terraphase engineering

Response to PADEP Comments on the Final Report - No. 4 Separator Release

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

The following provides responses to the Pennsylvania Department of Environmental Protection's (PADEP) comments received on June 4, 2024, upon their review of the Final Report (FR) for the No. 4 Separator Release. The FR was submitted to PADEP by Terraphase Engineering Inc. (Terraphase) on April 8, 2024. The responses below were prepared by Terraphase on behalf of Bellwether District Holdings, LLC (BDH), formerly known as Philadelphia Energy Solutions Refining and Marketing LLC.

Comment 1: The full area of the release has not attained the Statewide health standard (SHS). Soil sample SEP4-SB19 exceeds the SHS medium specific concentration (MSC) for benzene, which indicates that the distinct area of contamination impacted by the release has not been completely remediated. Additional remedial actions or sampling for demonstration of attainment is required. 25 Pa. Code Section 250.703(b) and (d) as referenced by 25 Pa. Code Section 250.312(d).

Response 1: The release from the No. 4 Separator in October 2022 occurred to the ground surface. Surface soil between the ground surface and 12 inches below ground surface (bgs) were impacted by this release, as described in the FR. Pre-Existing contamination is also known to be present in this area of the Facility. The soil sample at SEP4-SB19, which exceeded the SHS MSC for benzene, was collected between the bulkheads at a depth beneath the interval impacted by the October 2022 release; this sample was collected between 1.5 and 2 feet (ft) bgs. Accordingly, based on the conceptual site model for the October 2022 release, the benzene concentration at 1.5-2 ft bgs is believed to be associated with a Pre-Existing condition and not the result of the October 2022 release. To further characterize the nature and extent of benzene concentrations in soil in the vicinity of SEP4-SB19 and to further evaluate the conceptual site model for the October 2022 release, additional soil sampling was performed on June 7 and 19, 2024 near the SEP4-SB19 boring location.

A shallower soil sample was collected from the SEP4-SB19 location (boring SEP4-SB19R); this sample was collected from 0 to 0.5 ft bgs. Additionally, three new soil borings were completed 10 ft to the east, west, and south of SEP4-SB19 (i.e., SEP4-SB19E, SEP4-SB19W, and SEP4-SB19S, respectively). Two samples were collected from each of the step-out borings at depths of 0-0.5 and 1.5-2.0 ft bgs. Each sample was analyzed for benzene. Sample results are presented in Table 1 (Attachment A) and in Figure 1 (Attachment B).

Benzene was not detected above the laboratory reporting limit in the shallower sample (0-0.5 ft bgs) collected from the boring SEP4-SB19R. This result is consistent with the conceptual site model for the October 2022 release. Specifically, that soil impacts from the release to the ground surface did not extend to this location between the bulkheads, and the deeper contamination present in this area is associated with a Pre-Existing condition. Additionally, benzene was not detected at concentrations greater than the applicable MSC in the soil samples collected from the three step out borings. Similar to the vertical concentration distribution observed at SEP4-SB19 and SEP4-SB19R, benzene concentrations were higher at 1.5-2 ft bgs

than at 0-0.5 ft bgs at two of the three step out locations (SEP4-SB19S and SEP4-SB19W). These results further support the conceptual site model and the conclusion that the concentrations of benzene greater than the SGW MSC observed at SEP4-SB19 from 1.5-2.0 ft bgs are not associated with the No. 4 Separator release but rather with Pre-Existing conditions.

Based on these results, the remediation of contamination associated with the October 2022 release from the No. 4 Separator has been demonstrated to have attained the SHS and BDH qualifies for the cleanup liability protection for chemicals associated with the release.

Associated laboratory reports and soil boring logs are provided in Attachment C and D, respectively.

Attachments

Attachment A – Additional Soil Sampling Results

Attachment B – Soil Sampling Results Figure

Attachment C – Additional Laboratory Reports

Attachment D – Additional Soil Boring Logs

Attachment A

Additional Soil Sampling Results

Table 1
Additional Soil Analytical Results
No. 4 Separator Release Area
Bellwether District Holdings, LLC

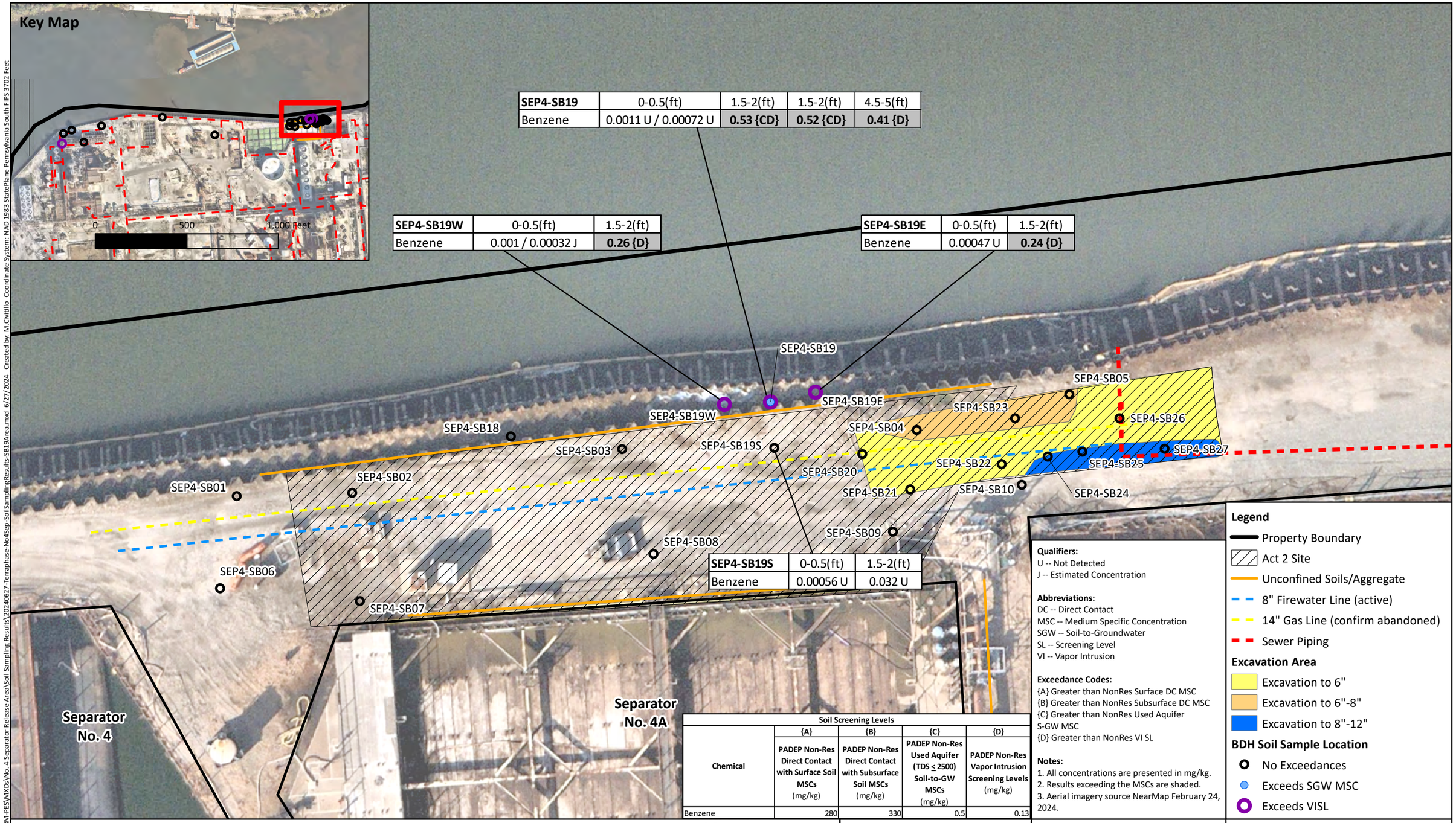
Location				SEP4-SB19R	SEP4-SB19R	SEP4-SB19E	SEP4-SB19E	SEP4-SB19S	SEP4-SB19S	SEP4-SB19W	SEP4-SB19W	SEP4-SB19W
Field Sample ID	Non-Res Direct Contact with Soil MSC	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSC	Non-Res Soil Vapor Intrusion Screening Value	SEP4-SB19R-0.0-0.5	SEP4-SB19R-0.0-0.5D	SEP4-SB19E-0.0-0.5	SEP4-SB19E-1.5-2.0	SEP4-SB19S-0.0-0.5	SEP4-SB19S-1.5-2.0	SEP4-SB19W-0.0-0.5	SEP4-SB19W-0.0-0.5D	SEP4-SB19W-1.5-2.0
Collection Depth (ft bgs)				0.0 - 0.5	0.0 - 0.5	0.0 - 0.5	1.5 - 2.0	0.0 - 0.5	1.5 - 2.0	0.0 - 0.5	0.0 - 0.5	1.5 - 2.0
Sample Method				Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date				6/7/2024	6/7/2024	6/19/2024	6/19/2024	6/19/2024	6/19/2024	6/19/2024	6/19/2024	6/19/2024
Comments					Field Duplicate						Field Duplicate	
Volatile Organic Compounds												
Benzene	280	0.5	0.13	ND (0.0011)	ND (0.00072)	ND (0.00047)	*0.24 (0.048)*	ND (0.00056)	ND (0.032)	0.001 (0.00081)	0.00032 J (0.00086)	*0.26 (0.046)*

Notes:
1 All concentrations reported in or mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
3 No concentrations exceed the Non-Res Direct Contact with Soil MSC.
4 No concentrations exceed the Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSC.
5 Italicized concentrations exceed the Non-Res Soil Vapor Intrusion Screening Value.

Abbreviations:
ND - Not Detected
J - Estimated Concentration

Attachment B

Soil Sampling Results Figure



Soil Screening Levels				
Chemical	{A} PADEP Non-Res Direct Contact with Surface Soil MSCs (mg/kg)	{B} PADEP Non-Res Direct Contact with Subsurface Soil MSCs (mg/kg)	{C} PADEP Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW MSCs (mg/kg)	{D} PADEP Non-Res Vapor Intrusion Screening Levels (mg/kg)
Benzene	280	330	0.5	0.13

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

Abbreviations:
DC -- Direct Contact
MSC -- Medium Specific Concentration
SGW -- Soil-to-Groundwater
SL -- Screening Level
VI -- Vapor Intrusion

Exceedance Codes:
{A} Greater than NonRes Surface DC MSC
{B} Greater than NonRes Subsurface DC MSC
{C} Greater than NonRes Used Aquifer S-GW MSC
{D} Greater than NonRes VI SL

Notes:
1. All concentrations are presented in mg/kg.
2. Results exceeding the MSCs are shaded.
3. Aerial imagery source NearMap February 24, 2024.

Legend
- Property Boundary
- Act 2 Site
- Unconfined Soils/Aggregate
- 8" Firewater Line (active)
- 14" Gas Line (confirm abandoned)
- Sewer Piping

Excavation Area
- Excavation to 6"
- Excavation to 6"-8"
- Excavation to 8"-12"

BDH Soil Sample Location
- No Exceedances
- Exceeds SGW MSC
- Exceeds VISL

Sample Location

SEP4-SB19E	0-0.5(ft)	1.5-2(ft)
Benzene	0.00047 U	0.24 {D}

Sampling Depth
Result/MSC Exceed

0 20 40 Feet
1 inch = 20 feet

N

SAFETY FIRST

terraphase engineering

CLIENT: Bellwether District Holdings, LLC
PROJECT: No.4 Separator Release Area
PROJECT NUMBER: P044.001.012

Additional Soil Sampling Results

FIGURE 1

File: N:\GIS\Prj\P044.001_PESRM-PES\MXDs\No. 4 Separator Release Area\Soil Sampling Results\20240627-Terraphase-No4Sep-SoilSamplingResults-SB19Area.mxd 6/27/2024 Created by: M.Civitillo Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Attachment C

Additional Laboratory Reports

ANALYTICAL REPORT

Lab Number:	L2432184
Client:	Terraphase Engineering Inc. 1100 Canal Pointe Boulevard Suite 100 Princeton, NJ 08540
ATTN:	Nick Scala
Phone:	(609) 236-8171
Project Name:	BDH NO. 4 SEPARATOR
Project Number:	P044.001.012
Report Date:	06/11/24

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2432184
Report Date: 06/11/24

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2432184-01	SEP4-SB19R-0.0-0.5	SOIL	3144 W. PASSYUNK AVE.	06/07/24 07:53	06/07/24
L2432184-02	SEP4-SB19R-0.0-0.5D	SOIL	3144 W. PASSYUNK AVE.	06/07/24 07:53	06/07/24
L2432184-03	FB-240607	WATER	3144 W. PASSYUNK AVE.	06/07/24 08:20	06/07/24
L2432184-04	TB-240607	SOIL	3144 W. PASSYUNK AVE.	06/07/24 08:25	06/07/24

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2432184
Project Number:	P044.001.012	**Report Date:**	06/11/24

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2432184
Project Number:	P044.001.012	**Report Date:**	06/11/24

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 06/11/24

ORGANICS

VOLATILES

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2432184
Project Number: P044.001.012
Report Date: 06/11/24

SAMPLE RESULTS

Lab ID: L2432184-01
Client ID: SEP4-SB19R-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/07/24 07:53
Date Received: 06/07/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/09/24 15:22
Analyst: AJK
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.0011	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	**141**	Q	70-130
Dibromofluoromethane	95		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2432184
Project Number: P044.001.012
Report Date: 06/11/24

SAMPLE RESULTS

Lab ID: L2432184-02
Client ID: SEP4-SB19R-0.0-0.5D
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/07/24 07:53
Date Received: 06/07/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/09/24 15:45
Analyst: AJK
Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00072	0.00024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	126		70-130
Dibromofluoromethane	93		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2432184
Project Number: P044.001.012
Report Date: 06/11/24

SAMPLE RESULTS

Lab ID: L2432184-03
Client ID: FB-240607
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/07/24 08:20
Date Received: 06/07/24
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 06/08/24 16:41
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	111		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2432184
Project Number: P044.001.012
Report Date: 06/11/24

SAMPLE RESULTS

Lab ID: L2432184-04
Client ID: TB-240607
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/07/24 08:25
Date Received: 06/07/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/09/24 14:35
Analyst: AJK
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00050	0.00017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	89		70-130

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2432184
Report Date: 06/11/24

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/08/24 10:22
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1931907-5					
Benzene	ND		ug/l	0.50	0.16

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	110		70-130

Project Name: BDH NO. 4 SEPARATOR **Lab Number:** L2432184

Project Number: P044.001.012 **Report Date:** 06/11/24

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/09/24 14:09
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-02,04 Batch: WG1932201-5					
Benzene	ND		mg/kg	0.00050	0.00017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	91		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR

Project Number: P044.001.012

Lab Number: L2432184

Report Date: 06/11/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1931907-3 WG1931907-4								
Benzene	97		99		70-130	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		108		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	93		96		70-130
Dibromofluoromethane	105		106		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR

Project Number: P044.001.012

Lab Number: L2432184

Report Date: 06/11/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1932201-3 WG1932201-4								
Benzene	116		117		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	87		86		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	114		114		70-130
Dibromofluoromethane	92		89		70-130

INORGANICS
&
MISCELLANEOUS

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2432184
Report Date: 06/11/24

SAMPLE RESULTS

Lab ID: L2432184-01
Client ID: SEP4-SB19R-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.
Sample Depth:
Matrix: Soil
Date Collected: 06/07/24 07:53
Date Received: 06/07/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.9		%	0.100	NA	1	-	06/08/24 09:19	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2432184
Report Date: 06/11/24

SAMPLE RESULTS

Lab ID: L2432184-02
Client ID: SEP4-SB19R-0.0-0.5D
Sample Location: 3144 W. PASSYUNK AVE.
Sample Depth:
Matrix: Soil

Date Collected: 06/07/24 07:53
Date Received: 06/07/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.2		%	0.100	NA	1	-	06/08/24 09:19	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR

Project Number: P044.001.012

Lab Number: L2432184

Report Date: 06/11/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1931507-1 QC Sample: L2431553-01 Client ID: DUP Sample						
Solids, Total	86.8	86.6	%	0		20

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2432184
Report Date: 06/11/24

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2432184-01A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2432184-01B	Vial water preserved	A	NA		3.0	Y	Absent	08-JUN-24 03:07	PA-8260HLW(14)
L2432184-01C	Vial water preserved	A	NA		3.0	Y	Absent	08-JUN-24 03:07	PA-8260HLW(14)
L2432184-01D	Plastic 120ml unpreserved	A	NA		3.0	Y	Absent		TS(7)
L2432184-02A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2432184-02B	Vial water preserved	A	NA		3.0	Y	Absent	08-JUN-24 03:07	PA-8260HLW(14)
L2432184-02C	Vial water preserved	A	NA		3.0	Y	Absent	08-JUN-24 03:07	PA-8260HLW(14)
L2432184-02D	Plastic 120ml unpreserved	A	NA		3.0	Y	Absent		TS(7)
L2432184-03A	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260(14)
L2432184-03B	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260(14)
L2432184-03C	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260(14)
L2432184-04A	Vial MeOH preserved	A	NA		3.0	Y	Absent		PA-8260HLW(14)
L2432184-04B	Vial water preserved	A	NA		3.0	Y	Absent	08-JUN-24 03:07	PA-8260HLW(14)
L2432184-04C	Vial water preserved	A	NA		3.0	Y	Absent	08-JUN-24 03:07	PA-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2432184
Project Number:	P044.001.012	**Report Date:**	06/11/24

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2432184
Project Number:	P044.001.012	**Report Date:**	06/11/24

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2432184
Project Number:	P044.001.012	**Report Date:**	06/11/24

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2432184
Project Number:	P044.001.012	**Report Date:**	06/11/24

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 6/8/24

ALPHA Job #: L2432184

Client Information

Client: Terraphase Engineering Inc.
Address: 1100 E. Hector St. Ste 400
Conshohocken, PA 19428
Phone: 609-236-8171 ext. 92
Fax:
Email: nick.scala@terraphase.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: BDH - No. 4 separator
Project Location: 3144 W. Passyunk Ave.
Project #: P044.001.012
Project Manager: Nick Scala
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!)
2 day TAT
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☑ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Please send EDD to EDD@terraphase.com

ANALYSIS: Benzene via 5260

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Benzene via 5260	TOTAL # BOTTLES
32184-01	SEP4-SB19R-0.0-0.5	6/7/24	753	So	EEJ	X	
-02	SEP4-SB19R-0.0-0.5D	6/7/24	753	So	EEJ	X	
-03	FB-240607	6/7/24	820	W	EEJ	X	
-04	TB-240607	6/7/24	825	W	EEJ	X	

Ellie Johnston 6/7/24

6/8/24 0040

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
Ellie Johnston TEI	6/7/24 900	PACE	06072024 09:00
PACE	06072024 1450	PACE	6/7/24 14:50
	6/7/24		6/7/24 18:45
	6/7/2024	6/7 2200	6/8 040

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

ANALYTICAL REPORT

Lab Number:	L2434555
Client:	Terraphase Engineering Inc. 1100 Canal Pointe Boulevard Suite 100 Princeton, NJ 08540
ATTN:	Nick Scala
Phone:	(609) 236-8171
Project Name:	BDH NO. 4 SEPARATOR
Project Number:	P044.001.012
Report Date:	06/21/24

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2434555-01	SEP4-SB19E-0.0-0.5	SOIL	3144 W. PASSYUNK AVE.	06/19/24 08:10	06/19/24
L2434555-02	SEP4-SB19E-1.5-2.0	SOIL	3144 W. PASSYUNK AVE.	06/19/24 08:50	06/19/24
L2434555-03	SEP4-SB19W-0.0-0.5	SOIL	3144 W. PASSYUNK AVE.	06/19/24 09:00	06/19/24
L2434555-04	SEP4-SB19W-0.0-0.5D	SOIL	3144 W. PASSYUNK AVE.	06/19/24 09:00	06/19/24
L2434555-05	SEP4-SB19W-1.5-2.0	SOIL	3144 W. PASSYUNK AVE.	06/19/24 09:30	06/19/24
L2434555-06	SEP4-SB19S-0.0-0.5	SOIL	3144 W. PASSYUNK AVE.	06/19/24 10:04	06/19/24
L2434555-07	SEP4-SB19S-1.5-2.0	SOIL	3144 W. PASSYUNK AVE.	06/19/24 10:45	06/19/24
L2434555-08	FB-240619	WATER	3144 W. PASSYUNK AVE.	06/19/24 10:55	06/19/24
L2434555-09	TB-240619	SOIL	3144 W. PASSYUNK AVE.	06/19/24 11:00	06/19/24

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2434555
Project Number:	P044.001.012	**Report Date:**	06/21/24

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2434555
Project Number:	P044.001.012	**Report Date:**	06/21/24

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2434555-02: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (147%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2434555-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (140%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2434555-04: One or more of the internal standard recoveries is outside the acceptance criteria; however, the internal standard is within criteria for the target compounds; therefore, the results are reported.

L2434555-04: The surrogate recovery is outside the method acceptance criteria for 4-bromofluorobenzene (190%) due to interference with the Internal Standard.

L2434555-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (166%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2434555-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (262%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2434555-07: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2434555-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 06/21/24

ORGANICS

VOLATILES

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-01
Client ID: SEP4-SB19E-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 08:10
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 15:17
Analyst: RAW
Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00047	0.00016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	91		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-02
Client ID: SEP4-SB19E-1.5-2.0
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 08:50
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 20:29
Analyst: JIC
Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	0.24		mg/kg	0.048	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	**147**	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-03
Client ID: SEP4-SB19W-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 09:00
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 15:41
Analyst: RAW
Percent Solids: 71%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.0010		mg/kg	0.00081	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	**140**	Q	70-130
Dibromofluoromethane	95		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-04
Client ID: SEP4-SB19W-0.0-0.5D
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 09:00
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 16:05
Analyst: RAW
Percent Solids: 69%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	0.00032	J	mg/kg	0.00086	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	**190**	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-05
Client ID: SEP4-SB19W-1.5-2.0
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 09:30
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 20:53
Analyst: JIC
Percent Solids: 66%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	0.26		mg/kg	0.046	0.015	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	**166**	Q	70-130
Dibromofluoromethane	84		70-130

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-06
Client ID: SEP4-SB19S-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 10:04
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 17:17
Analyst: RAW
Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00056	0.00019	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	**262**	Q	70-130
Dibromofluoromethane	123		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-07
Client ID: SEP4-SB19S-1.5-2.0
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 10:45
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 21:16
Analyst: JIC
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	ND		mg/kg	0.032	0.010	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	**135**	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-08
Client ID: FB-240619
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 10:55
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 06/20/24 15:43
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	108		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-09
Client ID: TB-240619
Sample Location: 3144 W. PASSYUNK AVE.
Date Collected: 06/19/24 11:00
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 16:29
Analyst: RAW
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	ND		mg/kg	0.025	0.0083	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	90		70-130

Project Name: BDH NO. 4 SEPARATOR
Lab Number: L2434555
Project Number: P044.001.012
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-09
Client ID: TB-240619
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 11:00
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260D
Analytical Date: 06/20/24 16:53
Analyst: RAW
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Benzene	ND		mg/kg	0.00050	0.00017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	88		70-130

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/20/24 08:16
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08 Batch: WG1937075-5					
Benzene	ND		ug/l	0.50	0.16

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	104		70-130

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/20/24 13:40
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04,06,09 Batch: WG1937552-5					
Benzene	ND		mg/kg	0.00050	0.00017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	90		70-130

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/20/24 13:40
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 02,05,07,09 Batch: WG1937553-5					
Benzene	ND		mg/kg	0.025	0.0083

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	90		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08 Batch: WG1937075-3 WG1937075-4								
Benzene	100		91		70-130	9		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		104		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	107		106		70-130
Dibromofluoromethane	99		100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR

Project Number: P044.001.012

Lab Number: L2434555

Report Date: 06/21/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04,06,09 Batch: WG1937552-3 WG1937552-4								
Benzene	93		96		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	86		90		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	113		112		70-130
Dibromofluoromethane	89		91		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR

Project Number: P044.001.012

Lab Number: L2434555

Report Date: 06/21/24

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 02,05,07,09 Batch: WG1937553-3 WG1937553-4								
Benzene	93		96		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	86		90		70-130
Toluene-d8	100		101		70-130
4-Bromofluorobenzene	113		112		70-130
Dibromofluoromethane	89		91		70-130

INORGANICS
&
MISCELLANEOUS

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-01
Client ID: SEP4-SB19E-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.
Sample Depth:
Matrix: Soil

Date Collected: 06/19/24 08:10
Date Received: 06/19/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-02
Client ID: SEP4-SB19E-1.5-2.0
Sample Location: 3144 W. PASSYUNK AVE.
Sample Depth:
Matrix: Soil

Date Collected: 06/19/24 08:50
Date Received: 06/19/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.1		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-03
Client ID: SEP4-SB19W-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 09:00
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	71.4		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-04
Client ID: SEP4-SB19W-0.0-0.5D
Sample Location: 3144 W. PASSYUNK AVE.
Sample Depth:
Matrix: Soil

Date Collected: 06/19/24 09:00
Date Received: 06/19/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	69.1		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-05
Client ID: SEP4-SB19W-1.5-2.0
Sample Location: 3144 W. PASSYUNK AVE.

Sample Depth:
Matrix: Soil

Date Collected: 06/19/24 09:30
Date Received: 06/19/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	66.1		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-06
Client ID: SEP4-SB19S-0.0-0.5
Sample Location: 3144 W. PASSYUNK AVE.

Date Collected: 06/19/24 10:04
Date Received: 06/19/24
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.9		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012
Lab Number: L2434555
Report Date: 06/21/24

SAMPLE RESULTS

Lab ID: L2434555-07
Client ID: SEP4-SB19S-1.5-2.0
Sample Location: 3144 W. PASSYUNK AVE.
Sample Depth:
Matrix: Soil
Date Collected: 06/19/24 10:45
Date Received: 06/19/24
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.3		%	0.100	NA	1	-	06/20/24 10:36	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: BDH NO. 4 SEPARATOR

Project Number: P044.001.012

Lab Number: L2434555

Report Date: 06/21/24

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG1936971-1 QC Sample: L2434130-01 Client ID: DUP Sample						
Solids, Total	84.4	84.1	%	0		20

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2434555-01A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-01B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-01C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-01D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-02A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-02B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-02C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-02D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-03A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-03B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-03C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-03D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-04A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-04B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-04C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-04D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-05B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-05C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-05D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-06A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-06B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-06C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)

*Values in parentheses indicate holding time in days

Project Name: BDH NO. 4 SEPARATOR
Project Number: P044.001.012

Lab Number: L2434555
Report Date: 06/21/24

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2434555-06D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14)
L2434555-07B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-07C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14)
L2434555-07D	Plastic 120ml unpreserved	A	NA		2.7	Y	Absent		TS(7)
L2434555-08A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260-BTEX(14)
L2434555-08B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260-BTEX(14)
L2434555-08C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260-BTEX(14)
L2434555-09A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW-BTEX(14),PA-8260H(14)
L2434555-09B	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14),PA-8260H(14)
L2434555-09C	Vial water preserved	A	NA		2.7	Y	Absent	20-JUN-24 08:39	PA-8260HLW-BTEX(14),PA-8260H(14)

*Values in parentheses indicate holding time in days

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2434555
Project Number:	P044.001.012	**Report Date:**	06/21/24

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2434555
Project Number:	P044.001.012	**Report Date:**	06/21/24

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2434555
Project Number:	P044.001.012	**Report Date:**	06/21/24

Data Qualifiers

Identified Compounds (TICs). For calculated parameters, this represents that one or more values used in the calculation were estimated.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name:	BDH NO. 4 SEPARATOR	**Lab Number:**	L2434555
Project Number:	P044.001.012	**Report Date:**	06/21/24

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Nonpotable Water: EPA RSK-175 Dissolved Gases
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 6/19/24

ALPHA Job #: L2434555

Client Information

Client: Terraphase Engineering
Address: 1100 E. Hector St., Ste 400
Conshohocken, PA 19428
Phone: 609-236-8171 ext. 92
Fax:
Email: nick.scala@terraphase.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: BDH-No.4 separator
Project Location: 3144 W. Passyunk Ave.
Project #: P044.001.012
Project Manager: Nick Scala
ALPHA Quote #:

Turn-Around Time

☐ Standard ☒ RUSH (only confirmed if pre-approved!)
Date Due: 2-day TAT Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
Please send EDD to EDD@terraphase.com

ANALYSIS: Benzene VIA 8260

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Benzene VIA 8260	TOTAL # BOTTLES
3455501	SEP4-SB19E-0.0-0.5	6/19/24	810	So	MMM	X	
-02	SEP4-SB19E-1.5-2.0	6/19/24	850	So	MMM	X	
-03	SEP4-SB19W-0.0-0.5	6/19/24	900	So	MMM	X	
-04	SEP4-SB19W-0.0-0.5D	6/19/24	900	So	MMM	X	
-05	SEP4-SB19W-1.5-2.0	6/19/24	930	So	MMM	X	
-06	SEP4-SB19S-0.0-0.5	6/19/24	~~945~~ 1004	So	MMM	X	
-07	SEP4-SB19S-1.5-2.0	6/19/24	~~1020~~ 1045	So	MMM	X	
-08	FB-240619	6/19/24	1055	~~So~~ W	MMM	X	
-09	TB-240619	6/19/24	1100	W	MMM	X	
-10							

Ellie Johnston 6/19/24

6/20/24 0200

Container Type											
Preservative											

Relinquished By:	Date/Time	Received By:	Date/Time
Ellie Johnston TEI	6/19/24 1226	Nicole Page	6/19/24 1226
Nicole Page	6/19/24 1710		6/19/24 1710
	6/19/24 1900		6/19/24 18:05
	6/19/24		6/19/24 2330

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

6/20 200

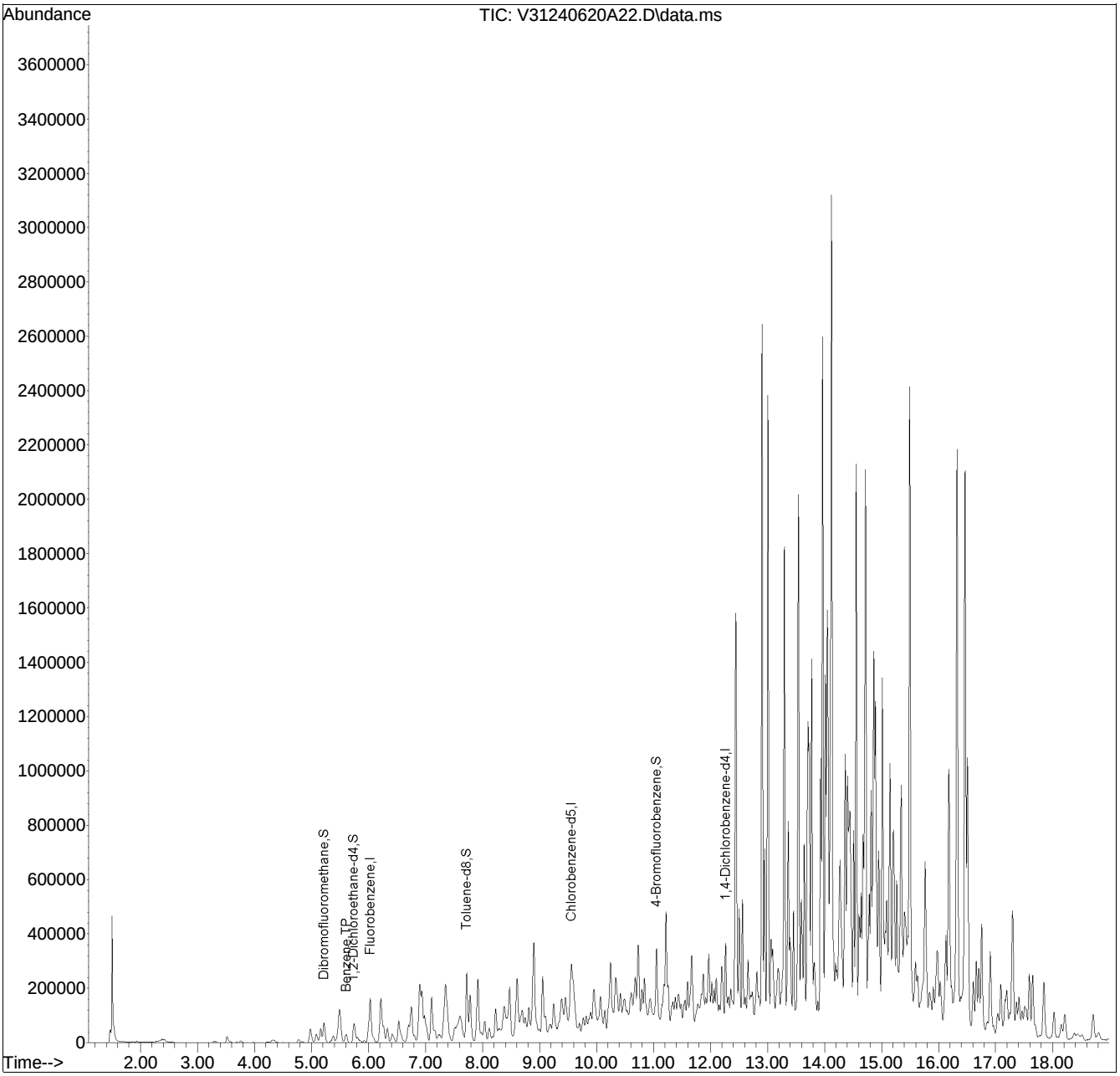
FORM NO. 01-01 (rev. 14-OCT-07)

Quantitation Report (QT Reviewed)

Data Path : K:\VOA131\2024\240620A\
Data File : V31240620A22.D
Acq On : 20 Jun 2024 08:29 pm
Operator : VOA131:JIC
Sample : l2434555-02,31h,4.083,5,0.100,,a,r3b
Misc : WG1937553,ICAL21120
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Jun 21 08:01:05 2024
Quant Method : K:\VOA131\2024\240620A\V131_240513A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 14 10:51:42 2024
Response via : Initial Calibration

Sub List : 8260-Benzene - benzene onlyV31240620A01.D•

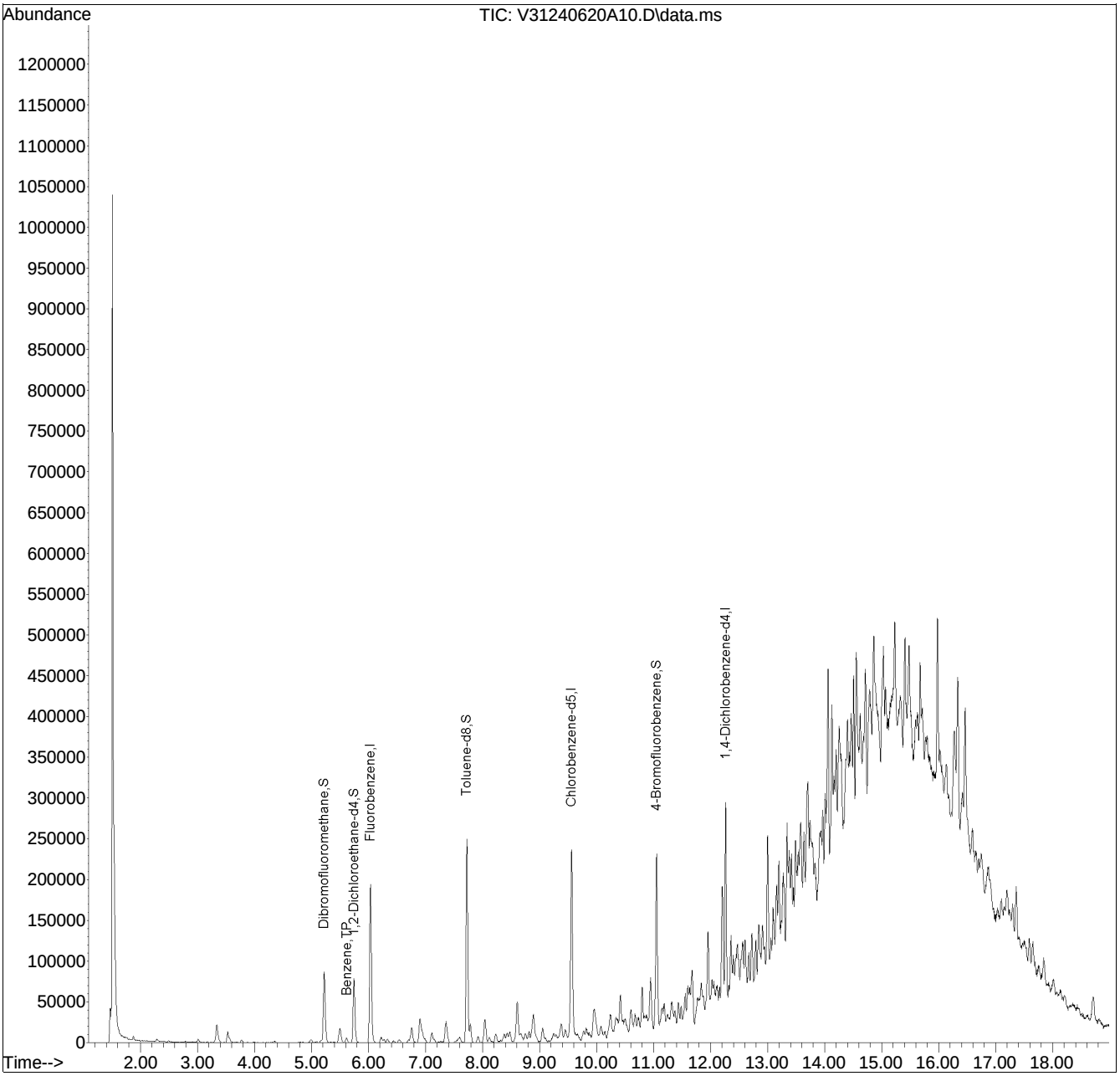


Quantitation Report (QT Reviewed)

Data Path : K:\VOA131\2024\240620A\
Data File : V31240620A10.D
Acq On : 20 Jun 2024 03:41 pm
Operator : VOA131:RAW
Sample : l2434555-03,31,4.34,5,,b,r3b
Misc : WG1937552,ICAL21120
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Jun 20 19:44:24 2024
Quant Method : K:\VOA131\2024\240620A\V131_240513A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 14 10:51:42 2024
Response via : Initial Calibration

Sub List : 8260-Benzene - benzene onlyV31240620A01.D•



Quantitation Report (QT Reviewed)

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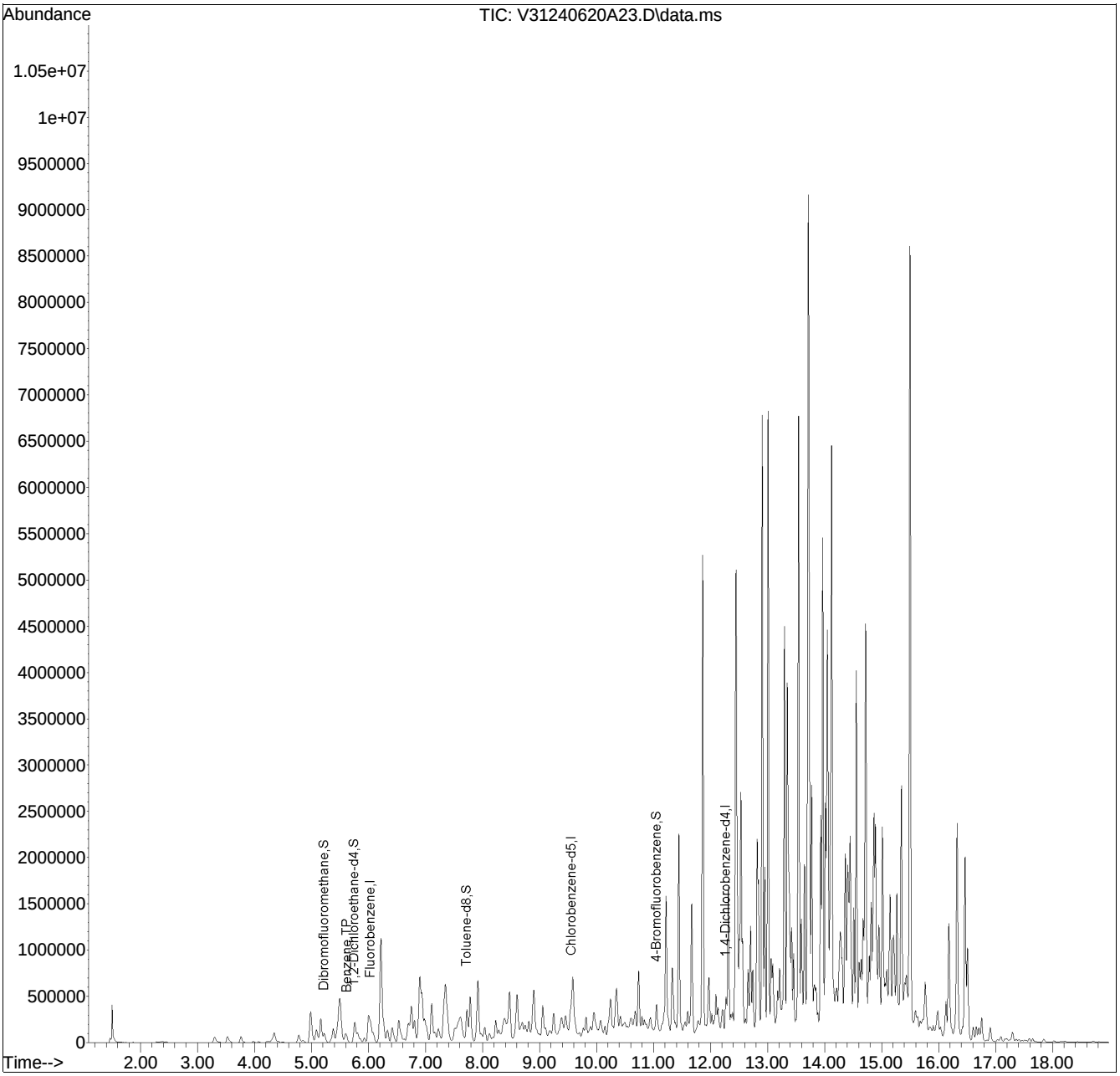
Data File : V31240620A23.D
Acq On : 20 Jun 2024 08:53 pm
Operator : VOA131:JIC
Sample : l2434555-05,31h,5.71,5,0.100,,a,r3b
Misc : WG1937553,ICAL21120
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Jun 21 08:01:10 2024
Quant Method : K:\VOA131\2024\240620A\V131_240513A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 14 10:51:42 2024
Response via : Initial Calibration

Sub List : 8260-Benzene - benzene onlyV31240620A01.D•



Quantitation Report (QT Reviewed)

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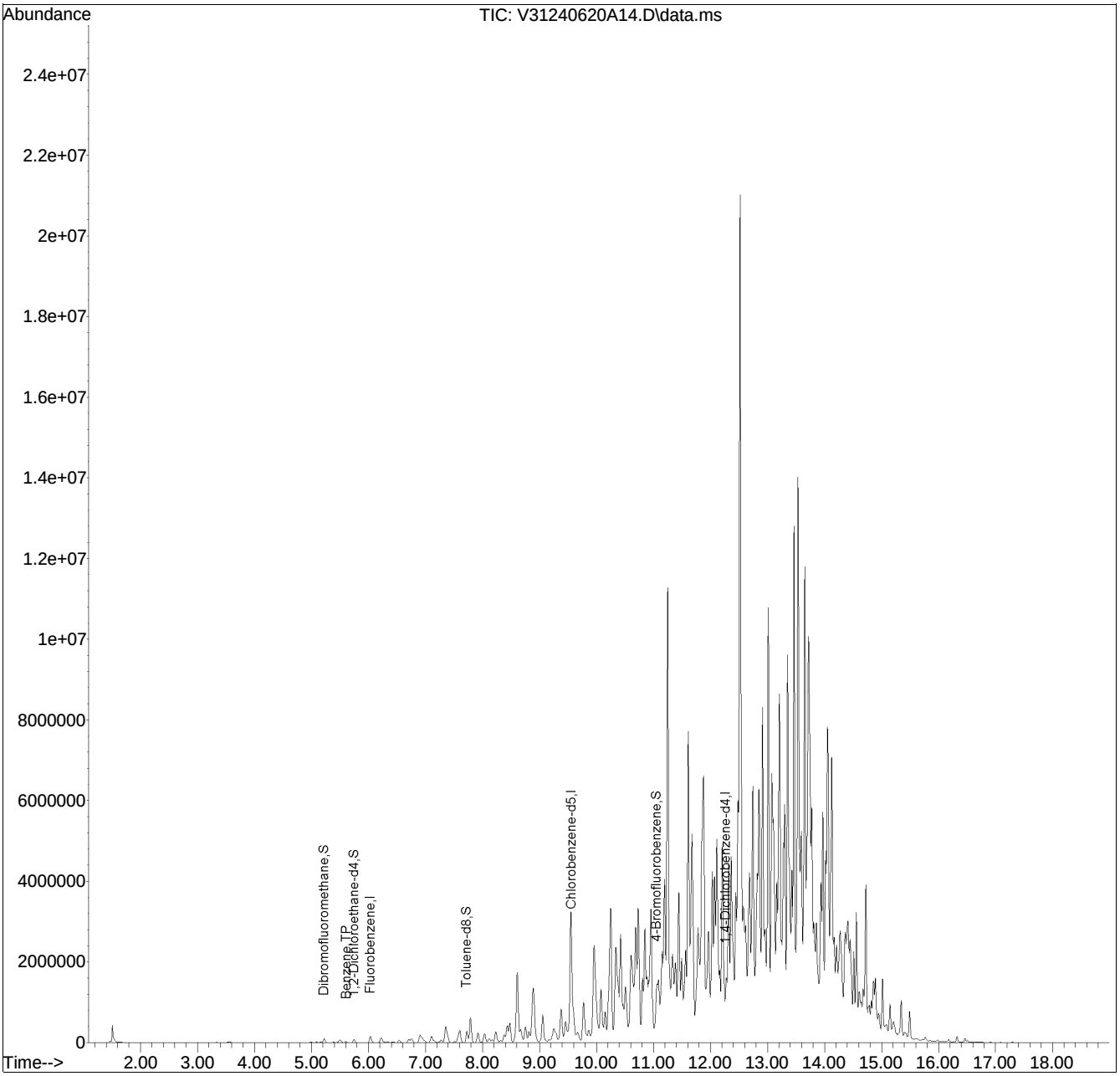
Data File : V31240620A14.D
Acq On : 20 Jun 2024 05:17 pm
Operator : VOA131:RAW
Sample : l2434555-06,31,4.74,5,,b,r3b
Misc : WG1937552,ICAL21120
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Jun 20 19:51:53 2024
Quant Method : K:\VOA131\2024\240620A\V131_240513A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 14 10:51:42 2024
Response via : Initial Calibration

Sub List : 8260-Benzene - benzene onlyV31240620A01.D•

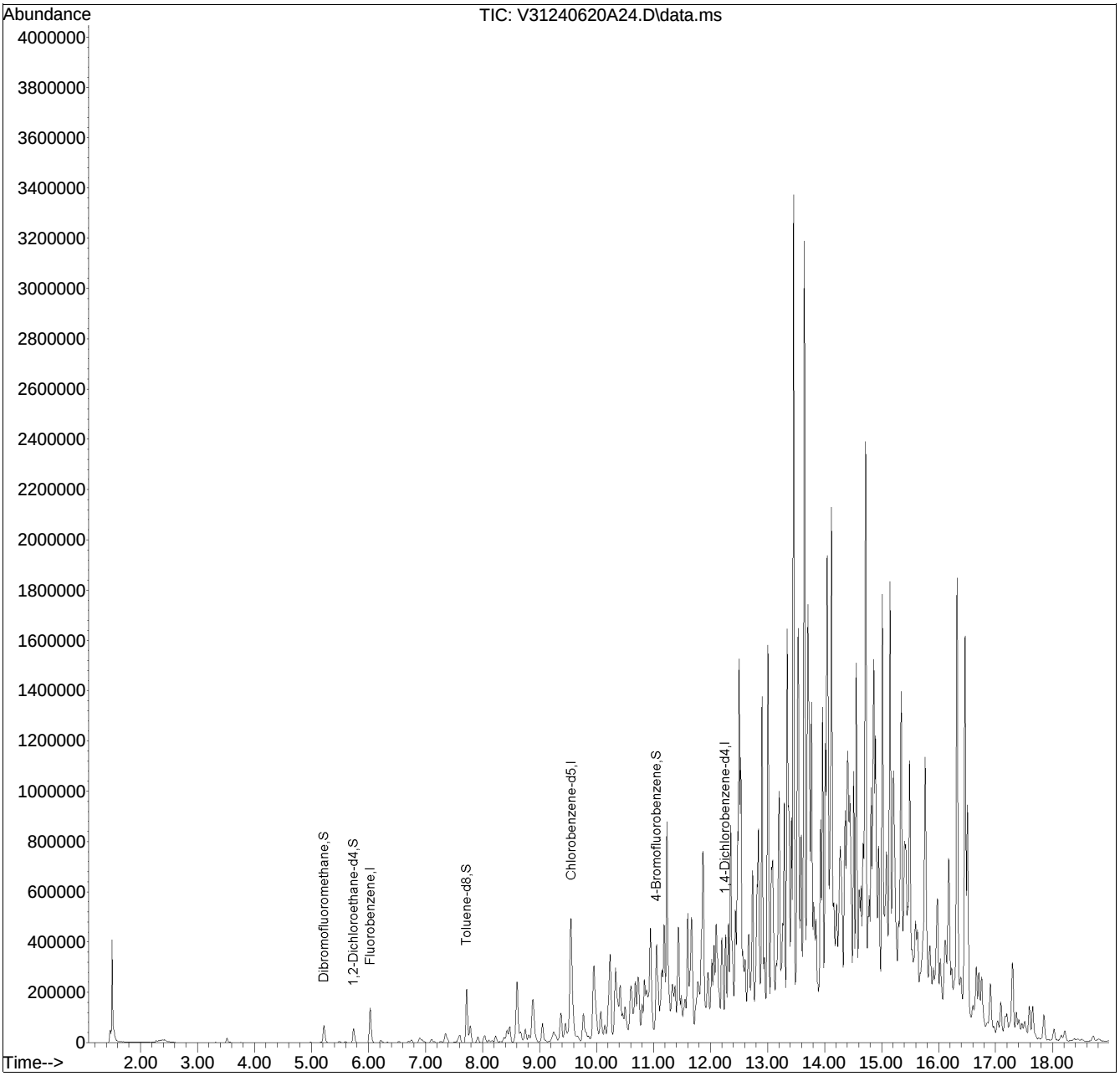


Quantitation Report (QT Reviewed)

Data Path : K:\VOA131\2024\240620A\
Data File : V31240620A24.D
Acq On : 20 Jun 2024 09:16 pm
Operator : VOA131:JIC
Sample : l2434555-07,31h,4.75,5,0.100,,a,r3b
Misc : WG1937553,ICAL21120
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Jun 21 08:01:14 2024
Quant Method : K:\VOA131\2024\240620A\V131_240513A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 14 10:51:42 2024
Response via : Initial Calibration

Sub List : 8260-Benzene - benzene onlyV31240620A01.D•



Attachment D

Additional Soil Boring Logs

Project: **BDH - No. 4 Separator**
Project Location: **3144 W. Passyunk Ave., Philadelphia, PA**
Project Number: **P044.001.012**

Log of Boring SEP4-SB19E

Sheet 1 of 1

Date(s) Drilled **6/19/24**	Logged By **M. Mowrer**	Checked By **N. Scala**
Drilling Method **Hand Auger**	Drill Bit Size/Type **2"x6" Split Spoon w/ Acetate Liner**	Total Depth of Borehole **2 feet bgs**
Drill Rig Type **N/A**	Drilling Contractor **TEI**	Elevation **N/A**
Groundwater Level **N/A**	Sampling Method(s) **Grab**	Temporary Well **N/A**
Borehole Backfill **Soil Cuttings**	Location **BDH - No. 4 Separator**	

Depth (feet)	Recovery (inches)	Sample Type	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0			SP		CLAYEY SAND, brownish yellow, dry, loose, coarse sand, rounded gravel; fill material	1.2	Sample SEP4-SB19E-0.0-0.5 collected from 0.0' to 0.5' bgs.
	24/24					2.3	
			SP		CLAYEY SAND, black, damp, rounded gravel, petroleum-like odor; fill material	5.0	
						20.1	Sample SEP4-SB19E-1.5-2.0 collected from 1.5' to 2.0' bgs.
2					End boring at 2.0' bgs		

C:\Users\Ellie\AppData\Local\Temp\borings_temp\tmpfile.bgs[no well shallow_KJO.tpl]

Project: **BDH - No. 4 Separator**

Project Location: **3144 W. Passyunk Ave., Philadelphia, PA**

Project Number: **P044.001.012**

Log of Boring SEP4-SB19W

Sheet 1 of 1

Date(s) Drilled **6/19/24**	Logged By **M. Mowrer**	Checked By **N. Scala**
Drilling Method **Hand Auger**	Drill Bit Size/Type **2"x6" Split Spoon Liner**	Total Depth of Borehole **2 feet bgs**
Drill Rig Type **N/A**	Drilling Contractor **TEI**	Elevation **N/A**
Groundwater Level **N/A**	Sampling Method(s) **Grab**	Temporary Well **N/A**
Borehole Backfill **Soil Cuttings**	Location **BDH - No. 4 Separator**	

Depth (feet)	Recovery (inches)	Sample Type	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0			SP		CLAYEY SAND, dark brown, moist, with rounded gravel; fill material	5.2	Sample SEP4-SB19W-0.0-0.5 and SEP4-SB19W-0.0-0.5D collected from 0.0' to 0.5' bgs.
	24/24		CL		CLAY, black, wet, slight plasticity, sparse medium coarse sand petroleum-like odor; fill material	150.2 170.4 163.1	Sample SEP4-SB19W-1.5-2.0 collected from 1.5' to 2.0' bgs.
2					End boring at 2.0' bgs		

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Project: **BDH - No. 4 Separator**

Project Location: **3144 W. Passyunk Ave., Philadelphia, PA**

Project Number: **P044.001.012**

Log of Boring SEP4-SB19S

Sheet 1 of 1

Date(s) Drilled **6/19/24**	Logged By **M. Mowrer**	Checked By **A. Strohl**
Drilling Method **Hand Auger**	Drill Bit Size/Type **2"x6" Split Spoon Liner**	Total Depth of Borehole **2 feet bgs**
Drill Rig Type **N/A**	Drilling Contractor **TEI**	Elevation **N/A**
Groundwater Level **N/A**	Sampling Method(s) **Grab**	Temporary Well **N/A**
Borehole Backfill **Soil Cuttings**	Location **BDH - No. 4 Separator**	

Depth (feet)	Recovery (inches)	Sample Type	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0			GW		SANDY GRAVEL, grayish brown, dry, loose, well graded; fill material	2.5	Sample SEP4-SB19S-0.0-0.5 collected from 0.0' to 0.5' bgs.
	24/24		GW		petroleum-like odor	5.2	
						276.6	
						92.3	Sample SEP4-SB19S-1.5-2.0 collected from 1.5' to 2.0' bgs.
2					End boring at 2.0' bgs		

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Project: **BDH - No. 4 Separator**
Project Location: **3144 W. Passyunk Ave., Philadelphia, PA**
Project Number: **P044.001.012**

Key to Log of Boring

Sheet 1 of 1

Depth (feet)	Recovery (inches)	Sample Type	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8

COLUMN DESCRIPTIONS

1 Depth (feet): Depth in feet below the ground surface.
2 Recovery (inches): Percent Recovery
3 Sample Type: Type of soil sample collected at the depth interval shown.
4 USCS Symbol: USCS symbol of the subsurface material.
5 Graphic Log: Graphic depiction of the subsurface material encountered.
6 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
7 PID Reading, ppm: The reading from a photo-ionization detector, in parts per million.
8 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS

Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
Well graded GRAVEL (GW)
Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS

Grab Sample

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)
Water level (after waiting, AW)
Minor change in material properties within a stratum
Inferred/gradational contact between strata
Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

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