:	GCMSZ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	34646	44.9		Pass
68	Less than 2.0% of mass 69	137	0.18	(0.37) [a]	Pass
69	Mass 69 relative abundance	36767	47.6		Pass
70	Less than 2.0% of mass 69	343	0.44	(0.93) [a]	Pass
127	40.0 - 60.0% of mass 198	36924	47.8		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	77195	100.0		Pass
199	5.0 - 9.0% of mass 198	5170	6.70		Pass
275	10.0 - 30.0% of mass 198	19561	25.3		Pass
365	1.0 - 100.0% of mass 198	2272	2.94		Pass
441	Present, but less than mass 443	11853	15.4	(87.3) [b]	Pass
442	40.0 - 100.0% of mass 198	71805	93.0		Pass
443	17.0 - 23.0% of mass 442	13573	17.6	(18.9) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ8537-ICC8537	Z172496.D	04/16/25	18:03	00:53	Initial cal 0.2
EZ8537-IC8537	Z172497.D	04/16/25	18:28	01:18	Initial cal 0.002
EZ8537-IC8537	Z172498.D	04/16/25	18:53	01:43	Initial cal 0.004
EZ8537-IC8537	Z172499.D	04/16/25	19:17	02:07	Initial cal 0.01
EZ8537-IC8537	Z172500.D	04/16/25	19:42	02:32	Initial cal 0.02
EZ8537-IC8537	Z172501.D	04/16/25	20:07	02:57	Initial cal 0.04
EZ8537-IC8537	Z172502.D	04/16/25	20:32	03:22	Initial cal 0.1
EZ8537-IC8537	Z172503.D	04/16/25	20:57	03:47	Initial cal 0.5
EZ8537-IC8537	Z172504.D	04/16/25	21:21	04:11	Initial cal 1
EZ8537-IC8537	Z172505.D	04/16/25	21:46	04:36	Initial cal 2

Instrument Performance Check (DFTPP)

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample:	EZ8538-DFTPP	**Injection Date:**	04/17/25
Lab File ID:	Z172509.D	**Injection Time:**	11:04
Instrument ID:	GCMSZ		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	47235	51.6		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	49790	54.4		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	46909	51.2		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	91571	100.0		Pass
199	5.0 - 9.0% of mass 198	6152	6.72		Pass
275	10.0 - 30.0% of mass 198	21562	23.5		Pass
365	1.0 - 100.0% of mass 198	2372	2.59		Pass
441	Present, but less than mass 443	10957	12.0	(84.4) [b]	Pass
442	40.0 - 100.0% of mass 198	68219	74.5		Pass
443	17.0 - 23.0% of mass 442	12979	14.2	(19.0) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EZ8538-ICV8537	Z172510.D	04/17/25	12:27	01:23	Initial cal verification 0.2
EZ8538-ICV8537	Z172511.D	04/17/25	12:52	01:48	Initial cal verification 1
EZ8538-CC8537	Z172514.D	04/17/25	15:06	04:02	Continuing cal 0.2
OP62764-MB1	Z172515.D	04/17/25	15:32	04:28	Method Blank
ZZZZZZ	Z172516.D	04/17/25	15:58	04:54	(unrelated sample)
ZZZZZZ	Z172517.D	04/17/25	16:24	05:20	(unrelated sample)
ZZZZZZ	Z172518.D	04/17/25	16:51	05:47	(unrelated sample)

Surrogate Recovery Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846 8270E BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE9509-1	4P696296.D	48	34	98	74	67	72
JE9509-2	4P696297.D	43	28	72	68	50	45
JE9509-3	4P696324.D	45	31	87	73	78	67
JE9509-4	4P696299.D	46	32	67	68	51	54
JE9509-5	4P696300.D	51	35	89	85	82	72
JE9509-6	4P696301.D	40	8* [a]	67	69	60	50
JE9509-7	4P696302.D	49	34	91	78	75	51
JE9509-8	4P696303.D	48	33	86	79	73	49
JE9509-9	4P696292.D	71	49	125	106	101	112
JE9509-11	4P696304.D	37	25	59	60	42	45
JE9509-12	4P696305.D	54	36	58	79	53	73
JE9509-13	4P696306.D	64	42	87	102	80	81
JE9509-14	4P696307.D	68	45	114	112	102	76
JE9509-15	4P696308.D	32	22	48	56	54	67
JE9509-16	Z172551.D	59	69	95	96	73	82
JE9509-17	4P696293.D	56	38	98	86	77	112
OP62877A-BS12	4P696320.D	63	45	84	88	90	90
OP62877A-BSD12	4P696295.D	49	34	76	76	52	107
OP62877A-MB1	4P696290.D	58	40	80	79	59	97

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	12-110%
S3 = 2,4,6-Tribromophenol	32-143%
S4 = Nitrobenzene-d5	29-124%
S5 = 2-Fluorobiphenyl	23-122%
S6 = Terphenyl-d14	22-130%

(a) Outside control limits due to matrix interference as per prep log description.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62976-MB1	7G54512.D	1	04/22/25	RK	04/22/25	OP62976	G7G1887

The QC reported here applies to the following samples: **Method:** SW846-8011

JE9509-1, JE9509-2, JE9509-3, JE9509-4, JE9509-5, JE9509-6, JE9509-7, JE9509-8, JE9509-9, JE9509-10, JE9509-11, JE9509-12, JE9509-13, JE9509-14, JE9509-15, JE9509-16, JE9509-17

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.019	0.016	ug/l	

CAS No.	Surrogate Recoveries		Limits
3017-95-6	2-Bromo-1-chloropropane	108%	38-210%
3017-95-6	2-Bromo-1-chloropropane	100%	38-210%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP62976-BS1	7G54513.D	1	04/22/25	RK	04/22/25	OP62976	G7G1887
OP62976-BSD	7G54514.D	1	04/22/25	RK	04/22/25	OP62976	G7G1887

The QC reported here applies to the following samples: **Method:** SW846-8011

JE9509-1, JE9509-2, JE9509-3, JE9509-4, JE9509-5, JE9509-6, JE9509-7, JE9509-8, JE9509-9, JE9509-10, JE9509-11, JE9509-12, JE9509-13, JE9509-14, JE9509-15, JE9509-16, JE9509-17

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
106-93-4	1,2-Dibromoethane	0.463	0.49	106	0.51	108	4	51-171/21

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3017-95-6	2-Bromo-1-chloropropane	110%	112%	38-210%
3017-95-6	2-Bromo-1-chloropropane	105%	107%	38-210%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE9509
Account: TERRPNJP Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

Method: SW846-8011 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE9509-1	7G54515.D	107	103
JE9509-2	7G54518.D	107	103
JE9509-3	7G54519.D	104	100
JE9509-4	7G54520.D	94	88
JE9509-5	7G54521.D	102	106
JE9509-6	7G54522.D	108	103
JE9509-7	7G54523.D	105	98
JE9509-8	7G54524.D	107	103
JE9509-9	7G54525.D	108	109
JE9509-10	7G54526.D	109	103
JE9509-11	7G54529.D	102	98
JE9509-12	7G54530.D	104	100
JE9509-13	7G54531.D	102	98
JE9509-14	7G54532.D	107	102
JE9509-15	7G54533.D	106	100
JE9509-16	7G54534.D	90	86
JE9509-17	7G54535.D	111	109
OP62976-BS1	7G54513.D	110	105
OP62976-BSD	7G54514.D	112	107
OP62976-MB1	7G54512.D	108	100

Surrogate Compounds	Recovery Limits
S1 = 2-Bromo-1-chloropropane	38-210%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE9509
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53922
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 04/18/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	.83	32		
Antimony	4.0	.17	1.7		
Arsenic	1.0	.05	.39		
Barium	2.0	.018	.73		
Beryllium	1.0	.01	.15		
Boron	50	1.7	14		
Cadmium	1.0	.02	.17		
Calcium	500	7.2	200		
Chromium	2.0	.036	.62		
Cobalt	1.0	.006	.17		
Copper	4.0	.048	1.9		
Iron	50	.47	19		
Lead	1.0	.016	.52	0.058	<1.0
Magnesium	500	.38	46		
Manganese	2.0	.024	.63		
Molybdenum	2.0	.034	.45		
Nickel	2.0	.034	.95		
Potassium	500	1.6	68		
Selenium	1.0	.088	.55		
Silver	1.0	.008	.16		
Sodium	500	3	470		
Strontium	10	.028	2.4		
Thallium	1.0	.004	.17		
Tin	10	.082	2.6		
Titanium	2.0	.22	1.6		
Vanadium	2.0	.026	1.8		
Zinc	10	.16	5.4		

Associated samples MP53922: JE9509-1F, JE9509-2F, JE9509-3F, JE9509-4F, JE9509-5F, JE9509-6F, JE9509-7F, JE9509-8F, JE9509-9F, JE9509-11F, JE9509-12F, JE9509-13F, JE9509-14F, JE9509-15F, JE9509-16F, JE9509-17F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JE9509
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53922
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 04/18/25

Metal	JE9509-1F Original	MS	Spikelot MP6020AQ3%	Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	0.28	85.0	80	105.9	75-125
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP53922: JE9509-1F, JE9509-2F, JE9509-3F, JE9509-4F, JE9509-5F, JE9509-6F, JE9509-7F, JE9509-8F, JE9509-9F, JE9509-11F, JE9509-12F, JE9509-13F, JE9509-14F, JE9509-15F, JE9509-16F, JE9509-17F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JE9509
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53922 Methods: SW846 6020B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/18/25

Metal	JE9509-1F Original	MSD	Spikelot MP6020AQ3%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	0.28	81.4	80	101.4	4.3	20
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP53922: JE9509-1F, JE9509-2F, JE9509-3F, JE9509-4F, JE9509-5F, JE9509-6F, JE9509-7F, JE9509-8F, JE9509-9F, JE9509-11F, JE9509-12F, JE9509-13F, JE9509-14F, JE9509-15F, JE9509-16F, JE9509-17F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE9509
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53922
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 04/18/25

Metal	BSP Result	Spikelot MP6020AQ3%	Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	83.8	80	104.8	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP53922: JE9509-1F, JE9509-2F, JE9509-3F, JE9509-4F, JE9509-5F, JE9509-6F, JE9509-7F, JE9509-8F, JE9509-9F, JE9509-11F, JE9509-12F, JE9509-13F, JE9509-14F, JE9509-15F, JE9509-16F, JE9509-17F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE9509
Account: TERRPNJP - Terraphase Engineering Inc.
Project: BDH Philadelphia Refinery, PA

QC Batch ID: MP53922
Matrix Type: AQUEOUS

Methods: SW846 6020B
Units: ug/l

Prep Date: 04/18/25

Metal	JE9509-1F Original	SDL 2:2	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	0.282	0.258	8.5	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP53922: JE9509-1F, JE9509-2F, JE9509-3F, JE9509-4F, JE9509-5F, JE9509-6F, JE9509-7F, JE9509-8F, JE9509-9F, JE9509-11F, JE9509-12F, JE9509-13F, JE9509-14F, JE9509-15F, JE9509-16F, JE9509-17F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Appendix G

Baildown Testing Workbooks

Well Designation:	C-152	Beckett and Lyverse (2002)
Date:	13-Mar-25	

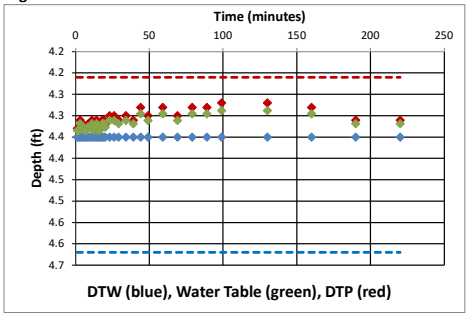
Ground Surface Elev (ft msl)	0.0	Enter These Data
Top of Casing Elev (ft msl)	0.0	
Well Casing Radius, r_c (ft):	0.167	r_{e1}
Well Radius, r_w (ft):	0.250	
LNAPL Specific Yield, S_y:	0.175	
LNAPL Density Ratio, ρ_r:	0.780	
Top of Screen (ft bgs):	0.0	
Bottom of Screen (ft bgs):	0.0	
LNAPL Baildown Vol. (gal.):	0.3	
Effective Radius, r_{e3} (ft):	0.184	Calculated Parameters
Effective Radius, r_{e2} (ft):	0.167	
Initial Casing LNAPL Vol. (gal.):	0.27	
Initial Filter LNAPL Vol. (gal.):	0.06	

Drawdown Adjustment (ft)
0

Enter Data Here

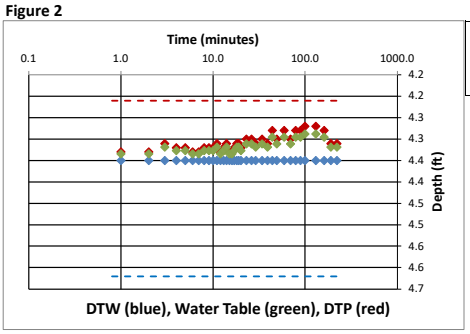
	Time (min)	DTP (ft btoc)	DTW (ft btoc)	DTP (ft bgs)	DTW (ft bgs)	Water Table Depth (ft)	LNAPL Drawdown s_n (ft)	Average Time (min)	LNAPL Discharge Q_n (ft^3/d)	s_n (ft)	b_n (ft)	r_e (ft)	DTP (ft bgs)	DTW (ft bgs)	LNAPL Volume (gallons)	Ave. r_e (ft)
Initial Fluid Levels:	0	4.21	4.62	4.21	4.62	4.30					0.41					
Enter Test Data:	1.0	4.33	4.35	4.33	4.35	4.33	0.12				0.02				0	0.184
	2.0	4.33	4.35	4.33	4.35	4.33	0.12	1.5	0.000	0.12	0.02	0.184	4.33	4.35	0.00	0
	3.0	4.31	4.35	4.31	4.35	4.32	0.10	2.5	3.063	0.11	0.04	0.184	4.32	4.35	0.02	0.184
	4.0	4.32	4.35	4.32	4.35	4.33	0.11	3.5	-1.532	0.11	0.03	0.184	4.32	4.35	0.01	0.368
	5.0	4.32	4.35	4.32	4.35	4.33	0.11	4.5	0.000	0.11	0.03	0.184	4.32	4.35	0.01	0.552
	6.0	4.33	4.35	4.33	4.35	4.33	0.12	5.5	-1.532	0.11	0.02	0.184	4.33	4.35	0.00	0.736
	7.0	4.33	4.35	4.33	4.35	4.33	0.12	6.5	0.000	0.12	0.02	0.184	4.33	4.35	0.00	0.920
	8.0	4.32	4.35	4.32	4.35	4.33	0.11	7.5	1.532	0.11	0.03	0.184	4.33	4.35	0.01	1.104
	9.0	4.32	4.35	4.32	4.35	4.33	0.11	8.5	0.000	0.11	0.03	0.184	4.32	4.35	0.01	1.288
	10.0	4.32	4.35	4.32	4.35	4.33	0.11	9.5	0.000	0.11	0.03	0.184	4.32	4.35	0.01	1.472
	11.0	4.31	4.35	4.31	4.35	4.32	0.10	10.5	1.532	0.11	0.04	0.184	4.32	4.35	0.02	1.656
	12.0	4.33	4.35	4.33	4.35	4.33	0.12	11.5	-3.063	0.11	0.02	0.184	4.32	4.35	0.00	1.840
	13.0	4.32	4.35	4.32	4.35	4.33	0.11	12.5	1.532	0.12	0.03	0.184	4.33	4.35	0.01	2.024
	14.0	4.31	4.35	4.31	4.35	4.32	0.10	13.5	1.532	0.11	0.04	0.184	4.32	4.35	0.02	2.208
	15.0	4.33	4.35	4.33	4.35	4.33	0.12	14.5	-3.063	0.11	0.02	0.184	4.32	4.35	0.00	2.392
	16.0	4.33	4.35	4.33	4.35	4.33	0.12	15.5	0.000	0.12	0.02	0.184	4.33	4.35	0.00	2.576
	17.0	4.32	4.35	4.32	4.35	4.33	0.11	16.5	1.532	0.11	0.03	0.184	4.33	4.35	0.01	2.760
	18.0	4.31	4.35	4.31	4.35	4.32	0.10	17.5	1.532	0.11	0.04	0.184	4.32	4.35	0.02	2.944
	19.0	4.31	4.35	4.31	4.35	4.32	0.10	18.5	0.000	0.10	0.04	0.184	4.31	4.35	0.02	3.128
	20.0	4.32	4.35	4.32	4.35	4.33	0.11	19.5	-1.532	0.11	0.03	0.184	4.32	4.35	0.01	3.312
	23.0	4.3	4.35	4.30	4.35	4.31	0.09	21.5	1.021	0.10	0.05	0.184	4.31	4.35	0.02	3.680
	26.0	4.3	4.35	4.30	4.35	4.31	0.09	24.5	0.000	0.09	0.05	0.184	4.30	4.35	0.02	4.232
	29.0	4.31	4.35	4.31	4.35	4.32	0.10	27.5	-0.511	0.09	0.04	0.184	4.31	4.35	0.02	4.784
	34.00	4.3	4.35	4.30	4.35	4.31	0.09	31.5	0.306	0.09	0.05	0.184	4.31	4.35	0.02	5.520
	39.00	4.31	4.35	4.31	4.35	4.32	0.10	36.5	-0.306	0.09	0.04	0.184	4.31	4.35	0.02	6.440
	44.00	4.28	4.35	4.28	4.35	4.30	0.07	41.5	0.919	0.08	0.07	0.184	4.30	4.35	0.04	7.360
	49.00	4.3	4.35	4.30	4.35	4.31	0.09	46.5	-0.613	0.08	0.05	0.184	4.29	4.35	0.02	8.280
	59.00	4.28	4.35	4.28	4.35	4.30	0.07	54.0	0.306	0.08	0.07	0.184	4.29	4.35	0.04	9.660
	69.00	4.3	4.35	4.30	4.35	4.31	0.09	64.0	-0.306	0.08	0.05	0.184	4.29	4.35	0.02	11.500
	79.00	4.28	4.35	4.28	4.35	4.30	0.07	74.0	0.306	0.08	0.07	0.184	4.29	4.35	0.04	13.340
	89.00	4.28	4.35	4.28	4.35	4.30	0.07	84.0	0.000	0.07	0.07	0.184	4.28	4.35	0.04	15.180
	99.00	4.27	4.35	4.27	4.35	4.29	0.06	94.0	0.153	0.06	0.08	0.184	4.28	4.35	0.05	17.020
	130.00	4.27	4.35	4.27	4.35	4.29	0.06	114.5	0.000	0.06	0.08	0.184	4.27	4.35	0.05	20.792
	160.00	4.28	4.35	4.28	4.35	4.30	0.07	145.0	-0.051	0.06	0.07	0.184	4.28	4.35	0.04	26.404
	190.00	4.31	4.35	4.31	4.35	4.32	0.10	175.0	-0.153	0.08	0.04	0.184	4.30	4.35	0.02	31.924
	220.00	4.31	4.35	4.31	4.35	4.32	0.10	205.0	0.000	0.10	0.04	0.184	4.31	4.35	0.02	37.443
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000

Figure 1



DTW (blue), Water Table (green), DTP (red)

Figure 2



DTW (blue), Water Table (green), DTP (red)

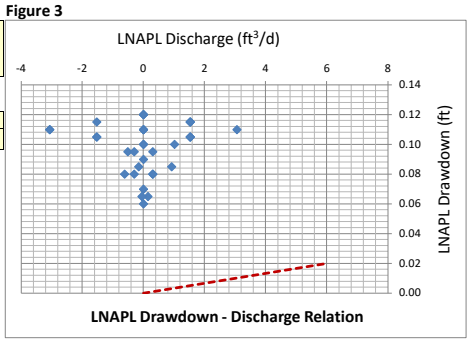
0.8	4.21
220	4.21
0.8	4.62
220	4.62

55.0	#N/A	3.2
55.0	#N/A	0.0

Figure 3

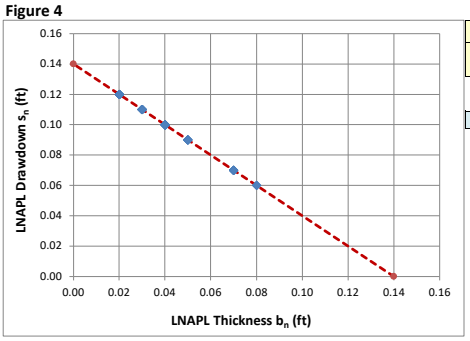
Q_n (ft³/d)	s_n (ft)
0	0
6	0.02

Drawdown Adjust.	
Δs_n (ft)	0



LNAPL Drawdown - Discharge Relation

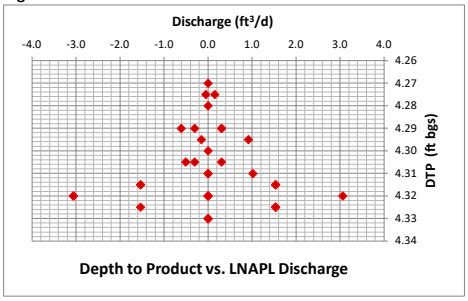
Figure 4



b_n	s_n
0.14	0
0	0.14

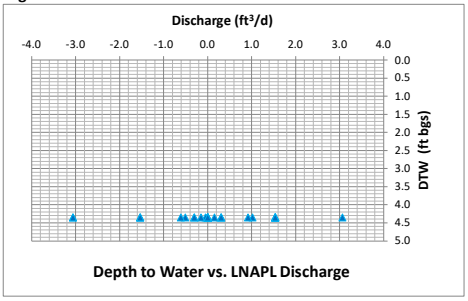
J-ratio	-1.000

Figure 5



Depth to Product vs. LNAPL Discharge

Figure 6



Depth to Water vs. LNAPL Discharge

Figure 7

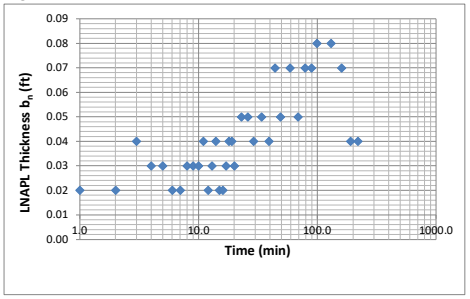
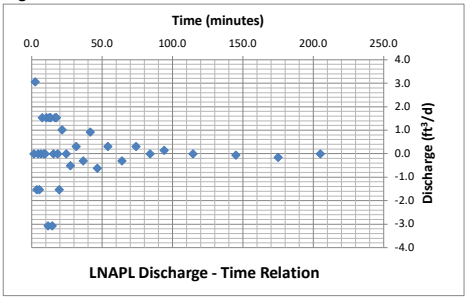


Figure 8



LNAPL Discharge - Time Relation

Figure 9

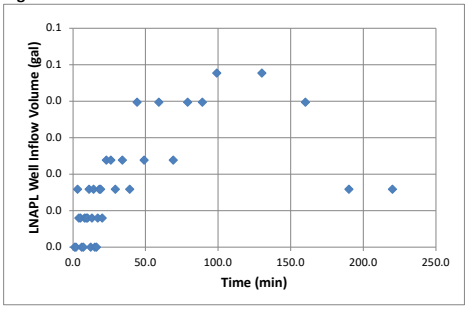
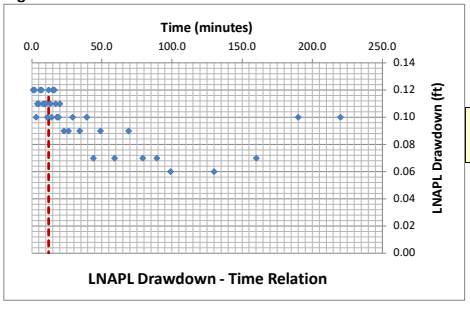


Figure 10



LNAPL Drawdown - Time Relation

t (min)	s_n (ft)
12	0.115
12	0

Generalized Bouwer and Rice (1976)

Well Designation:	C-152
Date:	13-Mar-25

$$T_n = \frac{r_e^{\,2}\,\ln(R/r_e)\ln(s_n(t_1)/s_n(t))}{2(-J)(t-t_1)}$$

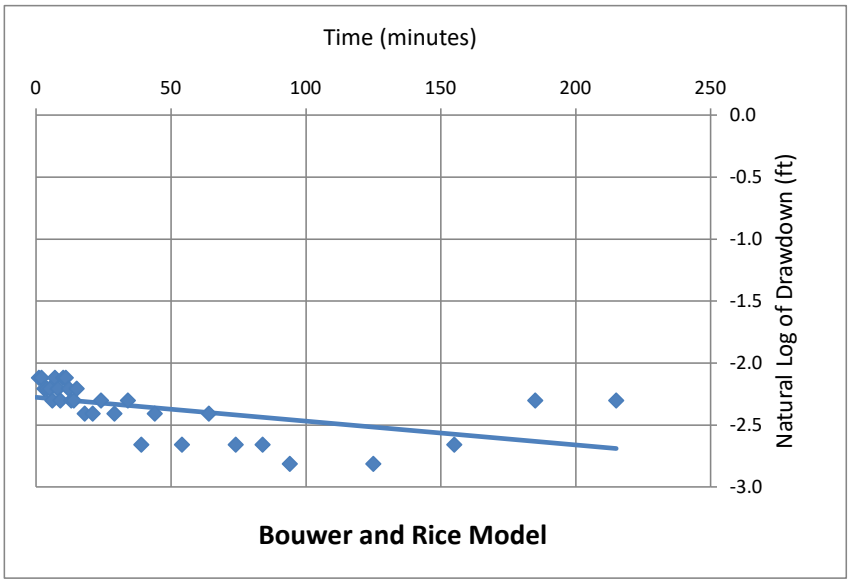
Enter early time cut-off for least-squares model fit

$Time_{cut}$	5	<- Enter or change value here

L_e/r_e
2.2
C
0.88
R/r_e
1.76

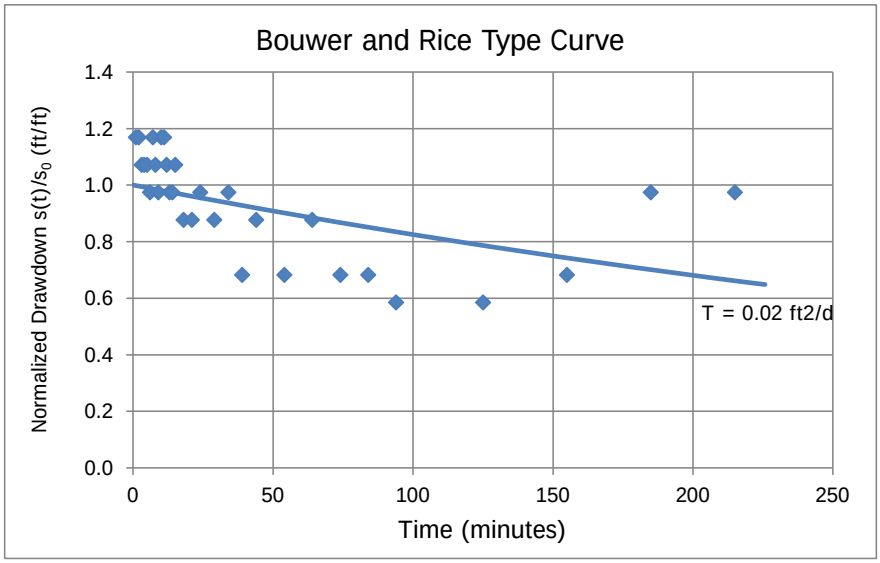
Model Results: T_n (ft^2/d) = 0.03 +/- 0.01 ft^2/d

J-Ratio
-1.000



Coef. Of Variation
0.31

C coefficient calculated from Eq. 6.5(c) of Butler, The Design, Performance, and Analysis of Slug Tests, CRC Press, 2000.



Well Designation:	C-161	Beckett and Lyverse (2002)
Date:	13-Mar-25	

Ground Surface Elev (ft msl)	0.0	Enter These Data
Top of Casing Elev (ft msl)	0.0	
Well Casing Radius, r_c (ft):	0.167	r_{e1}
Well Radius, r_w (ft):	0.250	
LNAPL Specific Yield, S_y:	0.175	
LNAPL Density Ratio, ρ_r:	0.780	
Top of Screen (ft bgs):	0.0	
Bottom of Screen (ft bgs):	10.0	
LNAPL Baildown Vol. (gal.):	0.2	
Effective Radius, r_{e3} (ft):	0.184	Calculated Parameters
Effective Radius, r_{e2} (ft):	0.181	
Initial Casing LNAPL Vol. (gal.):	0.13	
Initial Filter LNAPL Vol. (gal.):	0.03	

Drawdown Adjustment (ft)
0

Enter Data Here

	Time (min)	DTP (ft btoc)	DTW (ft btoc)	DTP (ft bgs)	DTW (ft bgs)	Water Table Depth (ft)	LNAPL Drawdown s_n (ft)	Average Time (min)	LNAPL Discharge Q_n (ft^3/d)	s_n (ft)	b_n (ft)	r_e (ft)	DTP (ft bgs)	DTW (ft bgs)	LNAPL Volume (gallons)	Ave. r_e (ft)
Initial Fluid Levels:	0	4.43	4.63	4.43	4.63	4.47					0.20					
Enter Test Data:	1.0	4.58	4.59	4.58	4.59	4.58	0.15				0.01				0	0.184
	2.0	4.58	4.59	4.58	4.59	4.58	0.15	1.5	0.000	0.15	0.01	0.184	4.58	4.59	0.00	0
	3.0	4.56	4.59	4.56	4.59	4.57	0.13	2.5	3.063	0.14	0.03	0.184	4.57	4.59	0.02	0.184
	4.0	4.56	4.59	4.56	4.59	4.57	0.13	3.5	0.000	0.13	0.03	0.184	4.56	4.59	0.02	0.368
	5.0	4.56	4.59	4.56	4.59	4.57	0.13	4.5	0.000	0.13	0.03	0.184	4.56	4.59	0.02	0.552
	6.0	4.56	4.59	4.56	4.59	4.57	0.13	5.5	0.000	0.13	0.03	0.184	4.56	4.59	0.02	0.736
	7.0	4.56	4.59	4.56	4.59	4.57	0.13	6.5	0.000	0.13	0.03	0.184	4.56	4.59	0.02	0.920
	8.0	4.56	4.59	4.56	4.59	4.57	0.13	7.5	0.000	0.13	0.03	0.184	4.56	4.59	0.02	1.104
	9.0	4.55	4.59	4.55	4.59	4.56	0.12	8.5	1.532	0.13	0.04	0.184	4.56	4.59	0.02	1.288
	10.0	4.56	4.59	4.56	4.59	4.57	0.13	9.5	-1.532	0.13	0.03	0.184	4.56	4.59	0.02	1.472
	11.0	4.55	4.59	4.55	4.59	4.56	0.12	10.5	1.532	0.13	0.04	0.184	4.56	4.59	0.02	1.656
	12.0	4.57	4.59	4.57	4.59	4.57	0.14	11.5	-3.063	0.13	0.02	0.184	4.56	4.59	0.01	1.840
	13.0	4.56	4.59	4.56	4.59	4.57	0.13	12.5	1.532	0.14	0.03	0.184	4.57	4.59	0.02	2.024
	14.0	4.55	4.59	4.55	4.59	4.56	0.12	13.5	1.532	0.13	0.04	0.184	4.56	4.59	0.02	2.208
	15.0	4.55	4.59	4.55	4.59	4.56	0.12	14.5	0.000	0.12	0.04	0.184	4.55	4.59	0.02	2.392
	16.0	4.55	4.59	4.55	4.59	4.56	0.12	15.5	0.000	0.12	0.04	0.184	4.55	4.59	0.02	2.576
	17.0	4.54	4.59	4.54	4.59	4.55	0.11	16.5	1.532	0.12	0.05	0.184	4.55	4.59	0.03	2.760
	18.0	4.55	4.59	4.55	4.59	4.56	0.12	17.5	-1.532	0.12	0.04	0.184	4.55	4.59	0.02	2.944
	19.0	4.54	4.59	4.54	4.59	4.55	0.11	18.5	1.532	0.12	0.05	0.184	4.55	4.59	0.03	3.128
	20.0	4.53	4.59	4.53	4.59	4.54	0.10	19.5	1.532	0.11	0.06	0.184	4.54	4.59	0.04	3.312
	23.0	4.51	4.59	4.51	4.59	4.53	0.08	21.5	1.021	0.09	0.08	0.184	4.52	4.59	0.06	3.680
	26.0	4.52	4.59	4.52	4.59	4.54	0.09	24.5	-0.511	0.09	0.07	0.184	4.52	4.59	0.05	4.232
	29.0	4.53	4.59	4.53	4.59	4.54	0.10	27.5	-0.511	0.10	0.06	0.184	4.53	4.59	0.04	4.784
	31.00	4.56	4.59	4.56	4.59	4.57	0.13	30.0	-2.297	0.12	0.03	0.184	4.55	4.59	0.02	5.244
	36.00	4.54	4.59	4.54	4.59	4.55	0.11	33.5	0.613	0.12	0.05	0.184	4.55	4.59	0.03	5.888
	46.00	4.54	4.59	4.54	4.59	4.55	0.11	41.0	0.000	0.11	0.05	0.184	4.54	4.59	0.03	7.268
	66.00	4.56	4.59	4.56	4.59	4.57	0.13	56.0	-0.153	0.12	0.03	0.184	4.55	4.59	0.02	10.028
	86.00	4.54	4.59	4.54	4.59	4.55	0.11	76.0	0.153	0.12	0.05	0.184	4.55	4.59	0.03	13.708
	106.00	4.49	4.59	4.49	4.59	4.51	0.06	96.0	0.383	0.09	0.10	0.184	4.52	4.59	0.07	17.388
	126.00	4.49	4.59	4.49	4.59	4.51	0.06	116.0	0.000	0.06	0.10	0.184	4.49	4.59	0.07	21.068
				#N/A	#N/A	#N/A	#N/A	0.0	#N/A	#N/A	#N/A	0.000	#N/A	#N/A	#N/A	0.000

Figure 1

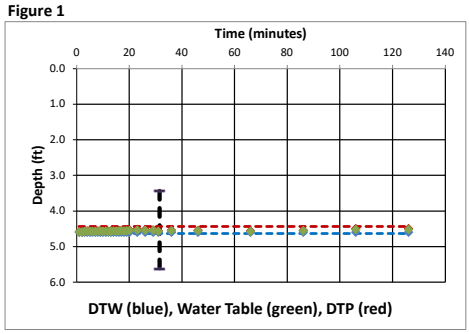
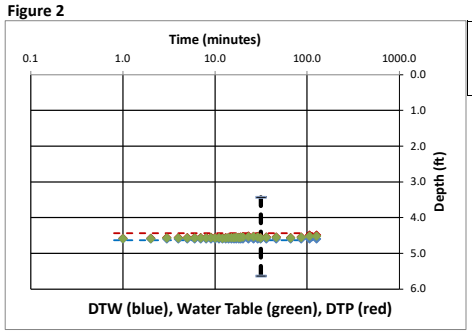


Figure 2



0.8	4.43
126	4.43
0.8	4.63
126	4.63

31.5	3.43	3.4
31.5	5.6	5.6

Figure 3

Q_n (ft^3/d)	s_n (ft)
0	0
4	0.38

Drawdown Adjust.	
Δs_n (ft)	0

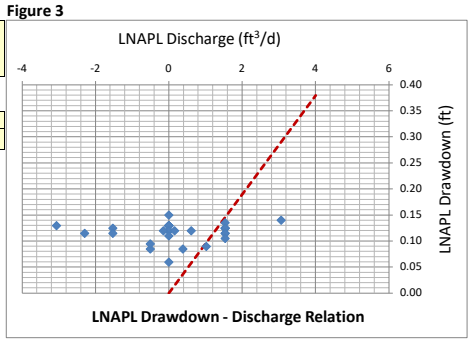


Figure 4

b_n	s_n
2.71	0
0	0.52

J-ratio	-0.192

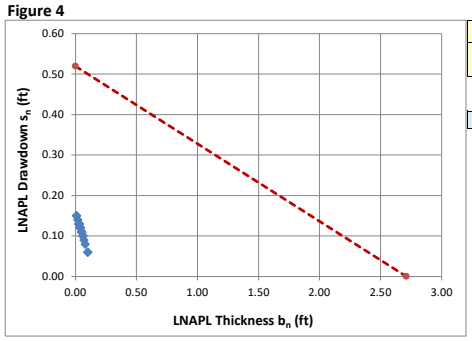


Figure 5

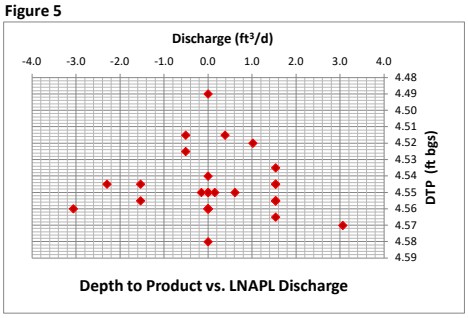


Figure 6

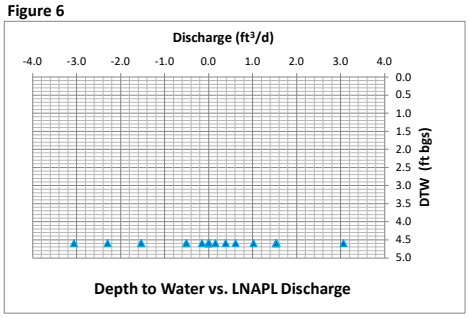


Figure 7

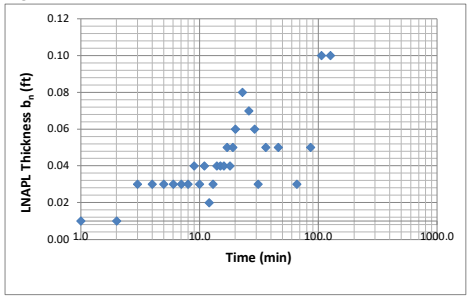


Figure 8

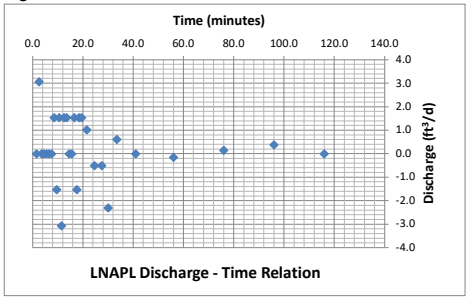


Figure 9

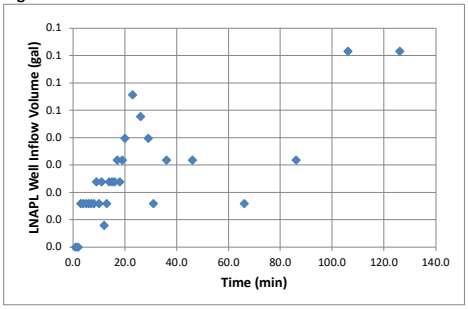
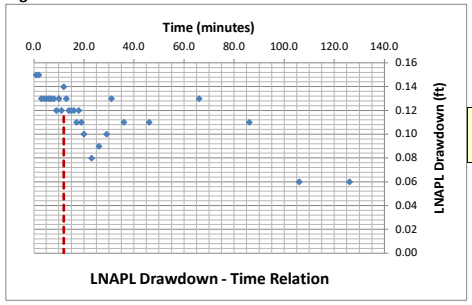


Figure 10



t (min)	s_n (ft)
12	0.115
12	0

Generalized Bouwer and Rice (1976)

Well Designation:	C-161
Date:	13-Mar-25

$$T_n = \frac{r_e^{\,2}\,\ln(R/r_e)\ln(s_n(t_1)/s_n(t))}{2(-J)(t-t_1)}$$

Enter early time cut-off for least-squares model fit

$Time_{cut}$		<- Enter or change value here

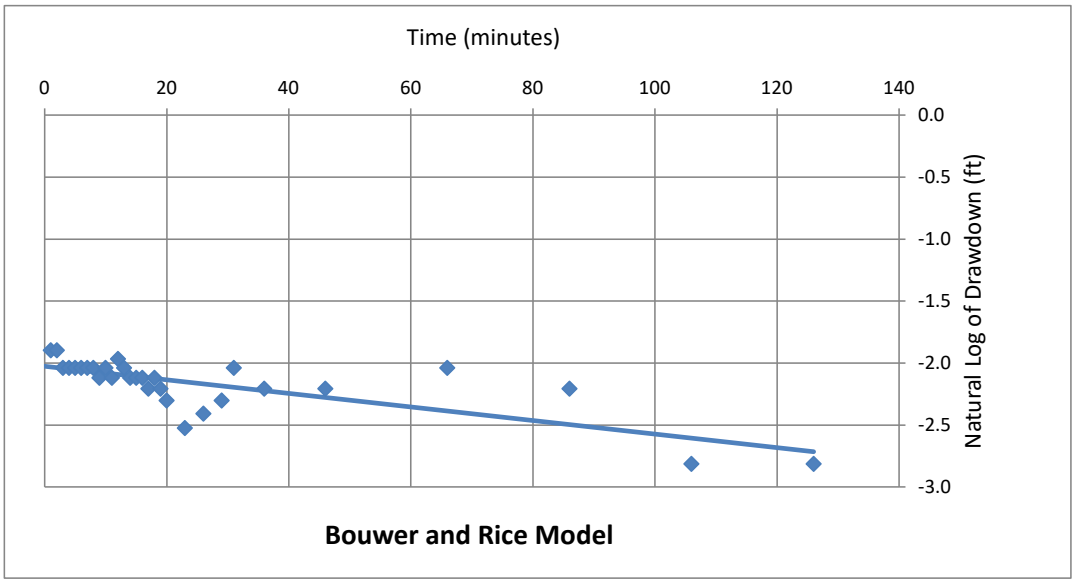
Model Results:	T_n (ft^2/d) =	0.05	+/-	0.01

ft^2/d

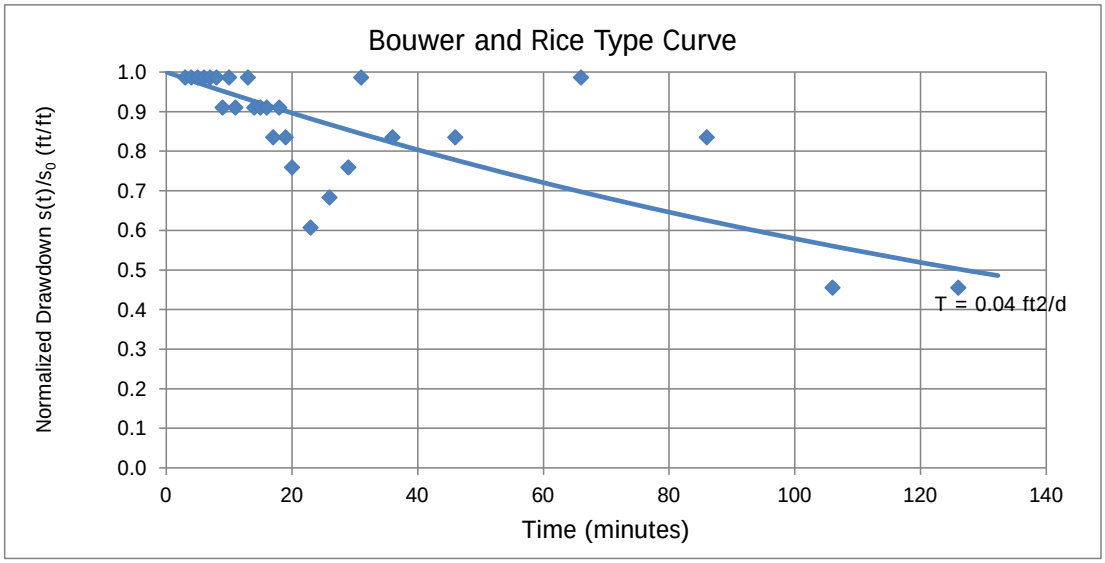
L_e/r_e
1.1
C
0.84
R/r_e
1.07

J-Ratio
-0.192

Coef. Of Variation
0.16



C coefficient calculated from Eq. 6.5(c) of Butler, The Design, Performance, and Analysis of Slug Tests, CRC Press, 2000.



Appendix H

General Quality Control Checks

Table H1
Quality Control Methodology
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Multiple VOC Runs Data Quality	Solution
If the surrogate recoveries for one run are **within acceptance criteria** and the other run has **3-4 surrogates outside of acceptance criteria**:	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If the surrogate recoveries for one run are **within acceptance criteria** and has some **detections** and the other run has **1-2 surrogates outside of acceptance criteria**:	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If one run has surrogate recoveries **within acceptance critera** but is **non-detect** and the other run has **1-2 surrogates outside of acceptance criteria** but has **detections**:	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have **detections** and **surrogate recoveries outside of acceptance criteria**:	The run with more surrogates recoveries outside acceptance criteria is not reported and the run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable.
If one run has surrogate recoveries **outside of acceptance critera** but is **non-detect** and the other run has **1-2 more surrogates outside of acceptance** criteria but has **detections**:	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have the **same number of surrogates** with recovery outside the acceptance criteria:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
If two VOC runs are reported and there are no QC issues for both runs:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.

Table H2
Quality Control Checklist
No. 3 Separator Release Area
Bellwether District Holdings, LLC , Philadelphia, PA

		Keyfile-Related			EDD-Related										
									Multiple Results						Check for Concerning Qualifiers
Date Sampled	SDG	Check Lab Login	Check Keyfile	COC/Field Notes Uploaded	Check Sample IDs	Check Analyte List Reported	Review EDD for Issues	Dates, Matrix and Sample	Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other	Resolved	
3/12/2025 & 3/13/2025	JE7507	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No						Yes
3/14/2025	JE7435	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No						Yes
4/14/2025 & 4/15/2025	JE9509	Yes	Yes	Yes											

Table H3
BDH Groundwater RPD Calculations
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Location Code	Sample Name	Sample Date	Chem Group	PARAMNAME	CASRN	Total or Dissolved	RPD	Ratio	Primary Result	Primary Qualifier	Primary Limit	Duplicate Result	Duplicate Qualifier	Duplicate Limit	Average Result	Average Qualifier	Average Limit	Result Unit
C-148	C-148-250312	3/12/2025	VOC	Benzene	71-43-2	T	3%	1.0	1.17E-01		2.00E-03	1.13E-01		2.00E-03	1.15E-01		2.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	Cumene	98-82-8	T	7%	1.1	2.01E-02		4.00E-03	1.87E-02		4.00E-03	1.94E-02		4.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	1,2-Dibromoethane	106-93-4	T	0%	1.0		U	1.90E-05		U	1.90E-05		U	1.90E-05	mg/L
C-148	C-148-250312	3/12/2025	VOC	1,2-Dichloroethane	107-06-2	T	0%	1.0		U	4.00E-03		U	4.00E-03		U	4.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	Ethyl Benzene	100-41-4	T	0%	1.0		U	4.00E-03		U	4.00E-03		U	4.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	Methyl tert-butyl ether	1634-04-4	T	0%	1.0		U	4.00E-03		U	4.00E-03		U	4.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	Toluene	108-88-3	T	6%	1.1	1.48E-02		4.00E-03	1.40E-02		4.00E-03	1.44E-02		4.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	1,2,4-Trimethylbenzene	95-63-6	T	0%	1.0		U	8.00E-03		U	8.00E-03		U	8.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	1,3,5-Trimethylbenzene	108-67-8	T	0%	1.0		U	8.00E-03		U	8.00E-03		U	8.00E-03	mg/L
C-148	C-148-250312	3/12/2025	VOC	Xylenes (total)	1330-20-7	T	9%	1.1	1.77E-02		4.00E-03	1.62E-02		4.00E-03	1.70E-02		4.00E-03	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Anthracene	120-12-7	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Benzo(a)anthracene	56-55-3	T	118%	3.9	1.55E-04		4.00E-05		U	4.00E-05	8.75E-05	J	4.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Benzo(a)pyrene	50-32-8	T	29%	1.3	3.00E-05	J	4.00E-05		U	4.00E-05	2.50E-05	J	4.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Benzo(b)fluoranthene	205-99-2	T	56%	1.8	4.32E-05		4.00E-05	2.42E-05	J	4.00E-05	3.37E-05	J	4.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Chrysene	218-01-9	T	46%	1.6	5.01E-05	J	8.00E-05		U	8.00E-05	4.51E-05	J	8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Fluorene	86-73-7	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Naphthalene	91-20-3	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	SVOC	Pyrene	129-00-0	T	61%	1.9	3.29E-04		8.00E-05	1.75E-04		8.00E-05	2.52E-04		8.00E-05	mg/L
C-148	C-148-250312	3/12/2025	INORG	Lead	7439-92-1	D	0%	1.0		U	1.00E-03		U	1.00E-03		U	1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	Benzene	71-43-2	T	5%	1.1	4.54E-02		5.00E-04	4.32E-02		5.00E-04	4.43E-02		5.00E-04	mg/L
C-148	C-148-250414	4/14/2025	VOC	Cumene	98-82-8	T	7%	1.1	2.92E-02		1.00E-03	2.71E-02		1.00E-03	2.82E-02		1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	1,2-Dibromoethane	106-93-4	T	5%	1.1		U	1.80E-05		U	1.90E-05		U	1.85E-05	mg/L
C-148	C-148-250414	4/14/2025	VOC	1,2-Dichloroethane	107-06-2	T	0%	1.0		U	1.00E-03		U	1.00E-03		U	1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	Ethyl Benzene	100-41-4	T	9%	1.1	8.20E-04	J	1.00E-03	7.50E-04	J	1.00E-03	7.85E-04	J	1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	Methyl tert-butyl ether	1634-04-4	T	61%	1.9	5.30E-04	J	1.00E-03		U	1.00E-03	5.15E-04	J	1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	Toluene	108-88-3	T	5%	1.0	4.30E-03		1.00E-03	4.10E-03		1.00E-03	4.20E-03		1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	1,2,4-Trimethylbenzene	95-63-6	T	0%	1.0		U	2.00E-03		U	2.00E-03		U	2.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	1,3,5-Trimethylbenzene	108-67-8	T	0%	1.0		U	2.00E-03		U	2.00E-03		U	2.00E-03	mg/L
C-148	C-148-250414	4/14/2025	VOC	Xylenes (total)	1330-20-7	T	10%	1.1	5.30E-03		1.00E-03	4.80E-03		1.00E-03	5.05E-03		1.00E-03	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Anthracene	120-12-7	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Benzo(a)anthracene	56-55-3	T	12%	1.1	3.18E-05	J	4.00E-05	2.81E-05	J	4.00E-05	3.00E-05	J	4.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Benzo(a)pyrene	50-32-8	T	33%	1.4	2.86E-05	J	4.00E-05		U	4.00E-05	2.43E-05	J	4.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Benzo(b)fluoranthene	205-99-2	T	43%	1.5	4.14E-05		4.00E-05	2.68E-05	J	4.00E-05	3.41E-05	J	4.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Chrysene	218-01-9	T	20%	1.2	1.02E-04		8.00E-05	8.37E-05		8.00E-05	9.29E-05		8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Fluorene	86-73-7	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Naphthalene	91-20-3	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	8.00E-05		U	8.00E-05		U	8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	SVOC	Pyrene	129-00-0	T	18%	1.2	2.66E-04		8.00E-05	2.21E-04		8.00E-05	2.44E-04		8.00E-05	mg/L
C-148	C-148-250414	4/14/2025	INORG	Lead	7439-92-1	D	0%	1.0		U	1.00E-03		U	1.00E-03		U	1.00E-03	mg/L

Table H4
Summary of QAQC Analytical Results
No. 3 Separator Release Area
Bellwether District Holdings, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	FB-250312-1	TB-250312-1	FB-250313-2	TB-250313-2	FB-250314-3	TB-250314-3	FB-250414-1	TB-250414-1	FB-250415-2
Sample Date	3/12/2025	3/12/2025	3/13/2025	3/13/2025	3/14/2025	3/14/2025	4/14/2025	4/14/2025	4/15/2025
Comments	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organic Compounds									
Naphthalene	ND (0.08)	NA	ND (0.08)	NA	0.0474 J (0.08)	NA	ND (0.08)	NA	ND (0.08)
Metals	ND	NA	ND	NA	ND	NA	ND	NA	ND

Notes:
1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Appendix I

Groundwater to Surface Water Discharge Modeling

METHOD FOR ESTIMATNG FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER

PA DEPARTMENT
OF ENVIRONMENTAL PROTECTION
SWLOAD5B.XLS
A METHOD FOR ESTIMATING
COMTAMINANT LOADING TO SURFACE
WATER
based on
P.A. Domenico (1987)
Modified to Include Retardation

Project:	No. 3 Sep Area Remediation
Date:	6/20/2025
Contaminant:	Benzene
Prepared by:	Terraphase Engineering Inc.

SOURCE CONC (units)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)
mg/l	>.0001	>.0001	>=.0001	day-1			
0.09465	1.5	0.15	1.00E-03	0.000959	160	5	1.00E+99

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^{3})	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
2.50E+01	0.001	0.225	1.8	58	5.00E-03	3.32	0.0334672

			-100	-80	-60	-40	-20	0	20	40	60	80	100
Edge Criterion (mg/l)	0.071	0	0	0.0313212	0.062642	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.031321	0
Higest modeled conc.	0.06264	-1	0	0.0313212	0.062642	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.031321	0
		-2	0	0.0313212	0.062642	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.031321	0
SURFACE WATER LOADING GRID		-3	0	0.0313212	0.062642	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.031321	0
Distance to Stream (ft)	15	-4	0	0.0313212	0.062642	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.0626424	0.031321	0
Plume View Width (ft)	200	-5	0	0.0156606	0.031321	0.0313212	0.0313212	0.0313212	0.0313212	0.0313212	0.0313212	0.015661	0
Plume View Depth (ft)	10	-6	0	0	0	0	0	0	0	0	0	0	0
		-7	0	0	0	0	0	0	0	0	0	0	0
		-8	0	0	0	0	0	0	0	0	0	0	0
TMS NOT NEEDED		-9	0	0	0	0	0	0	0	0	0	0	0
		-10	0	0	0	0	0	0	0	0	0	0	0

Average Groundwater Concentration	0.05104	mg/l
Plume Flow	0.00023 cfs	0.00015 MGD
Mass Loading to Stream	28.91	mg/day

Appendix J

Pennsylvania Natural Heritage Program Search

1. PROJECT INFORMATION

Project Name: **BDH - No. 3 Separator Area**
Date of Review: **4/8/2025 03:34:03 PM**
Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation, Voluntary cleanup (Act 2 and Chapter 250)**
Project Area: **2.01 acres**
County(s): **Philadelphia**
Township/Municipality(s): **Philadelphia City**
ZIP Code:
Quadrangle Name(s): **PHILADELPHIA**
Watersheds HUC 8: **Schuylkill**
Watersheds HUC 12: **City of Philadelphia-Schuylkill River**
Decimal Degrees: **39.909608, -75.211722**
Degrees Minutes Seconds: **39° 54' 34.5881" N, 75° 12' 42.1977" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

BDH - No. 3 Separator Area



Buffered Project Boundary

Project Boundary



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

BDH - No. 3 Separator Area





Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, Maxar, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA,

RESPONSE TO QUESTION(S) ASKED

Q1: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.
Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands (holding a natural resource degree or equivalent work experience), or it is currently unknown if the project or project activities will affect wetlands.

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: https://conservationexplorer.dcnr.pa.gov/content/survey-protocols)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Amaranthus cannabinus	Waterhemp Ragweed	Special Concern Species*	Special Concern Species*	Flowers July - September

PA Fish and Boat Commission

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email the following information to the agency(s) (see AGENCY CONTACT INFORMATION). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies (but not USFWS).
*If information was requested by USFWS, applicants must email, or mail, project information to IR1_ESPenn@fws.gov to initiate a review. USFWS will not accept uploaded project materials.

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
Email: IR1_ESPenn@fws.gov
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Management
Division of Environmental Review
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

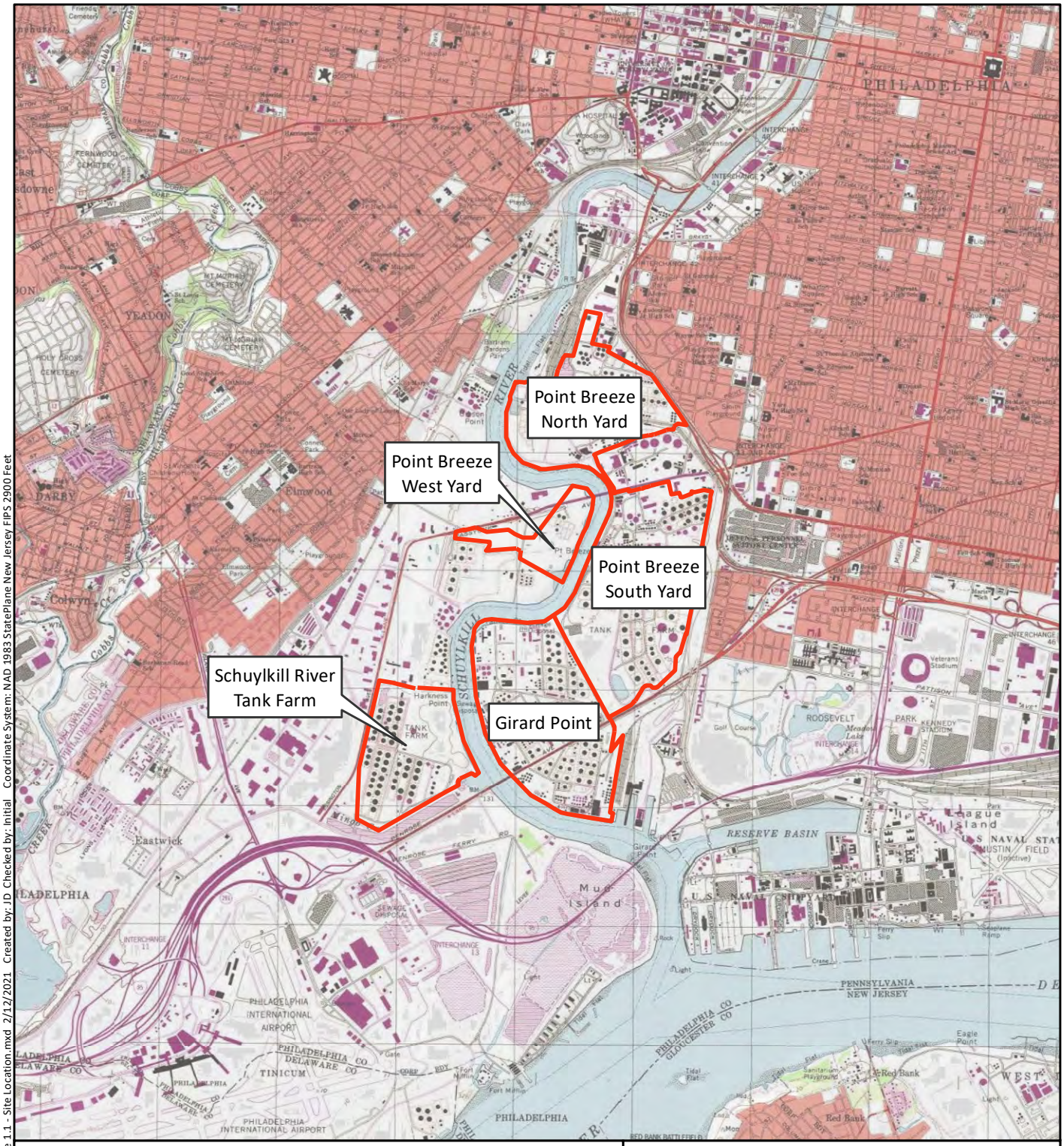
_____ _____
applicant/project proponent signature date

Project Description – PNDI-838315

Terraphase Engineering Inc. (Terraphase) is supporting Bellwether District Holdings, LLC (BDH), with the regulatory closure of a site referred to as the "No 3 Separator Area" (Site), located within the boundary of the former Philadelphia Energy Solutions (PES) Refinery, in accordance with The Land Recycling and Environmental Remediation Standards Act (Act 2) and 25 Pa. Code 250 during demolition and redevelopment activities. The former PES Refinery is located at 3144 West Passyunk Avenue, Philadelphia, PA (Site) (Figure 1.1).

The former PES Refinery is a 1,300-acre former refinery that is being repurposed and redeveloped into a state of the art, multimodal industrial park with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. To facilitate redevelopment, existing infrastructure at the former PES Refinery, including the No 3 Separator Area will be demolished. Terraphase will prepare reports for submission to the Pennsylvania Department of Environmental Protection (PADEP) as the work progresses throughout the refinery.

This PNDI review request (838315) is associated with contamination due to petroleum-related releases associated with a stormwater and process sewer system at the Site (Figure 1.2). The Site is located directly south and adjacent to the Schuylkill. No wetlands or other potential sensitive receptors are in or adjacent to the Site. The Site consists of an approximately 2-acre area within the former PES refinery.



0 1,400 2,800 4,200 5,600 Feet

1 inch = 4,000 feet

N

Legend

Property Boundary

Base Map: USGS Philadelphia 1994 7.5 Minute Quadrangle.

SAFETY FIRST

terraphase engineering

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Area East of PB 253

PROJECT NUMBER: P044.001.017

Site Location

FIGURE 1.1

File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\AST Work\Figure 1.1 - Site Location.mxd 2/12/2021 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet

Affected Sewer 03
Affected Sewer 07
Affected Sewer 02
Affected Sewer 05
Affected Sewer 04
Affected Sewer 01
137 Unit Sewer Box 01
137 Unit Sewer Box 02
137 Unit Sewer Box
No. 3
Separator
Evergreen's No. 3
Separator
Remediation System

Legend

- Property Boundary
- No. 3 Separator
- No. 3 Separator Remediation System
- No. 3 Separator Remediation System
- Sewer Piping
- Sewer Flow Direction
- Sewer Monitoring Location

Notes:
Aerial imagery source: Nearmap (June 2024)

0 30 60 90 120 ft

1 Inch = 60 Feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Bellwether District Holdings, LLC

PROJECT: No. 3 Separator Area Remediation

PROJECT NUMBER: P044.001.003

Site Layout

FIGURE 1.2

N:\GIS\Prj\P044.001_PESRM-PES\QGIS_QGZ and GPKG\Branch_Act 2 Areas\No 3 Sep\(20250331)QGZ328_P044.001_BDH_No3Sep.qgz Figure 1 - Site Layout 2023-10-17T10:19:57.000 Created by: M.Civitillo Checked by: A. Strohl

Pennsylvania
Department of Conservation and Natural Resources

April 16, 2025

PNDI Number: 838315
Version: Final_1; 4/8/2025

Samantha Chubb
Terraphase Engineering Inc.
1100 East Hector Street, Suite 400
Conshohocken, PA 19428
Email: Samantha.Chubb@terraphase.com (hard copy will not follow)

Re: BDH – No. 3 Separator Area
Philadelphia Township, Philadelphia County, PA

Dear Samantha Chubb,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number **838315 (Final_1)** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

Recommended Best Management Practices:

- Use a conservative approach to project design that minimizes permanent and temporary disturbances to soil and native vegetation. This will conserve habitat and limit opportunities for invasive plants.
- Clean boot treads, tools, construction equipment, watercraft, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site. This will remove invasive plant seeds and invasive earthworms/cocoons that may have been picked up at other worksites.
- Use clean project materials (e.g., weed-free straw, topsoil, rock fill, etc.) or materials native to the worksite to avoid introducing invasive species from contaminated sources.
- Do not use seed mixes that include invasive species. More information about invasive plants in Pennsylvania can be found at the following link: http://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/Pages/default.aspx
- Use habitat appropriate seed mixes and, when available, use PA ecotypes. For example, use a riparian seed mix when reseeding along a waterway. The Bureau of Forestry Planting & Seeding Guidelines can be found at the following link for recommendations: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031083.pdf

- Use native plants for landscaping, revegetation, and stormwater management. Do not use nonnative invasive species. Reduce the area of lawn and impermeable surfaces to the fullest extent practicable in favor of native gardens or habitat restoration (e.g., forest, meadow, wetland, etc.). More information about lawn conversion can be found at the following link: https://www.dcnr.pa.gov/Conservation/Water/LawnConversion/Pages/default.aspx
- Plant forest buffers where trees were historically present along streams, wetlands, and bodies of water. Buffers should be a minimum of 35 feet in width (ideally at least 100 feet in width). Where trees are not appropriate (e.g., powerline rights-of-way), buffer with native shrubs and herbaceous plants. More information about riparian buffers can be found at the following link: https://www.dcnr.pa.gov/Conservation/Water/RiparianBuffers/Pages/default.aspx
- Manage road/utility rights-of-way, median trips, edges, and other green spaces for diverse native plant communities and wildlife (e.g., common and swamp milkweed for monarch butterfly). In seed mixes, include PA native wildflowers that have overlapping bloom periods and provide forage for pollinators throughout the growing season.
- Avoid blanket herbicide applications; instead, spot-treat undesirable tall woody vegetation and invasive weeds. Where mowing is necessary, reduce frequency to once every few years during the dormant season (i.e., after first frost in late fall and before bird nesting in early spring), leaving some refugia for overwintering wildlife.
- Monitor for invasive plants before, during, and after project activities and promptly control any identified infestations. Frequent monitoring allows for early detection and rapid response.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Alexander Dogonniuck, Ecological Information Specialist, by phone (717-783-3913) or via email (c-adogonni@pa.gov).

Sincerely,



Greg Podniesinski, Section Chief
Natural Heritage Section

pennsylvania
FISH AND BOAT COMMISSION

April 16, 2025

IN REPLY REFER TO
SIR# 61327

Terraphase Engineering
Samantha Chubb
1100 E. Hector Street
Conshohocken, Pennsylvania 19428

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 838315_1
BDH - No. 3 Separator Area
Philadelphia City: PHILADELPHIA County

Dear Samantha Chubb:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish and Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish and Boat Code (Chapter 75), or the Wildlife Code.

An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 or c-kgipe@pa.gov and refer to the SIR # 61327. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU//KDG/dn

U.S. Fish and Wildlife Service
National Wetlands Inventory

No. 3 Separator



April 23, 2025

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.