ARM Group LLC
Engineers and Scientists

September 1, 2023

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Re: NAPL Delineation Completion Letter
(Revision 1)
Area B: Parcel B17
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic (TPA), has prepared this Letter to provide a summary of the non-aqueous phase liquid (NAPL) delineation activities at Parcel B17 (the Site, refer to **Figure 1**) on the TPA property located in Sparrows Point, Maryland. The work was completed in accordance with the *NAPL Delineation Work Plan* for Parcel B17 (Revision 1 dated May 1, 2023) that was submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (EPA) (hereafter referred to as the Agencies).

1.0 Soil Sampling

Soil conditions within and surrounding the Site have been characterized by the *Parcel B17 Phase II Investigation Report* (Revision 1 dated August 7, 2019), the *SW-026 NAPL Delineation Interim Report* (dated June 3, 2021), the *Parcel B17 NAPL Delineation Work Plan* (Revision 1 dated May 1, 2023), and the *Soil Gas Investigation Report for Project Huddell* (dated March 24, 2022). The reports for these parcels have been submitted to the MDE and USEPA (submittal dates listed above). Relevant soil boring locations from the Phase II Investigation are shown in **Figure 2**.

Based on the Phase II Investigation, there were PAL exceedances for inorganics (arsenic, lead, and manganese), PCBs, semi-volatile organic compounds (SVOCs), and Oil & Grease observed within the soil borings (refer to **Figures S1-S4**). The maximum detections of lead and arsenic identified in soil during this Phase II Investigation were co-located in two samples: B17-014-SB-5 (lead detection of 9,720 mg/kg and arsenic detection of 204 mg/kg) and B17-019-SB-4 (lead detection of 6,780 mg/kg and arsenic detection of 218 mg/kg). Delineation activities were completed at these two locations, with the delineation results presented in the Supplemental Investigation Report for Lead and Arsenic Impacted Soil at B17-014-SB and B17-019-SB (dated August 7, 2019). No

further investigation was required at that time; however, the Report indicated that the need for additional action in the future would be determined by risk assessments to be presented in associated Response and Development Work Plans.

Evidence of NAPL was detected in soil at the Site and further delineation efforts were conducted, which is discussed in Section 3.0.

2.0 Groundwater Sampling

Groundwater at the Site was characterized by the Area B Groundwater Phase II Investigation (Revision 0 dated September 30, 2016) and the Parcel B17 Phase II Investigation Report in 2016 and 2017 (refer to **Figure 3** for applicable groundwater locations). All Phase II results were compared to the groundwater PALs (refer to **Table 1A**). **Figures GW1** through **GW3** show PAL exceedances in groundwater. PAL exceedances included six SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, and naphthalene) and TPH-DRO. The SVOC PAL exceedances were minor. TPH-DRO was detected at a maximum concentration of 530 micrograms per liter (µg/L) (compared to a PAL of 47 µg/L) from SW-026-MWS. All results were also compared to USEPA's Vapor Intrusion Screening Levels (VISLs) for commercial properties (refer to **Table 1A**). There were no VISL exceedances during the Phase II Investigation.

An additional groundwater sample was collected from SW-026-MWS in May 2023, prior to abandonment (refer to **Appendix C** for the lab report). The results were compared to the groundwater PALs and the VISLs (refer to **Table 1B**). PAL exceedances included two SVOCs (benz[a]anthracene and naphthalene) and TPH-DRO. The SVOC PAL exceedances were minor. TPH-DRO was detected at a maximum concentration of 7,600 micrograms per liter (µg/L) (compared to a PAL of 47 µg/L) from SW-026-MWS. There were no VISL exceedances in May 2023.

3.0 NAPL Investigation and Delineation

Groundwater at the Site was characterized by the Area B Groundwater Phase II Investigation (Revision 0 dated September 30, 2016), the SW-026 NAPL Delineation Interim Report and the Parcel B17 Phase II Investigation Report. NAPL was first identified in MW-026-MWS in August 2020. Multiple rounds of delineation were conducted in 2020 and 2021 via NAPL screening piezometers and test pits (refer to **Figure 4**).

In March 2021, a NAPL sample was collected from the delineation piezometers and submitted for hydrocarbon matching analysis and interpretation of the results to Torkelson Geochemistry, Inc. The results indicate that the NAPL appears to be a lubricating oil with a very small amount of lighter end hydrocarbons (refer to **Appendix A**).

Observation points were installed in September 2021 within test pits TP-1, TP-2, TP-4, and TP-7 based on NAPL observations in the test pits. Regular NAPL gauging and removal (where possible) was conducted throughout 2022 and January 2023. Since February 2022, NAPL was observed

during one or more gauging events in monitoring well SW-026-MWS, three 1-inch NAPL screening piezometers (SW-026D-MWS, SW-026E-MWS, SW-026G-MWS), one 4-inch geotechnical boring (B17 Geotech Boring OP), and TP-1 Observation Point (OP). Where measurable NAPL was observed, it was removed via bailer, absorbent sock, or Enhanced Fluid Recovery (EFR), which is high vacuum extraction of product and water from a sealed well. However, minimal NAPL recovery has occurred, in part due to the slow NAPL recharge in MW-026-MWS following removal activities, and in part due to the low volume and viscous nature of the NAPL observed in the Geotech Boring. As shown in **Figure 4**, NAPL delineation around MW-026-MWS is complete. The viscous NAPL observed in the Geotech Boring does not appear to be related to the NAPL observed in the vicinity of MW-026-MWS.

On May 2-3, 2023, multiple monitoring points were abandoned in accordance with the Parcel B17 NAPL Delineation Work Plan (Revision 1 dated May 1, 2023): three 1-inch piezometers (SW-026D-MWS, SW-026E-MWS, SW-026G-MWS), one 4-inch geotechnical boring, and one observation point. Five test pits were advanced to further delineate the extent of NAPL within the Site where the previous piezometers and geotechnical borings were located (refer to **Figure 5**). The test pits were advanced to approximately 2 feet below the water table. No NAPL or sheen was observed in TP-E. A light to moderate NAPL sheen and / or NAPL globules has been observed within the remaining four test pits, with sheen / globules covering between 20% (TP-B, former Geotech Boring) to 80% (TP-G, former SW-026G-MWS) of the groundwater surface within the test pits. There is no measurable NAPL thickness in any of the test pits. No PID readings above 10 parts per million (ppm) were identified in any of the excavated soils.

Monitoring well SW-026-MWS was later abandoned on May 25, 2023, in accordance with the Monitoring Well Abandonment Request Letter (Revision 0 dated May 16, 2023). The last measured product thickness before abandonment was 0.34 ft of LNAPL, and a groundwater sample was collected from the well for laboratory analysis prior to abandonment (as discussed in Section 2.0). An additional test pit was installed in the place of SW-026-MWS.

In June 2023, a light to moderate NAPL sheen and / or NAPL globules was observed in several of the test pits, although the sheen / globules did not cover the entire test pit groundwater surface, and there was no measurable NAPL thickness in any of the open test pits. Absorbent pads have been used for several test pits with sheen / slight globules (TP-G, TP-O, TP-B). Additional test pits checks were conducted throughout July and August 2023 (refer to **Appendix B** for final photos). During the NAPL checks, either no sheen or minimal sheen was observed in TP-D and TP-E. A moderate NAPL sheen was observed in the SW-026-MWS test pit, TP-G TP-O, and TP-B.

4.0 Soil Gas Sampling

As part of previous development work (Project Huddell, which is no longer proceeding) in 2022, soil gas sampling was conducted at the Shipyard. On February 23 and 24, 2022, a total of eleven temporary sub-slab soil gas collection points were installed in accordance with the methods specified in the *Soil Gas Investigation Work Plan* (Revision 0 submitted February 15, 2022). On February 24, 2022, all soil gas samples were collected and analyzed for volatile organic

compounds (VOCs) via USEPA Method TO-15. Of those, four locations (SG-1, SG-2, SG-3, and SG-6) were within Parcel B17 (refer to **Figure 6**). SG-2 was advanced in the vicinity of the SW-026-MWS NAPL delineation. While there were several VOCs detected at low concentrations in the samples, none of the detected concentrations exceeded the MDE Tier I Commercial Soil Gas Screening Levels in any of the samples submitted for analysis (refer to **Table 2**). The *Soil Gas Sampling Report* was submitted for MDE review on March 24, 2022.

Based on the absence of exceedances of the MDE Tier I Commercial Soil Gas Screening Levels, there does not appear to be a significant risk to future workers via the VI to indoor air risk pathway, and the future structure should be suitable for occupancy.

5.0 Proposed Development

Sub-Parcel B17-1 consists of approximately 43.5 acres (covering Parcel B17 and the adjacent Shipyard area) with plans for construction of an approximate one million square foot warehouse building. Sub-Parcel B17-1 is currently slated for grading in accordance with the *Sub-Parcel B17-1 Grading Plan* (Revision 0 dated May 26, 2023). Fill material will be placed to raise the elevation at the Site. No utility installations, excavations, or other ground intrusive works will be conducted during this phase of development.

The NAPL identified within the B17 / SW-026 area has been delineated. Within the B17 / SW-026 NAPL area, NAPL recovery within monitoring wells and piezometers has been minimal due to the slow NAPL recharge in MW-026-MWS and the low volume and viscous nature of the NAPL observed in the Geotech Boring. Test pits were installed in the area of the former monitoring wells and piezometers and have been observed from May 2023 through August 2023. Absorbent pads have been used for several test pits with sheen / slight globules (TP-G, TP-O, TP-B). No measurable thickness of NAPL has been identified in any of the test pits. MW-026-MWS has been excavated with the remaining test pit intermittently exhibiting minimal rainbow sheen on the groundwater.

Soil gas sampling conducted in 2022 did not identify any exceedances of the MDE Tier I Commercial Soil Gas Screening Levels within the proposed building footprint, including samples collected from Parcel B17. Therefore, the potential vapor intrusion risk for the proposed building is assumed to be minimal.

No excavated material exhibited evidence of contamination (staining, tar-like coating, odor, or > 10 ppm PID readings). At this time, TPA proposes to backfill the Parcel B17 test pit locations with excavated material.

If you have questions regarding any information covered in this document, please feel free to contact Peter Haid at Tradepoint Atlantic: 443-649-5055.

Respectfully Submitted,
ARM Group LLC

Joshua M. Barna, G.I.T.
Project Geologist

Kaye Guille, P.E., PMP
Senior Engineer

Attachments:

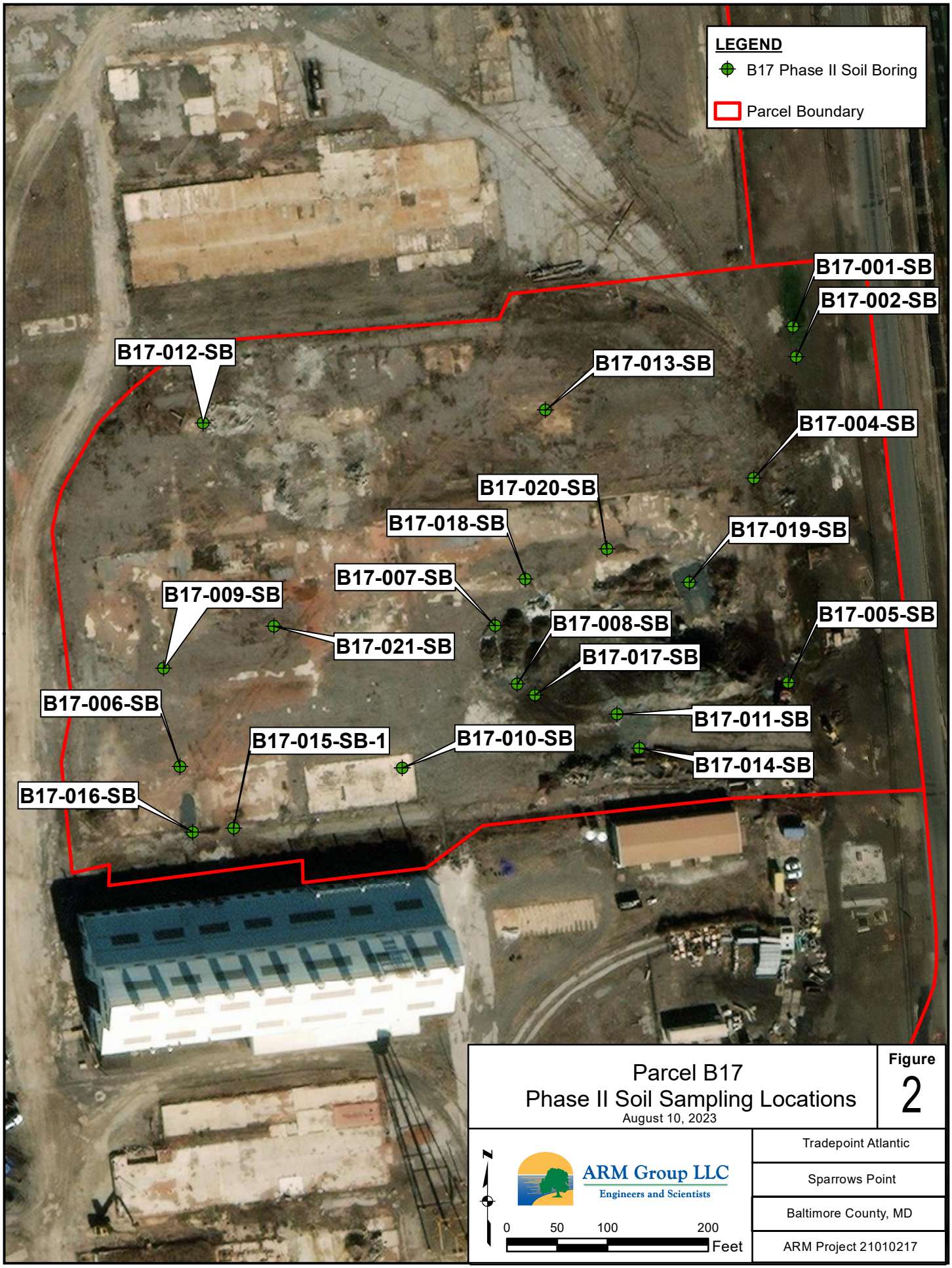
Figure 1: Area A and Area B Parcels
Figure 2: Soil Sampling Locations
Figure S1: Inorganics Soil PAL Exceedances
Figure S2: PCB Soil PAL Exceedances
Figure S3: SVOC Soil PAL Exceedances
Figure S4: TPH / O&G Soil PAL Exceedances
Figure 3: Phase II Groundwater Sampling Locations
Figure GW1: SVOC Exceedances
Figure GW2: TPH Exceedances
Figure GW3: Inorganic Exceedances
Figure 4: Historic NAPL Locations
Figure 5: Current Conditions
Figure 6: Soil Gas Sampling Locations

Table 1A: Summary of Detection in Groundwater (Phase II Investigation)
Table 1B: Summary of Detection in Groundwater (2023 Sampling)
Table 2: Results for Detected VOCs in Soil Gas Samples

Appendix A: Torkelson NAPL Report
Appendix B: Parcel B17 Test Pit Photograph Log
Appendix C: SW-026-MWS Laboratory Report

FIGURES


LEGEND
B17 Parcel Boundary
Parcel Boundaries
Site Boundary
Private Property
Parcel A9
Parcel A13
Parcel A5
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A2
Parcel A15
Parcel A17
Parcel A18
Parcel A6
Parcel A4
Parcel A10
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B22
Parcel B16
Parcel B21
Parcel B15
Parcel B24
Parcel B23
Parcel B25
Parcel B7
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12
Tradepoint Atlantic Property
Area A and Area B Parcels
August 10, 2023
Figure
1
ARM Group LLC
Engineers and Scientists
0 460 920 1,840
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 22010834
P:\EnviroAnalytics Group\150298M EAG_Sparrows Point Area A\GIS\Site-wide Figures.mxd



Parcel B17
Phase II Soil Sampling Locations

August 10, 2023

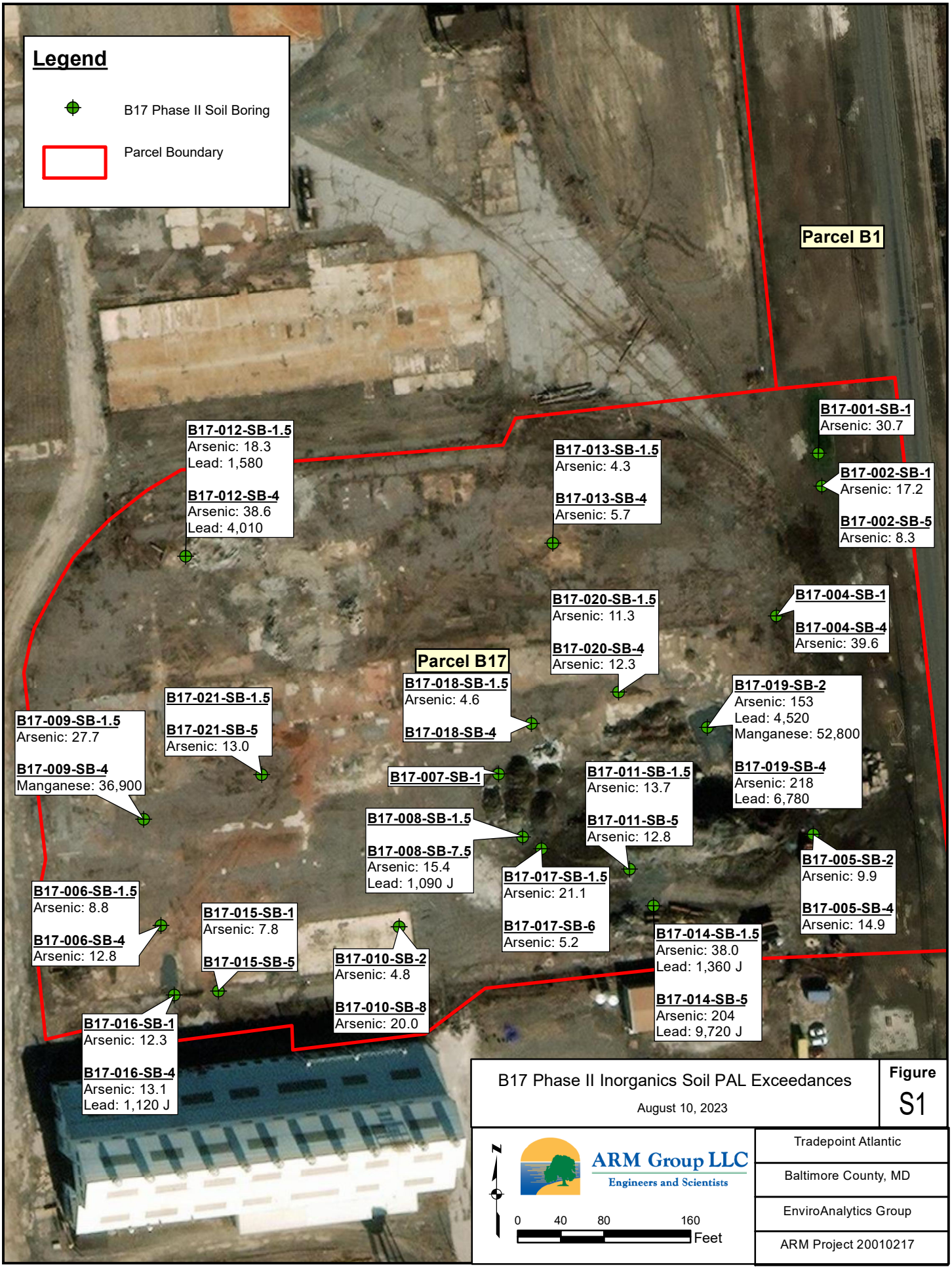
Figure 2

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010217

P:\EnviroAnalytics Group\150300M EAG_Sparrows Point Area B\GIS\Parcel B17 NAPL Report with Test Pits Figure 1-skl.mxd



B17 Phase II Inorganics Soil PAL Exceedances

August 10, 2023

Figure S1

ARM Group LLC
Engineers and Scientists

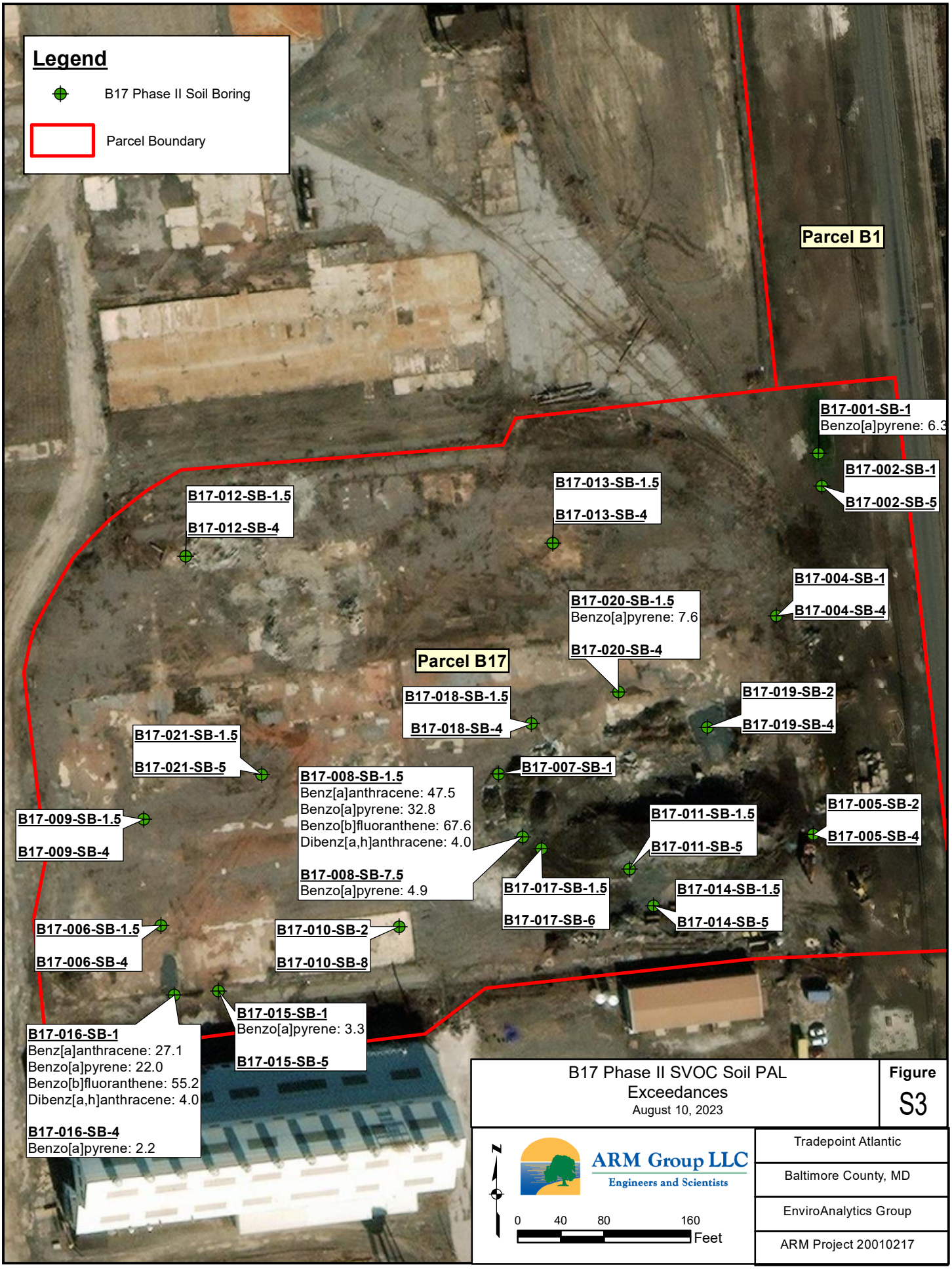
Tradepoint Atlantic

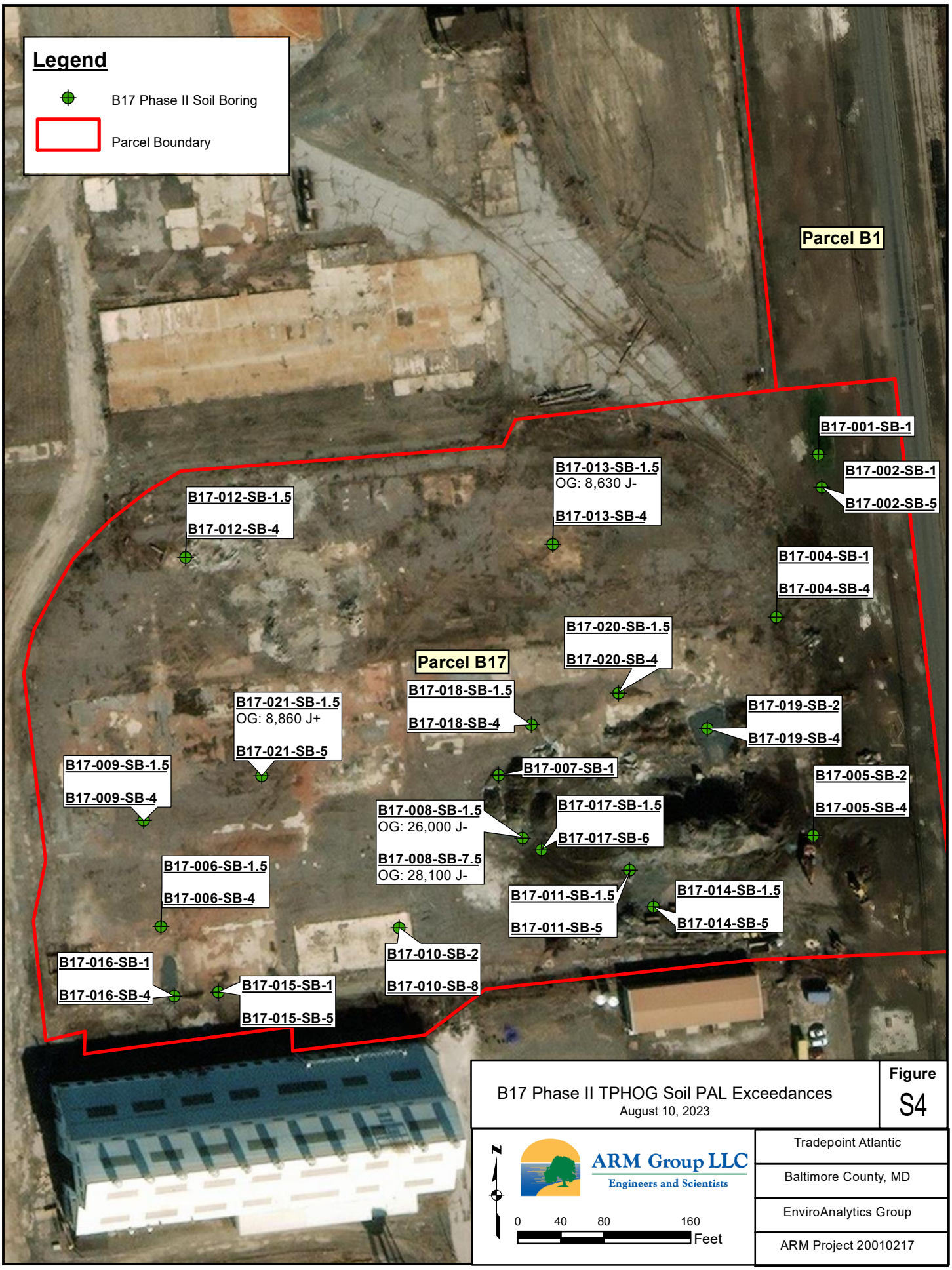
Baltimore County, MD

EnviroAnalytics Group

ARM Project 20010217


Legend
B17 Phase II Soil Boring
Parcel Boundary
Parcel B1
Parcel B17
B17-001-SB-1
B17-002-SB-1
B17-013-SB-1.5
B17-012-SB-1.5
B17-004-SB-1
B17-020-SB-1.5
Aroclor 1254: 2.3
PCBs (total): 2.3 J
B17-019-SB-2
Aroclor 1254: 2.4
PCBs (total): 2.4
B17-018-SB-1.5
B17-021-SB-1.5
B17-007-SB-1
B17-005-SB-2
B17-009-SB-1.5
B17-008-SB-1.5
B17-017-SB-1.5
B17-011-SB-1.5
B17-014-SB-1.5
B17-006-SB-1.5
B17-010-SB-2
B17-015-SB-1
B17-016-SB-1
B17 Phase II PCB Soil
PAL Exceedances
August 10, 2023
Figure
S2
ARM Group LLC
Engineers and Scientists
0 40 80 160
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 20010217


Legend
B17 Phase II Soil Boring
Parcel Boundary
Parcel B1
Parcel B17
B17-001-SB-1
Benzo[a]pyrene: 6.3
B17-002-SB-1
B17-002-SB-5
B17-012-SB-1.5
B17-012-SB-4
B17-013-SB-1.5
B17-013-SB-4
B17-004-SB-1
B17-004-SB-4
B17-020-SB-1.5
Benzo[a]pyrene: 7.6
B17-020-SB-4
B17-018-SB-1.5
B17-018-SB-4
B17-019-SB-2
B17-019-SB-4
B17-021-SB-1.5
B17-021-SB-5
B17-007-SB-1
B17-008-SB-1.5
Benz[a]anthracene: 47.5
Benzo[a]pyrene: 32.8
Benzo[b]fluoranthene: 67.6
Dibenz[a,h]anthracene: 4.0
B17-008-SB-7.5
Benzo[a]pyrene: 4.9
B17-009-SB-1.5
B17-009-SB-4
B17-011-SB-1.5
B17-011-SB-5
B17-005-SB-2
B17-005-SB-4
B17-017-SB-1.5
B17-017-SB-6
B17-014-SB-1.5
B17-014-SB-5
B17-006-SB-1.5
B17-006-SB-4
B17-010-SB-2
B17-010-SB-8
B17-015-SB-1
Benzo[a]pyrene: 3.3
B17-015-SB-5
B17-016-SB-1
Benz[a]anthracene: 27.1
Benzo[a]pyrene: 22.0
Benzo[b]fluoranthene: 55.2
Dibenz[a,h]anthracene: 4.0
B17-016-SB-4
Benzo[a]pyrene: 2.2
B17 Phase II SVOC Soil PAL Exceedances
August 10, 2023
Figure
S3
ARM Group LLC
Engineers and Scientists
0
40
80
160
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 20010217



B17 Phase II TPHOG Soil PAL Exceedances

August 10, 2023

Figure S4

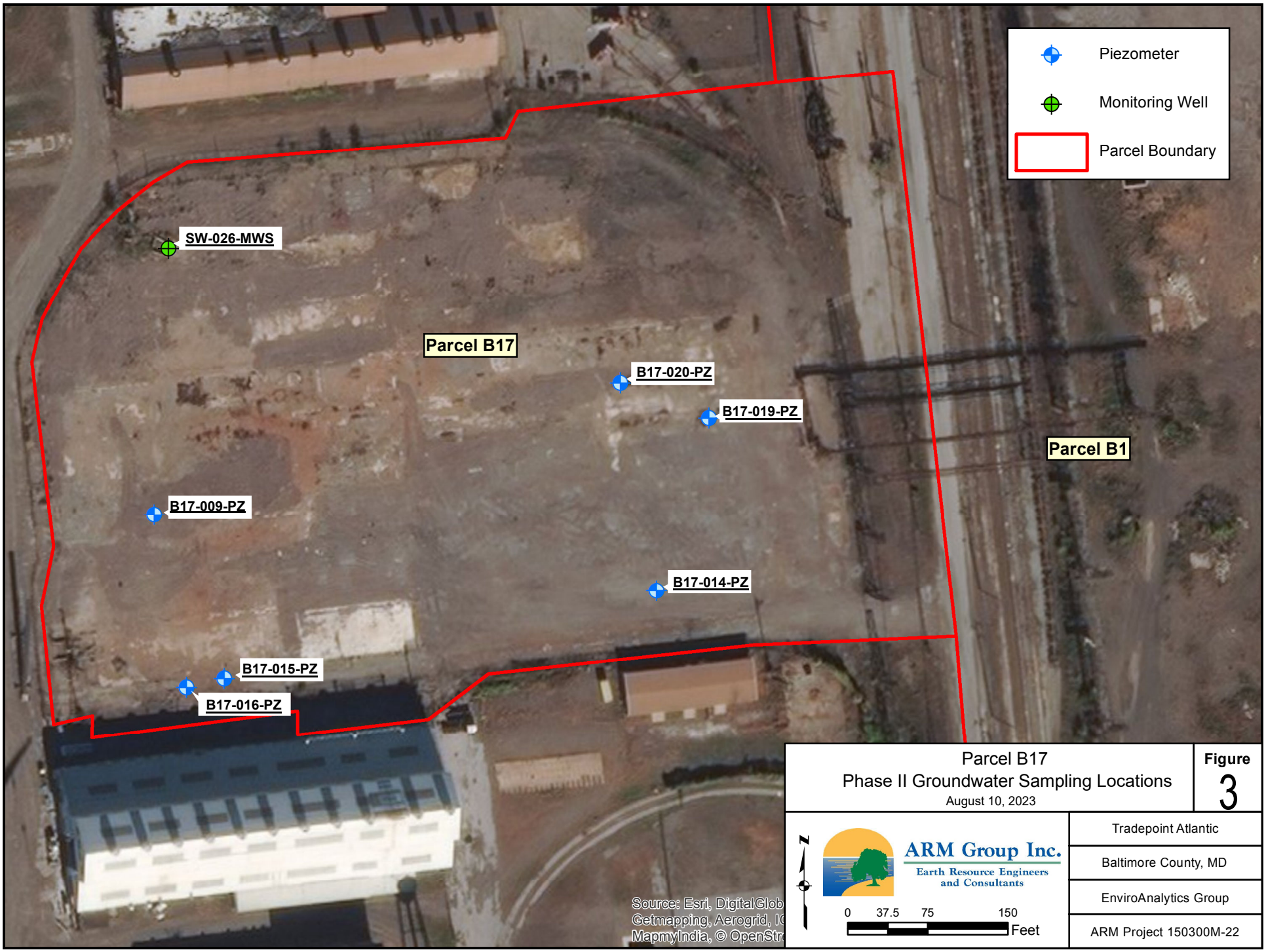
ARM Group LLC
Engineers and Scientists

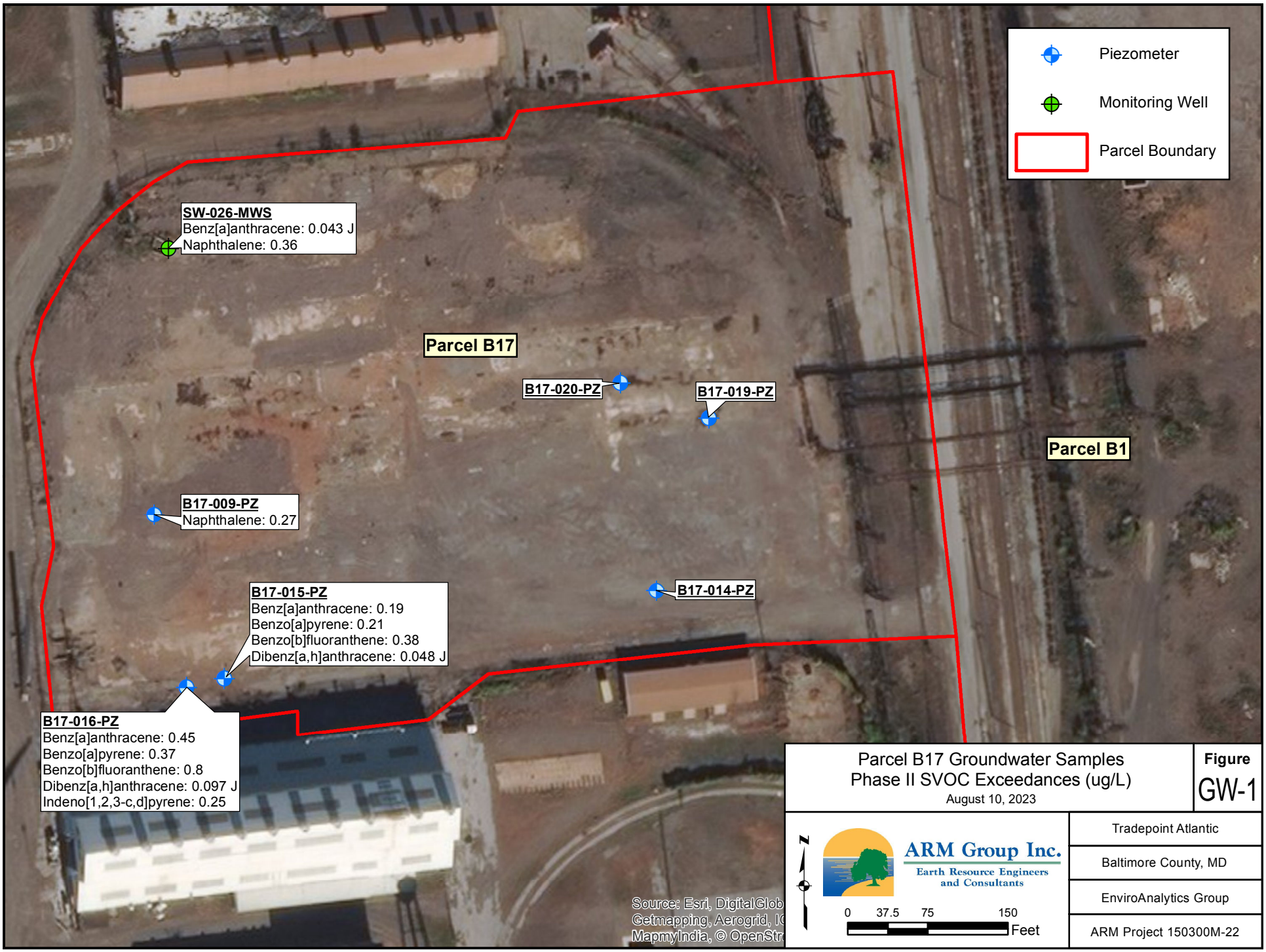
Tradepoint Atlantic

Baltimore County, MD

EnviroAnalytics Group

ARM Project 20010217


Piezometer
Monitoring Well
Parcel Boundary
SW-026-MWS
Parcel B17
B17-020-PZ
B17-019-PZ
Parcel B1
B17-009-PZ
B17-014-PZ
B17-015-PZ
B17-016-PZ
Source: Esri, DigitalGlob
Getmapping, Aerogrid, I
MapmyIndia, © OpenStr
Parcel B17
Phase II Groundwater Sampling Locations
August 10, 2023
Figure
3
ARM Group Inc.
Earth Resource Engineers and Consultants
0 37.5 75 150
Feet
Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 150300M-22

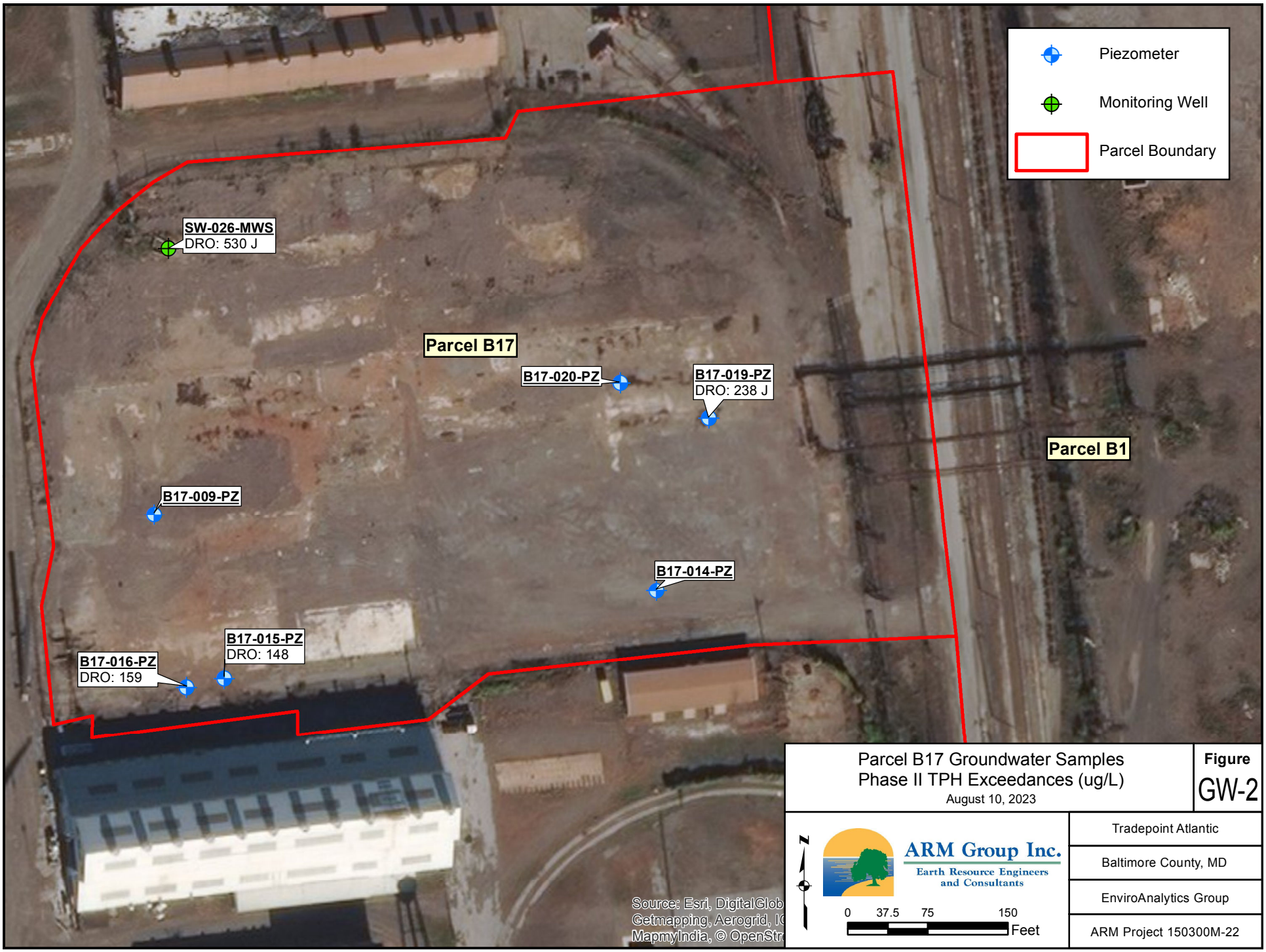


Parcel B17 Groundwater Samples
Phase II SVOC Exceedances (ug/L)
August 10, 2023

Figure
GW-1

ARM Group Inc.
Earth Resource Engineers and Consultants

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 150300M-22



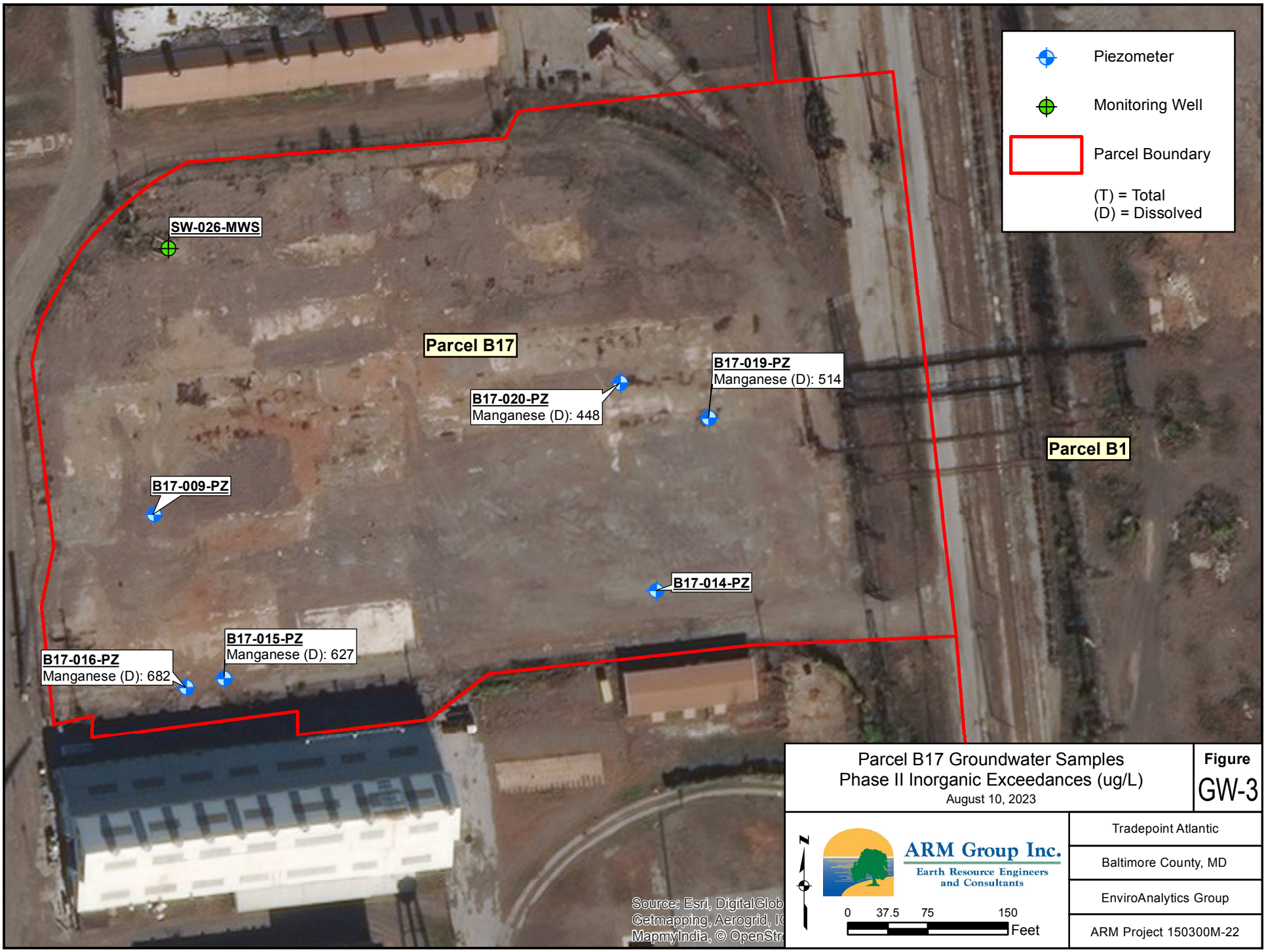
Parcel B17 Groundwater Samples
Phase II TPH Exceedances (ug/L)
August 10, 2023

Figure
GW-2

ARM Group Inc.
Earth Resource Engineers and Consultants

0 37.5 75 150 Feet

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 150300M-22



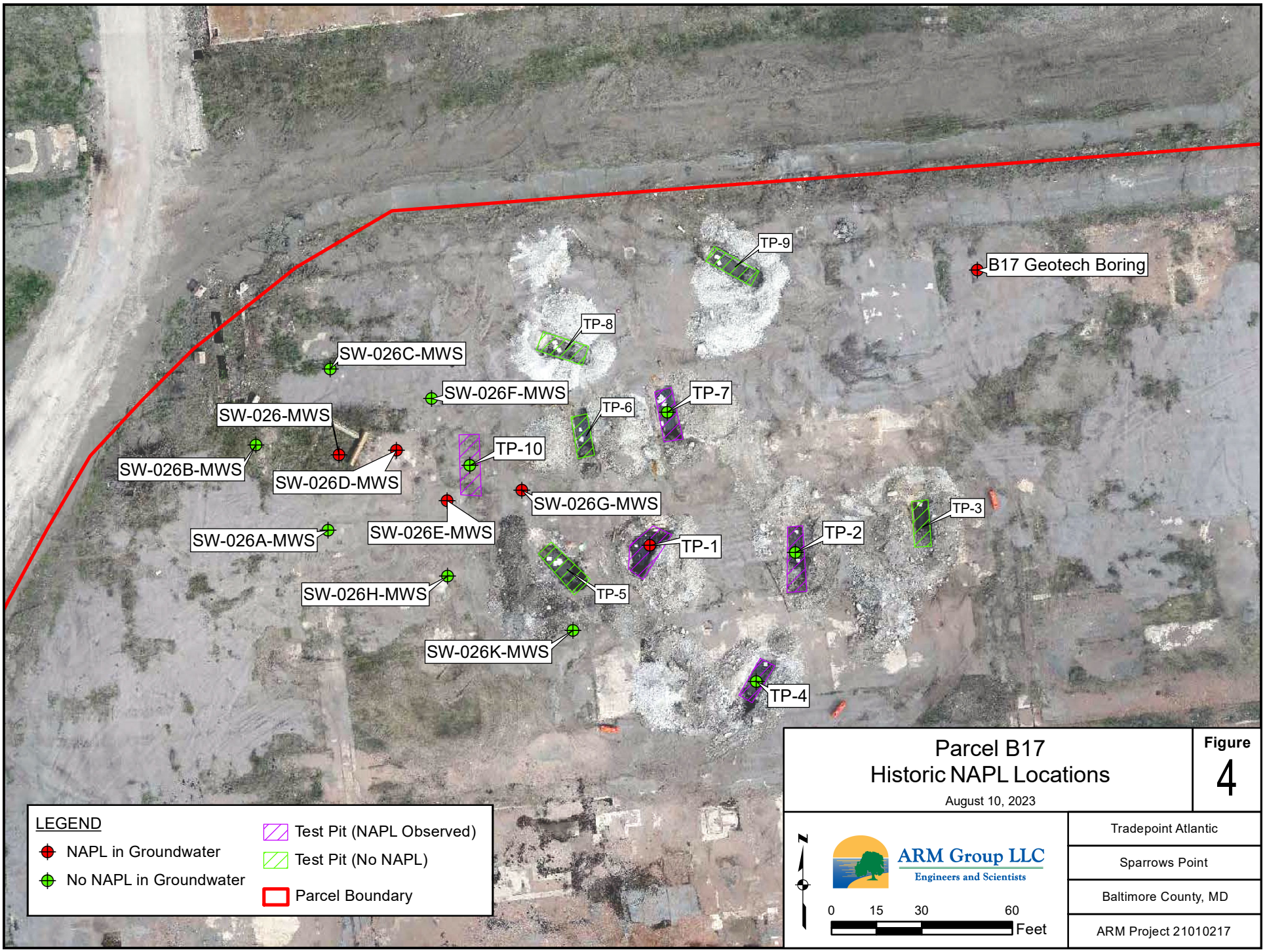
Parcel B17 Groundwater Samples
Phase II Inorganic Exceedances (ug/L)
August 10, 2023

Figure
GW-3

ARM Group Inc.
Earth Resource Engineers and Consultants

0 37.5 75 150 Feet

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 150300M-22



Parcel B17
Historic NAPL Locations

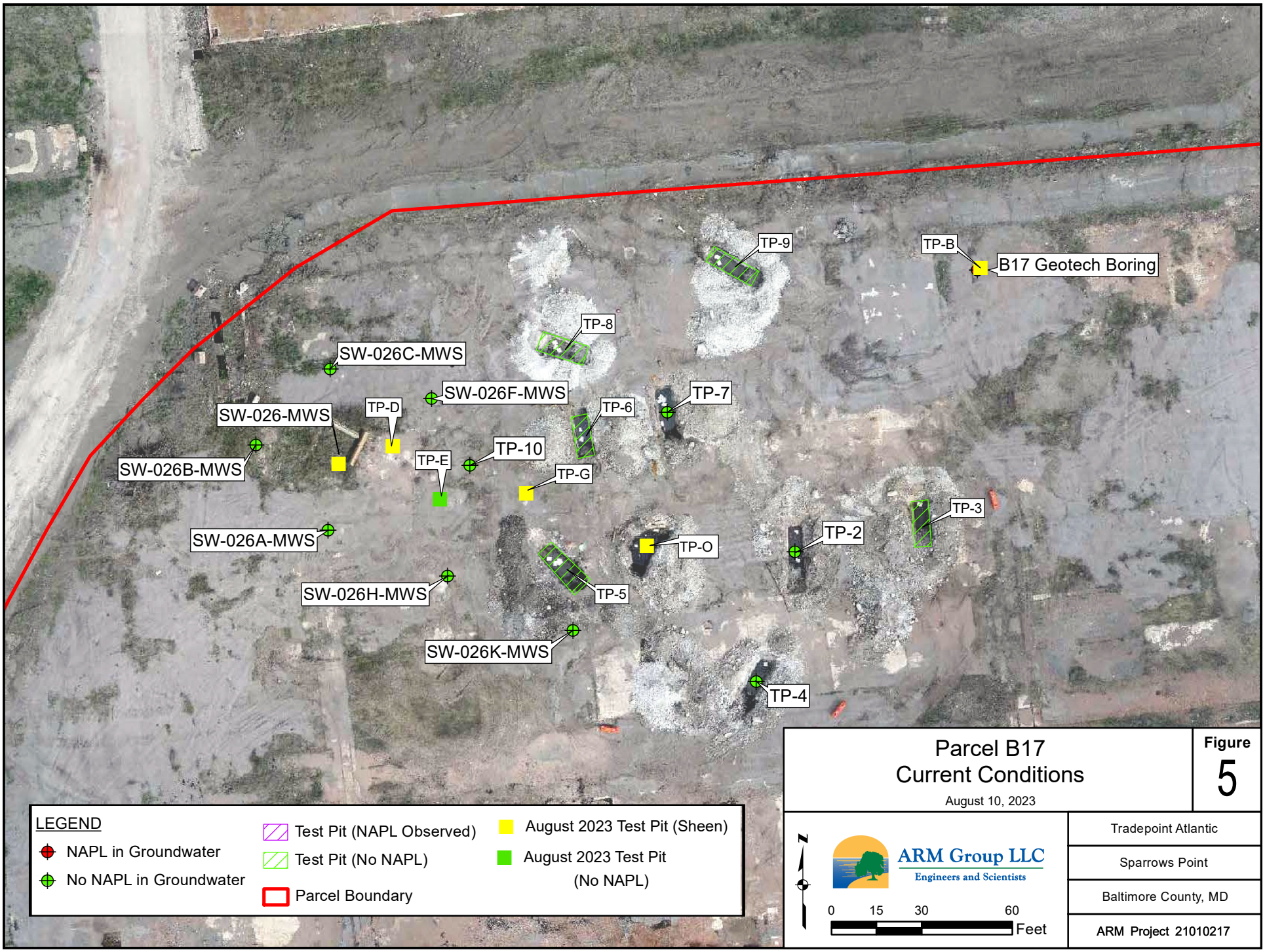
August 10, 2023

Figure 4

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010217

P:\EnviroAnalytics Group\150300M EAG_Sparrows Point Area B\GIS\Parcel B17 NAPL Report with Test Pits.mxd



Parcel B17
Current Conditions

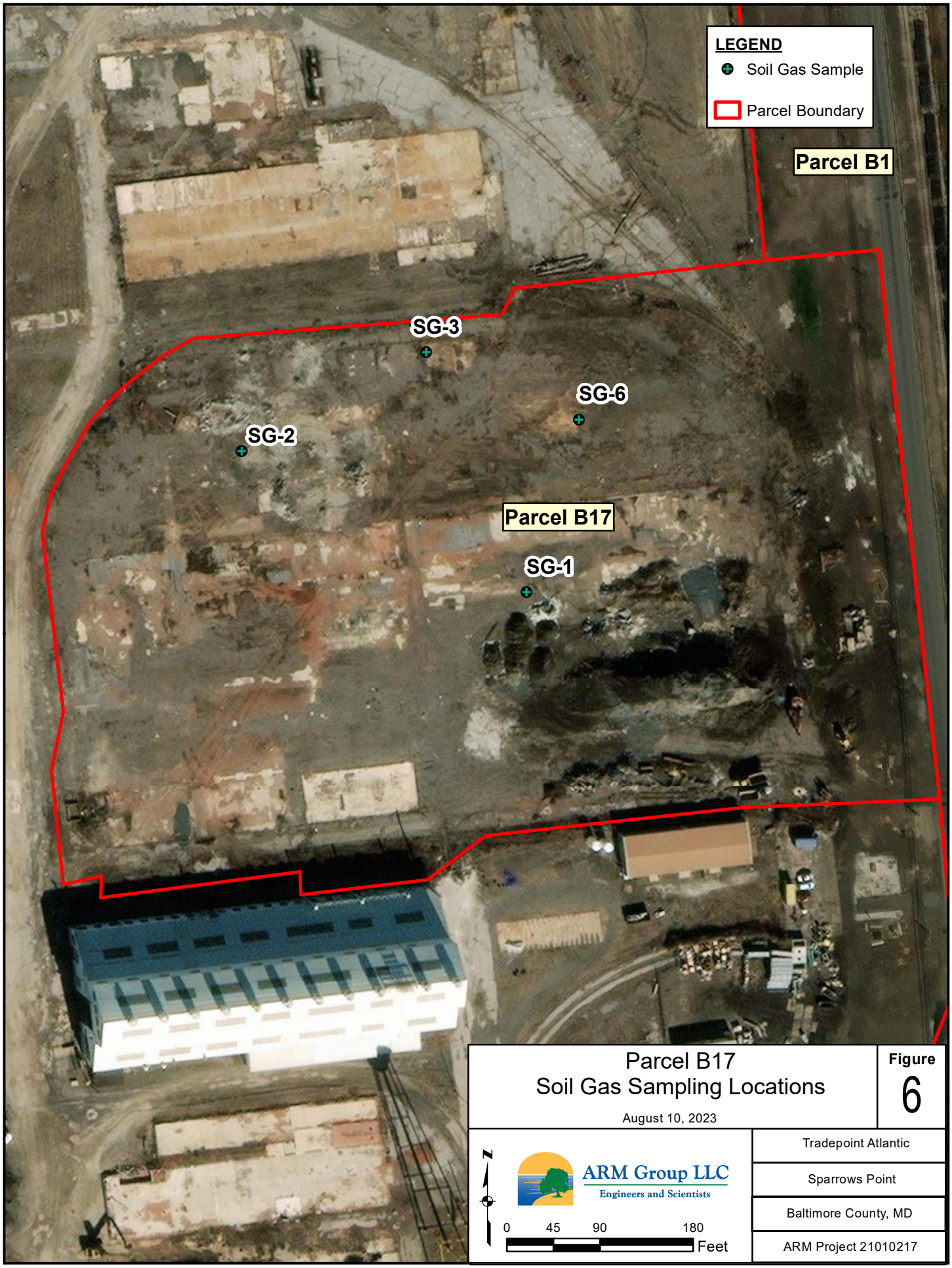
August 10, 2023

Figure 5

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010217

P:\EnviroAnalytics Group\150300M EAG_Sparrows Point Area B\GIS\Parcel B17 NAPL Report with Test Pits.mxd



Parcel B17
Soil Gas Sampling Locations

August 10, 2023

Figure 6

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010217

P:\EnviroAnalytics Group\150300M EAG_Sparrows Point Area B\GIS\Parcel B17 NAPL Report with Test Pits Figure 1-skl.mxd

TABLES

Table 1A - Parcel B17
Summary of Detections in Groundwater (Phase II Investigation)

Parameter	Units	PAL	VISL	B17-009-PZ	B17-014-PZ	B17-015-PZ	B17-016-PZ	B17-019-PZ	B17-020-PZ	SW-026-MWS
				10/11/2017	10/10/2017	10/10/2017	10/10/2017	10/11/2017	10/11/2017	3/30/2016
Volatile Organic Compounds										
Acetone	µg/L	14,000	--	10 UJ	**4.8 J**	**3.8 J**	**3.8 J**	8 B	5.5 B	10 R
Semi-Volatile Organic Compounds										
1,4-Dioxane	µg/L	0.46	12500	0.1 U	0.1 U	0.1 U	**0.03 J**	**0.032 J**	0.1 U	0.1 U
2-Methylnaphthalene	µg/L	36	--	**0.06 J**	0.1 U	0.1 U	0.1 U	0.098 U	0.1 U	**0.97**
Acenaphthene	µg/L	530	--	**0.056 J**	0.1 U	0.1 U	0.1 U	0.098 U	0.1 U	**0.12**
Acenaphthylene	µg/L	530	--	**0.077 J**	0.1 U	**0.04 J**	**0.037 J**	0.098 U	0.1 U	**0.02 J**
Anthracene	µg/L	1,800	--	**0.084 J**	0.1 U	**0.085 J**	**0.18**	0.098 U	0.1 U	**0.15**
Benz[a]anthracene	µg/L	0.03	417	0.1 U	0.1 U	**0.19**	**0.45**	0.098 U	0.1 U	**0.043 J**
Benzo[a]pyrene	µg/L	0.20	--	0.1 U	0.1 U	**0.21**	**0.37**	0.098 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	--	0.1 U	0.1 U	**0.38**	**0.8**	0.098 U	0.1 U	0.1 U
Benzo[g,h,i]perylene	µg/L		--	0.1 U	0.1 U	**0.18**	**0.27**	0.098 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	2.5	--	0.1 U	0.1 U	**0.36**	**0.76**	0.098 U	0.1 U	0.1 U
bis(2-Ethylhexyl)phthalate	µg/L	6.0		1 U	1 U	1 U	1 U	0.98 U	1 U	**0.21 J**
Chrysene	µg/L	25	--	0.1 U	0.1 U	**0.19**	**0.5**	0.098 U	0.1 U	**0.021 J**
Dibenz[a,h]anthracene	µg/L	0.025	--	0.1 U	0.1 U	**0.048 J**	**0.097 J**	0.098 U	0.1 U	0.1 U
Fluoranthene	µg/L	800	--	**0.075 J**	0.1 U	**0.31**	**0.88**	**0.07 J**	0.1 U	**0.051 J**
Fluorene	µg/L	290	--	**0.11**	0.1 U	0.1 U	0.1 U	0.098 U	0.1 U	**0.2**
Indeno[1,2,3-c,d]pyrene	µg/L	0.25	--	0.1 U	0.1 U	**0.15**	**0.25**	0.098 U	0.1 U	0.1 U
Naphthalene	µg/L	0.17	20.1	**0.27**	0.1 U	0.1 U	**0.11**	0.098 U	0.1 U	**0.36**
Phenanthrene	µg/L		--	**0.23**	0.1 U	**0.11**	**0.59**	0.098 U	0.1 U	**0.7**
Pyrene	µg/L	120	--	0.1 U	0.1 U	**0.29**	**0.66**	**0.065 J**	0.1 U	**0.09 J**
Total Petroleum Hydrocarbons										
Diesel Range Organics	µg/L	47	--	77.1 B	84.4 B	**148**	**159**	**238 J**	75.5 B	**530 J**
Total Metals										
Aluminum	µg/L	20,000	--	N/A	N/A	N/A	N/A	N/A	N/A	**726**
Barium	µg/L	2,000	--	N/A	N/A	N/A	N/A	N/A	N/A	**54.9**
Chromium	µg/L	100	--	N/A	N/A	N/A	N/A	N/A	N/A	**1.1 J**
Manganese	µg/L	430	--	N/A	N/A	N/A	N/A	N/A	N/A	**11.2**
Zinc	µg/L	6,000	--	N/A	N/A	N/A	N/A	N/A	N/A	**1.5 J**
Dissolved Metals										
Aluminum, Dissolved	µg/L	20,000	--	50 U	**21.1 J**	50 U	50 U	**34.6 J**	**27.2 J**	**582**
Arsenic, Dissolved	µg/L	10	--	5 U	**6.8**	5 U	**2.9 J**	5 U	5 U	5 U
Barium, Dissolved	µg/L	2,000	--	**23.3**	**58.9**	**79.9**	**76.9**	**111**	**112**	**52.2**
Iron, Dissolved	µg/L	14,000	--	**12.7 J**	**311**	**284**	**643**	**516**	**153**	**21.3 J**
Manganese, Dissolved	µg/L	430	--	**309**	**389**	**627**	**682**	**514**	**448**	1.4 B
Vanadium, Dissolved	µg/L	86	--	**0.78 J**	**0.64 J**	5 U	5 U	5 U	5 U	5 U
Zinc, Dissolved	µg/L	6,000	--	10 U	**1.6 J**	**2.5 J**	**2.9 J**	1.1 B	10 U	10 U
Other										
Available Cyanide	µg/L	200	84.4	**0.92 J**	**2.4**	2 U	**0.57 J**	**1.6 J**	**1.9 J**	N/A
Total Cyanide	µg/L	200		10 U	**3.5 J**	10 U	10 U	**6.6 J+**	**4.9 J+**	10 U

Detections in bold
Values in red indicate an exceedace of the Project Action Limit (PAL)
Values with yellow highlight exceed the EPA's Vapor Intrusion Screening Level (VISL) for commercial properties

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J+: The positive result reported for this analyte is a quantitative estimate but may be biased high.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 1B - Parcel B17
Summary of Detections in Groundwater (2023 Sampling)

Parameter	Units	PAL	VISL	SW-026-MWS 5/25/2023
Semi-Volatile Organic Compounds				
2-Methylnaphthalene	µg/L	36	--	**0.80**
Acenaphthene	µg/L	530	--	**0.09 J**
Acenaphthylene	µg/L	530	--	**0.05 J**
Anthracene	µg/L	1,800	--	**0.07 J**
Benz[a]anthracene	µg/L	0.03	417	**0.04 J**
Benzo[a]pyrene	µg/L	0.2	--	**0.02 J**
Benzo[b]fluoranthene	µg/L	0.25	--	**0.03 J**
Benzo[g,h,i]perylene	µg/L		--	**0.01 J**
Benzo[k]fluoranthene	µg/L	2.5	--	**0.02 J**
Chrysene	µg/L	25	--	**0.25**
Dibenzo(a,h)anthracene	µg/L		--	**0.01 J**
Fluoranthene	µg/L	800	--	**0.08 J**
Fluorene	µg/L	290	--	**0.21**
Indeno[1,2,3-c,d]pyrene	µg/L	0.25	--	**0.01 J**
Naphthalene	µg/L	0.12	20.1	**0.56**
Pentachlorophenol	µg/L	1	--	**0.06 J**
Phenanthrene	µg/L		--	**0.66**
Pyrene	µg/L	120	--	**0.17**
Volatile Organic Compounds				
Acetone	µg/L	14,000	--	**3.7 J**
Benzene	µg/L	5	6.93	**0.25 J**
Toluene	µg/L	1,000	8,070	**0.27 J**
Total Petroleum Hydrocarbons				
Diesel Range Organics	µg/L	47	--	**7600**

Detections in bold

Values in red indicate an exceedance of the groundwater Project Action Limit (PAL)

Values with yellow highlight exceed the EPA's Vapor Intrusion Screening Level (VISL) for commercial properties (HQ = 0.1 and TR = 1-E-6)

J: The positive result reported for this analyte is a quantitative estimate.

Table 2
Results for Detected VOCs in Soil Gas Samples
Parcel B17, Sparrows Point

Parameter	Units	PAL	MDE Commercial Soil Gas Standard	SG-1 2/24/22	SG-2 2/24/22	SG-3 2/24/22	SG-6 2/24/22
Volatile Organic Compounds							
1,1,1-Trichloroethane	ug/m^3	2,200,000	2,200,000	**6.2**	ND	**0.82 J**	**92**
1,1,2-Trichlorotrifluoroethane	ug/m^3	14,000,000	2,200,000	ND	ND	ND	**0.78 J**
1,1-Dichloroethene	ug/m^3	88,000	88,000	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/m^3	880	880	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ug/m^3	3,100	26,400	ND	ND	ND	ND
1,2-Dichloroethane	ug/m^3	480	480	**0.90 J**	ND	ND	**0.61 J**
1,3,5-Trimethylbenzene	ug/m^3	2,200	26,400	ND	ND	ND	ND
2-Butanone (MEK)	ug/m^3	2,200,000	2,200,000	**46.6**	**3.8 J**	**1.5 J**	**8.0**
2-Hexanone	ug/m^3	14,000	13,200	**4.4 J**	ND	ND	ND
2-Propanol	ug/m^3		88,000	**9.2**	**1.7 J**	**5.6**	**28.4**
4-Ethyltoluene	ug/m^3			ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	ug/m^3	1,400,000	1,320,000	**9.4**	ND	ND	ND
Acetone	ug/m^3	14,000,000	13,000,000	**181**	**8.6 J**	**8.2 J**	**26.5**
Benzene	ug/m^3	1,600	1,600	**27.1**	**0.67**	ND	**14.1**
Bromomethane	ug/m^3	2,200	2,200	ND	ND	ND	ND
Carbon disulfide	ug/m^3	310,000	310,000	**202**	**6.2**	**0.32 J**	**75.3**
Chlorobenzene	ug/m^3	22,000	22,000	ND	ND	ND	ND
Chloroethane	ug/m^3	4,400,000	4,400,000	ND	ND	ND	ND
Chloroform	ug/m^3	540	540	ND	ND	**0.36 J**	ND
Chloromethane	ug/m^3	40,000	40,000	**6.3**	**0.99**	**0.79 J**	**3.3**
Cyclohexane	ug/m^3	2,700,000	2,650,000	ND	**1.4 J**	ND	ND
Dichlorodifluoromethane	ug/m^3	44,000	44,000	**2.5**	**2.8**	**2.7**	**2.7**
Ethanol	ug/m^3			**19.9**	**4.3**	**8.8**	**18.2**
Ethyl acetate	ug/m^3		31,000	**1.6**	ND	ND	ND
Ethylbenzene	ug/m^3	5,000	5,000	**5.5**	ND	ND	**11.5**
Hexachloro-1,3-butadiene	ug/m^3		560	ND	ND	ND	ND
m&p-Xylene	ug/m^3	44,000	44,000	**3.9**	ND	ND	**6.8**
Naphthalene	ug/m^3	370	361	ND	**6.0**	ND	ND
n-Heptane	ug/m^3		176,000	**234**	ND	ND	**189**
n-Hexane	ug/m^3		308,000	**485**	**1.7**	**0.85 J**	**327**
o-Xylene	ug/m^3	44,000	44,000	**1.9**	ND	ND	**3.5**
Propylene	ug/m^3		1,320,000	ND	ND	ND	ND
Styrene	ug/m^3	440,000	440,000	ND	ND	ND	ND
Tetrachloroethene	ug/m^3	18,000	18,000	ND	ND	**2.1**	ND
Toluene	ug/m^3	2,200,000	2,200,000	**21.3**	ND	ND	**30.9**
Trichloroethene	ug/m^3	880	880	**0.78 J**	ND	ND	**2.0**
Trichlorofluoromethane	ug/m^3	310,000	310,000	**1.1 J**	**1.6 J**	**1.4 J**	**1.1 J**

Detections shown in bold.
Detection > MDE Commercial Standard shown in red.
MDE Commercial & Residential Soil Gas Standards are based on the Tier 1 values (MDE Technical Guidelines for Vapor Intrusion,

APPENDIX A

Torkelson Geochemistry, Inc.
2528 South Columbia Place, Tulsa, Oklahoma 74114-3233
Voice 918-749-8441

April 13, 2021

DRAFT

Bob Tworkowski
Tradepoint Atlantic
1600 Sparrows Point Blvd,
Sparrows Point, MD 21219

Subject: Hydrocarbon fingerprint analysis and evaluation of six product samples from the Sparrows Point IM, Sparrows Point, MD.

Introduction

Six product samples were submitted to Torkelson Geochemistry by Tradepoint Atlantic for hydrocarbon fingerprint (capillary gas chromatography) analysis and interpretation of results, see chain of Custodies, Figures 1 and 2.

The following are my interpretations/opinions of the data. Please keep in mind that these interpretations are made without any hands on knowledge of the site or other analyses done on the samples. In addition, the petroleum in the samples has probably been altered/weathered which can make an accurate interpretation of product type somewhat more difficult since some of the key features of the product may have been altered or removed by the evaporation, water washing and perhaps bacterial processes.

Discussion of Results

The B17 LNAPL sample appears to be a lubricating oil of some sort with a very small amount of unidentifiable light ends. The B17 LNAPL sample chromatogram (Figures 3 and 10) shows a series of peaks that starts at benzene (Bnz) and continues to the end of the chromatogram and an unresolved hump that starts at about nC13, reaches a maximum between nC24 and nC25 and continues to the end of the chromatogram. The large unresolved hump and associated peaks is most likely a lubricating oil of some sort. The identity of the very small amount of light ends in the benzene to nC14 range is not obvious.

The B18 LNAPL sample appears to be a mixture of a heavy material, perhaps a #5 or #6 fuel oil and a smaller amount of coal tar. The B18 LNAPL sample chromatogram (Figures 4 and 11) shows a series of peaks that starts at benzene (Bnz) and continues to about the end of the chromatogram and a broad unresolved hump that starts at about nC10, reaches a maximum at about nC33 and continues to the end of the chromatogram. The broad unresolved hump and smaller peaks may be a heavy fuel oil such as #5 or #6. The naphthalene and larger unlabeled peaks are probably polynuclear aromatic compounds and are typical of a coal tar.

The B6-066 LNAPL sample appears to be a lubricating oil of some sort with a small amount of unidentifiable light ends. The B6-066 LNAPL sample chromatogram (Figures 5 and 12) shows a series of peaks that starts at normal butane (nC4) and continues to the end of the chromatogram and an unresolved hump that starts at about nC13, reaches a maximum at about nC30 and continues to the end of the chromatogram. The large unresolved hump and associated peaks is most likely a lubricating oil of some sort. The identity of the small amount of light ends in the nC4 to nC14 range is not obvious.

The CO124 DNAPL sample appears to be a coal tar. The CO124 DNAPL sample chromatogram (Figures 6 and 13) shows a series of peaks that starts at benzene (Bnz) and continues to about the end of the chromatogram. The larger unlabeled peaks are probably polynuclear aromatic compounds and are typical of a coal tar.

The CO125 DNAPL sample appears to be a coal tar. The CO125 DNAPL sample chromatogram (Figures 7 and 14) shows a series of peaks that starts at benzene (Bnz) and continues to about the end of the chromatogram. The larger unlabeled peaks are probably polynuclear aromatic compounds and are typical of a coal tar.

The identity of the CO173 LNAPL sample is not obvious but may be a mixture of two products. The CO173 LNAPL sample chromatogram (Figures 8 and 15) shows a series of peaks that starts at about normal butane (nC5) and continues to the end of the chromatogram. The early peaks from the beginning of the chromatogram to about nC12 are some sort of highly aromatic mixture. The heavier portion from about nC12 to the end of the chromatogram has some fairly large normal paraffin peaks but the identity of this material is not obvious.

Please let me know if you have any questions regarding this preliminary interpretation.

Bruce Torkelson

Torkelson Geochemistry, Inc.

2528 S. Columbia Place
Tulsa, OK 74114-3233
Phone: 918-749-8441
Fax: 918-749-6005
e-mail: BTorkelson@torkelsongeochemistry.com

CHAIN-OF-CUSTODY RECORD

Sparrows Point IM
Sparrows Point, MD

GLD (443) 610-0211

gp@tradepointatlantic.com
1600 Sparrows Point Blvd
Sparrows Point, MD 21219
(240) 461-0750 (B. Torkowski)
btworkowski@tradepointatlantic.com

Additional Instructions
Please report to
btworkowski@tradepointatlantic.com
mnewman@tradepointatlantic.com
gdavis@armgroup.net
dhamilton@armgroup.net
STD

ITEM NO	SAMPLE DESCRIPTION	DATE	MATRIX	LAB NO	Total # OF Vials	PRESERVATIVES: None	ANALYSES REQUESTED: GC Characterization	Density	Viscosity	Water Surface Tension	NAPL Surface Tension	NAPL/Water Interfac Tens	Lead	Sulfur	REMARKS
1	C0124 DNAPL	3/11/21	DNAPL		2	X									
2	C0125 DNAPL	↓	DNAPL		2	X									
3	C0173 LNAPL	3/11/21	LNAPL		2	X									
4															
5															
6															
7															
8															
9															
10															

RELINQUISHED BY	DATE	TIME	ACCEPTED BY	DATE	TIME
	3/11/21	1410		3/17/21	1:40
				3-26-21	1320

Figure 1, Chain of Custody 1 of 2.

Torkelson Geochemistry, Inc.

2528 S. Columbia Place
Tulsa, OK 74114-3233
Phone 918-749-8441 e-mail BTorkelson@torkelsongeochemistry.com
Fax 918-749-6005

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Project: Sparrows Point IM
Location: Sparrows Point, MD
Proj. No:
P.O.:
Sampled By: ~~TGT~~ LLP (410) 961 3494

Report/Bill To: ap@tradepointatlantic.com
Address: 1600 Sparrows Point Blvd
Sparrows Point, MD 21219
Phone: 240 461-0750 (B. Tworkowski)
Fax:
e-mail: btworkowski@tradepointAtlantic.com

Additional Instructions
Please report to btworkowski@tradepointatlantic.com
mnewman@tradepointatlantic.com
gdavis@armgroup.net
dhamilton@armgroup.net

Requested Turn-Around Time: STD

ITEM NO.	SAMPLE DESCRIPTION	DATE	MATRIX	LAB NO.	Total # Of Work	PRESERVATIVES: None	ANALYSES REQUESTED: 35 Chlorobenzenes	Density	Viscosity	Water Surface Tension	NAPL Surface Tension	NAPL Water Interfac Tens.	Lead	Sulfur	REMARKS
1	B17 LNAPL	3/17/21	LNAPL		2	X									
2	B6-DBG LNAPL	3/17/21	LNAPL		2	X									
3	B18 LNAPL	3/17/21	LNAPL		2	X									
4															
5															
6															
7															
8															
9															
10															

RELINQUISHED BY	DATE	TIME	ACCEPTED BY	DATE	TIME
	3/17/21	1315		3/17	1:40
				3-26-21	1320

Figure 1, Chain of Custody 2 of 2.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : B17 LNAPL
Acquired : Apr 06, 2021 08:53:38

c:\ezchrom\chrom\21016\b17 -- Channel A

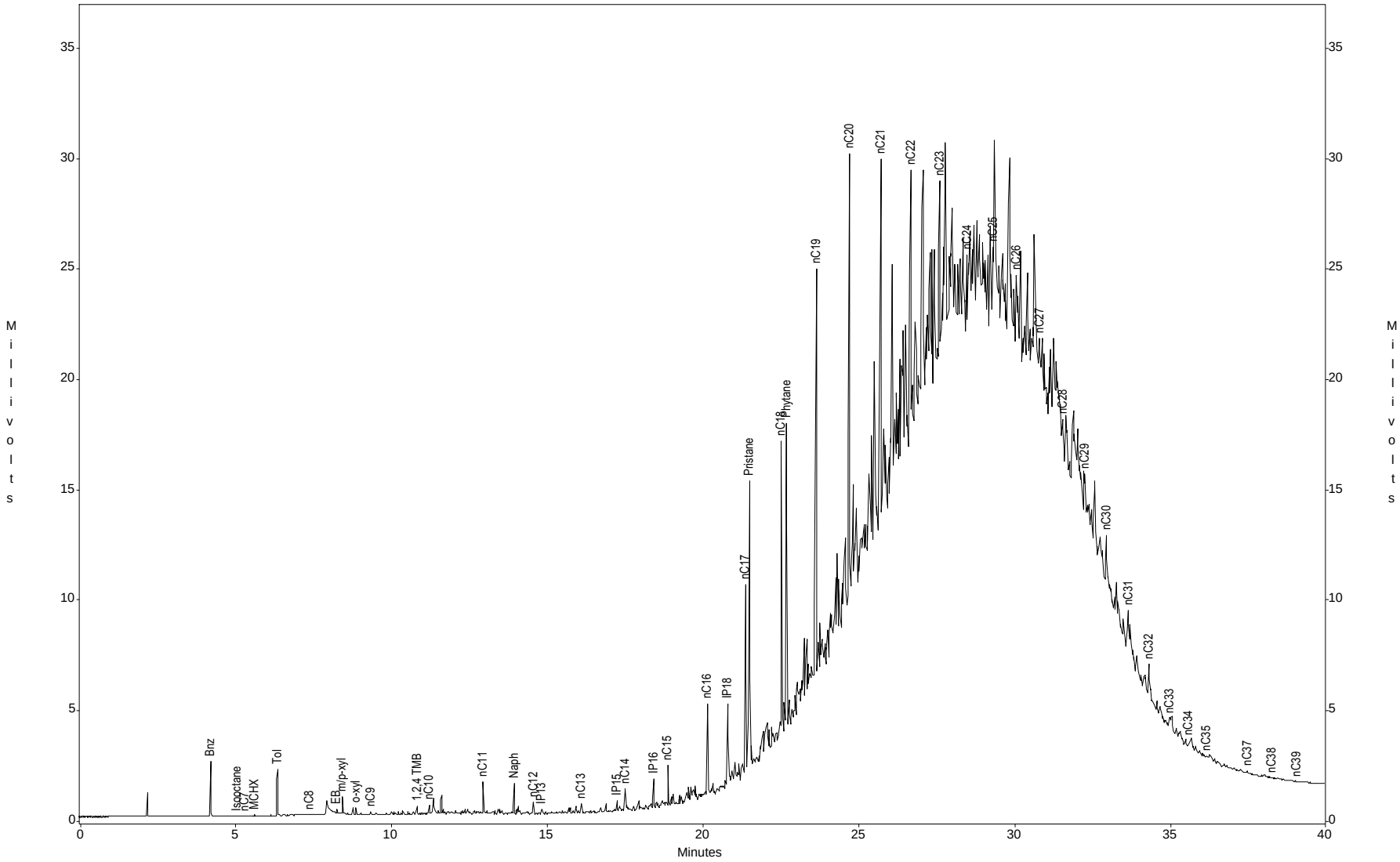


Figure 3, Gas chromatogram of the B17 LNAPL sample.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : B18 LNAPL
Acquired : Apr 06, 2021 15:41:57

c:\ezchrom\chrom\21016\b18.2 -- Channel A

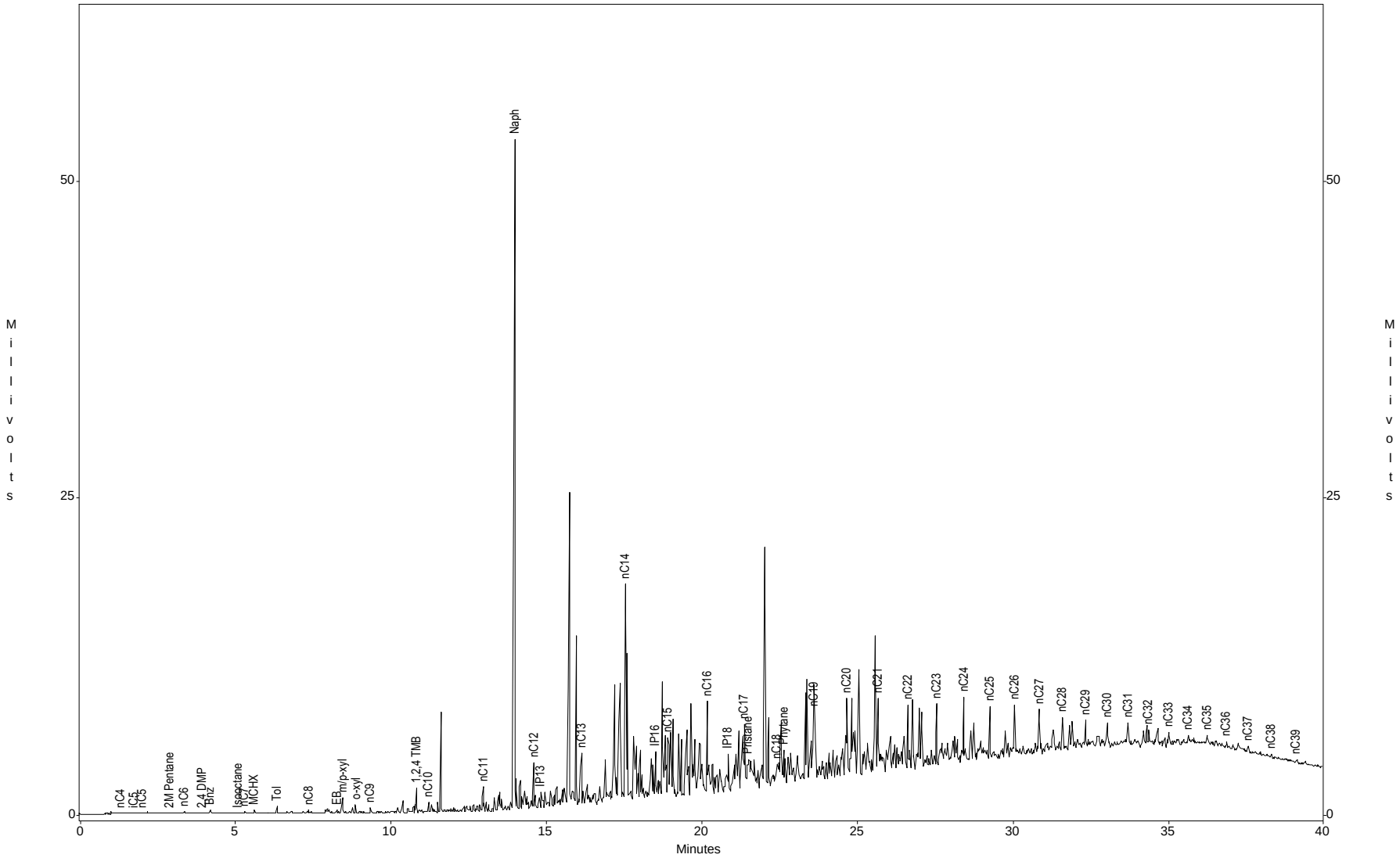


Figure 4, Gas chromatogram of the B18 LNAPL sample.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : B6-066 LNAPL
Acquired : Apr 06, 2021 09:44:19

c:\ezchrom\chrom\21016\b6-066 -- Channel A

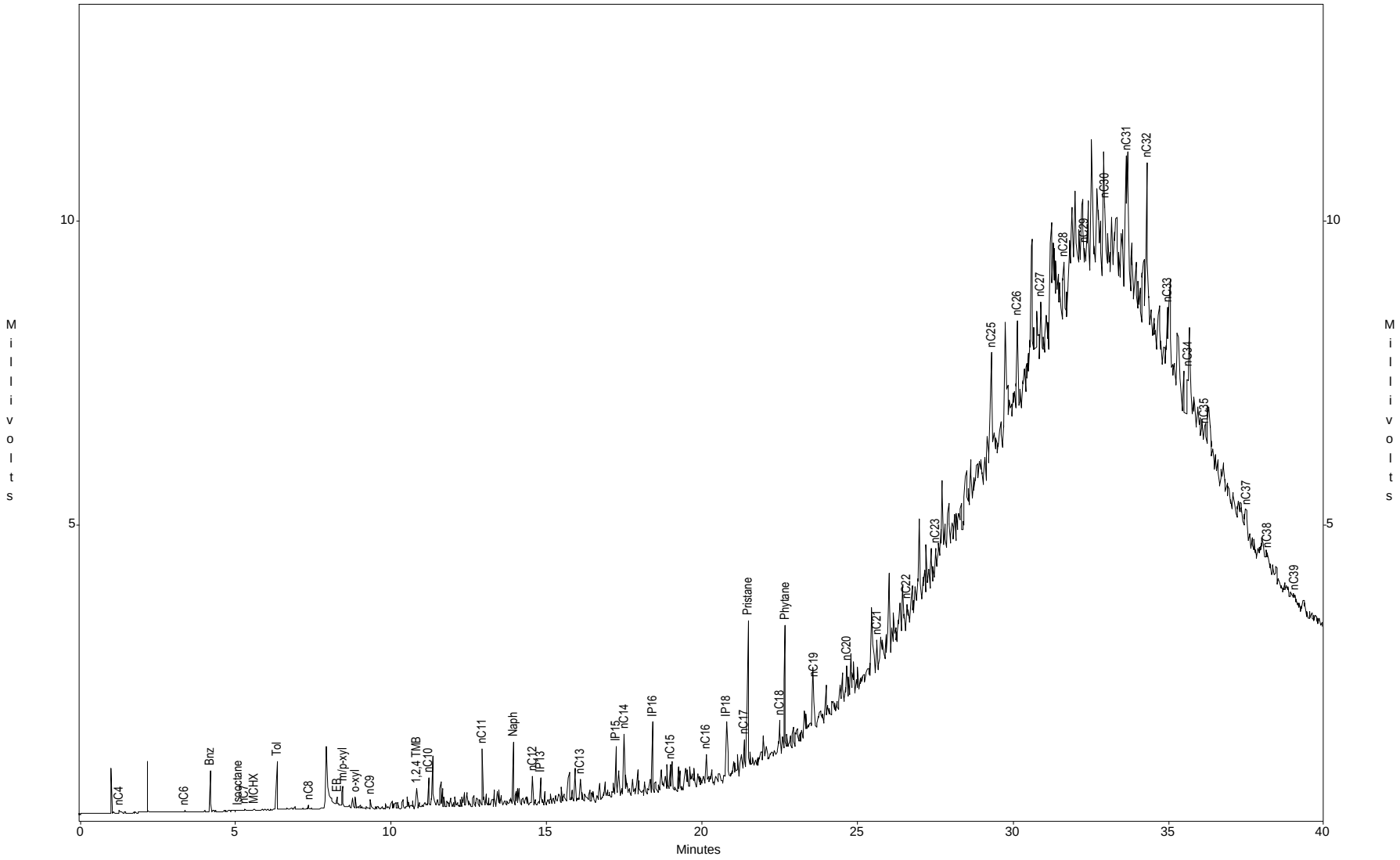


Figure 5, Gas chromatogram of the B6-066 LNAPL sample.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : CO124 DNAPL
Acquired : Apr 06, 2021 14:00:28

c:\ezchrom\chrom\21016\co124.2 -- Channel A

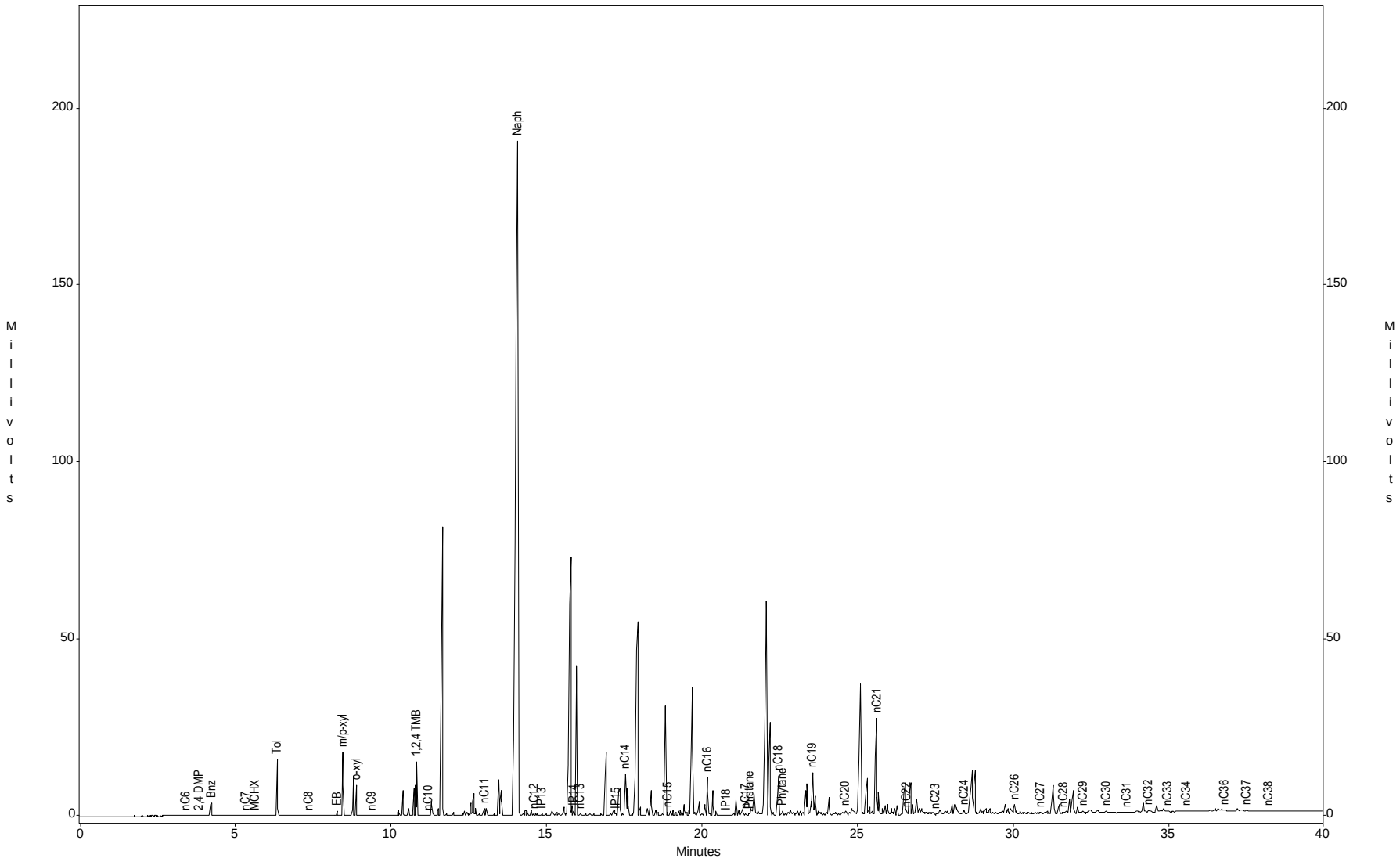


Figure 6, Gas chromatogram of the CO124 DNAPL sample.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : CO125 DNAPL
Acquired : Apr 06, 2021 12:17:21

c:\ezchrom\chrom\21016\co125.2 -- Channel A

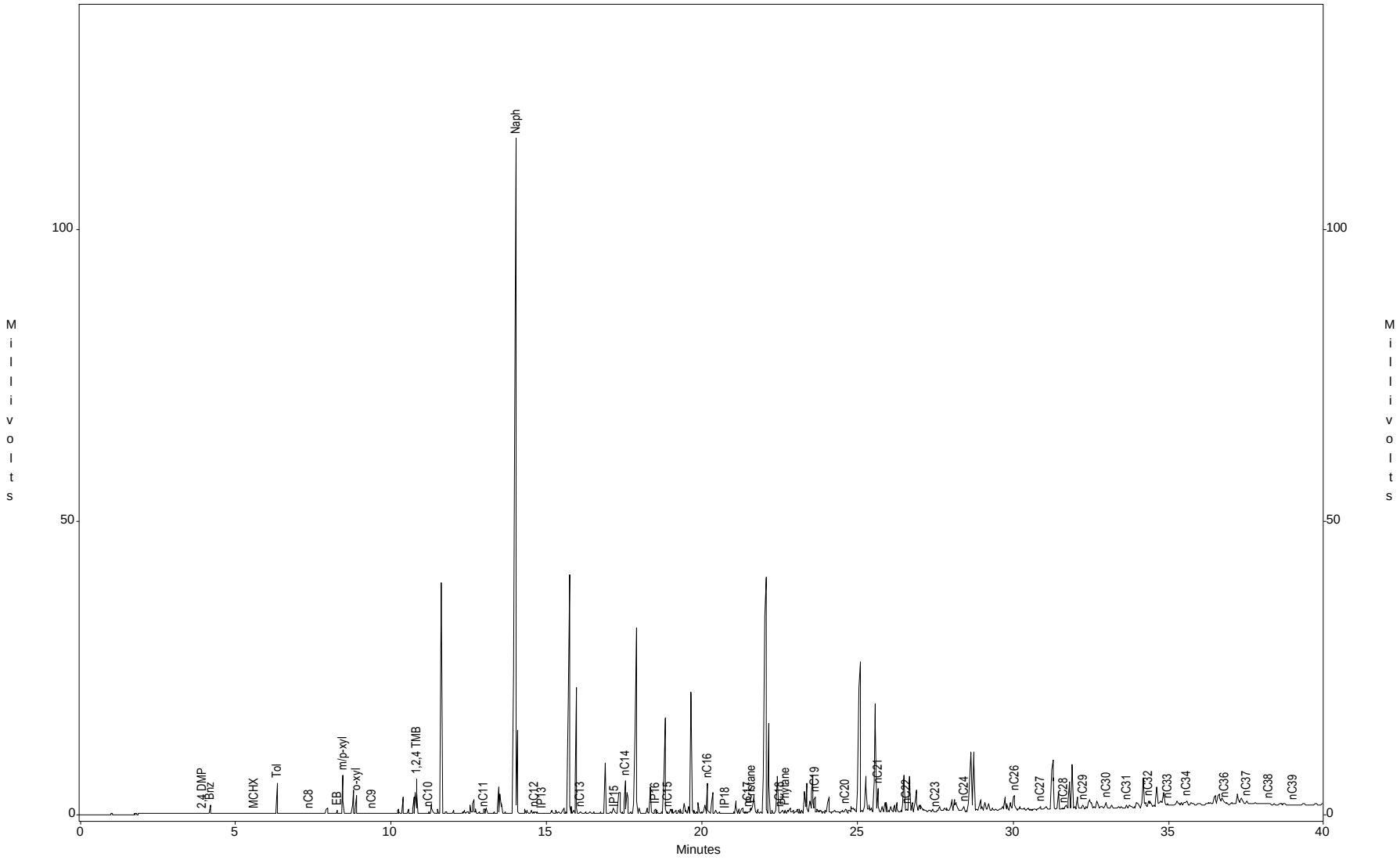


Figure 7, Gas chromatogram of the CO125 DNAPL sample.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : CO173 LNAPL
Acquired : Apr 06, 2021 08:04:42

c:\ezchrom\chrom\21016\co173 -- Channel A

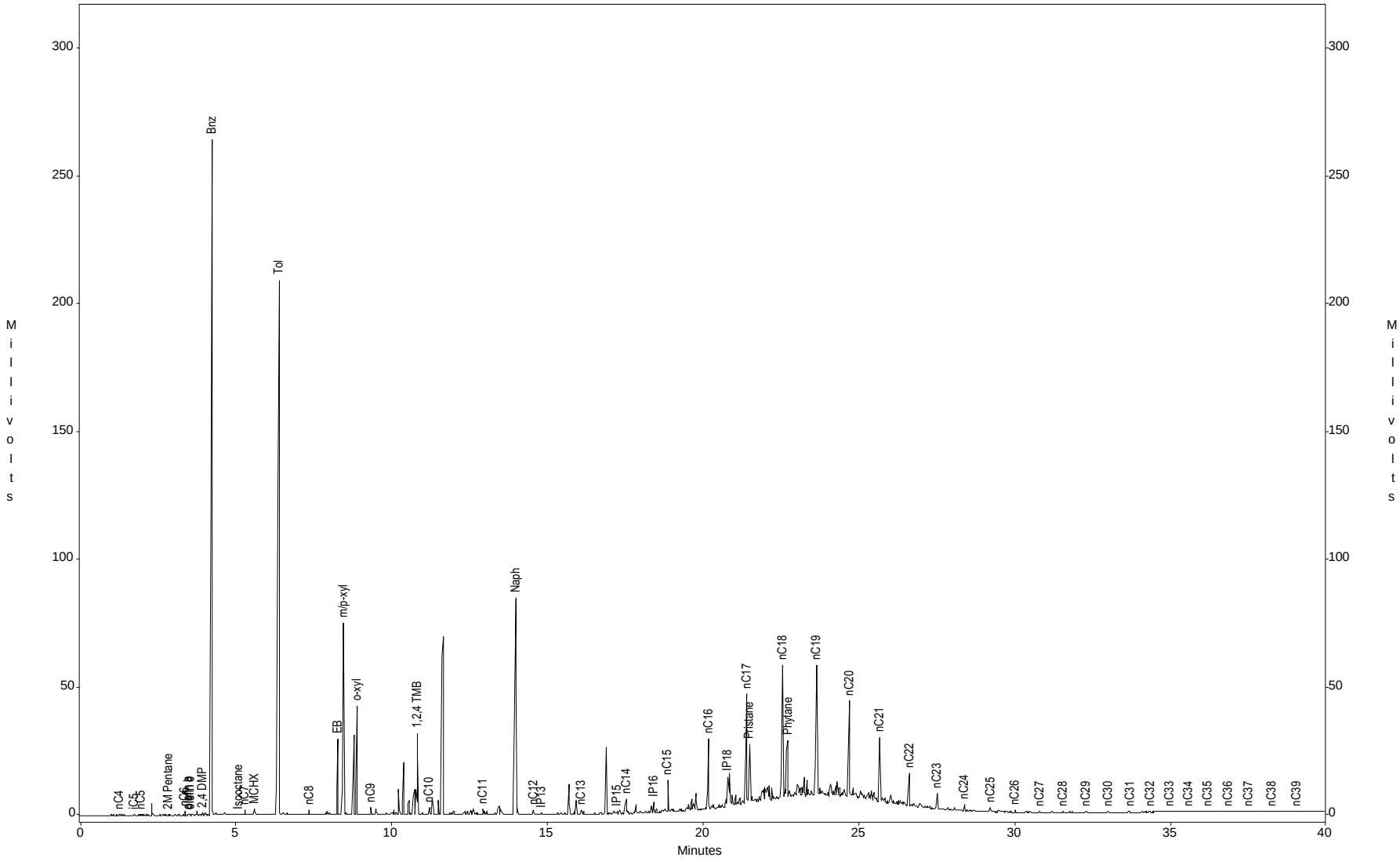


Figure 8, Gas chromatogram of the CO173 LNAPL sample.

Torkelson Geochemistry, Inc.
GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : Gas/Dies/Wax std
Acquired : Apr 06, 2021 10:35:22

c:\ezchrom\chrom\21016\gadiwax2 -- Channel A

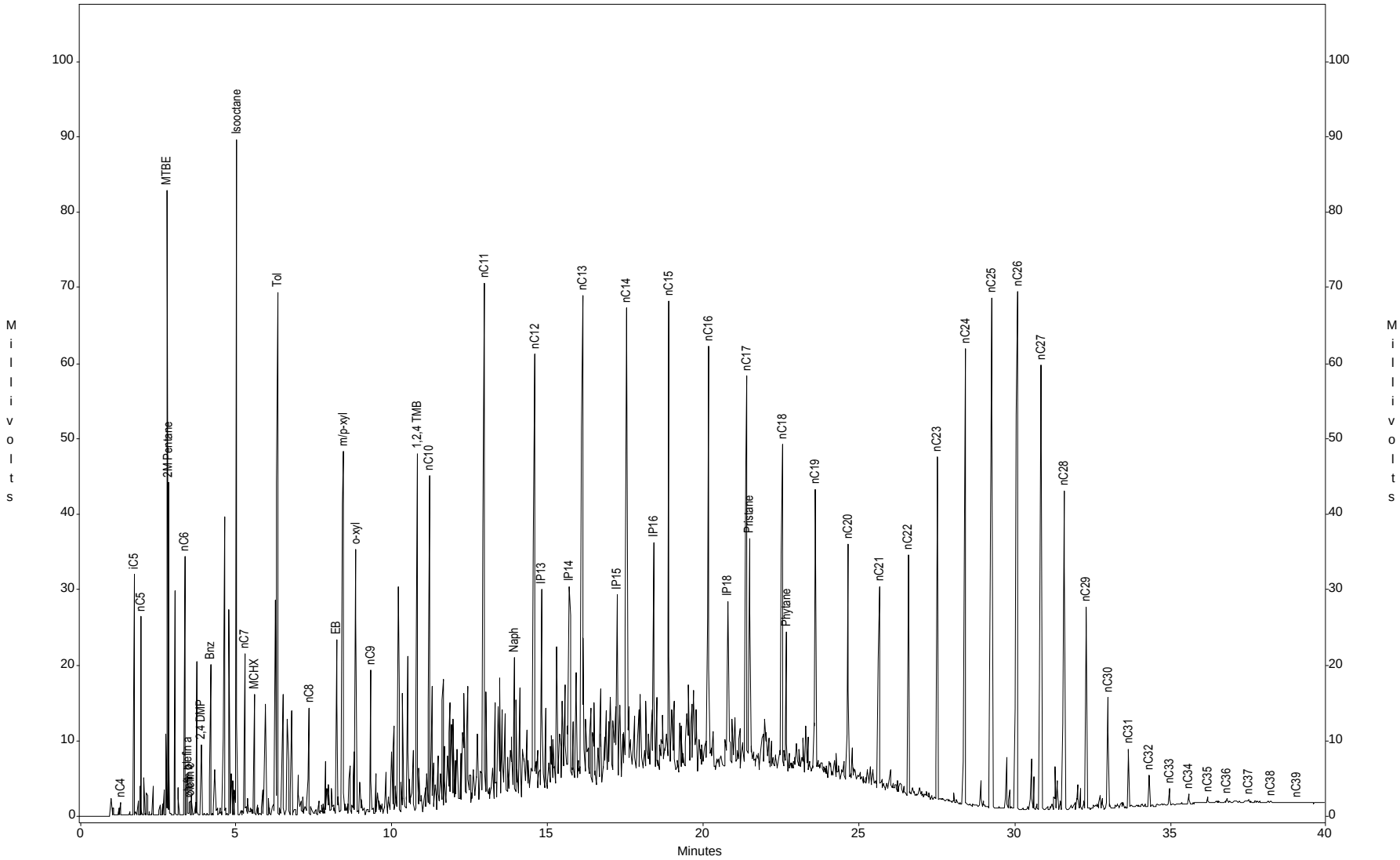
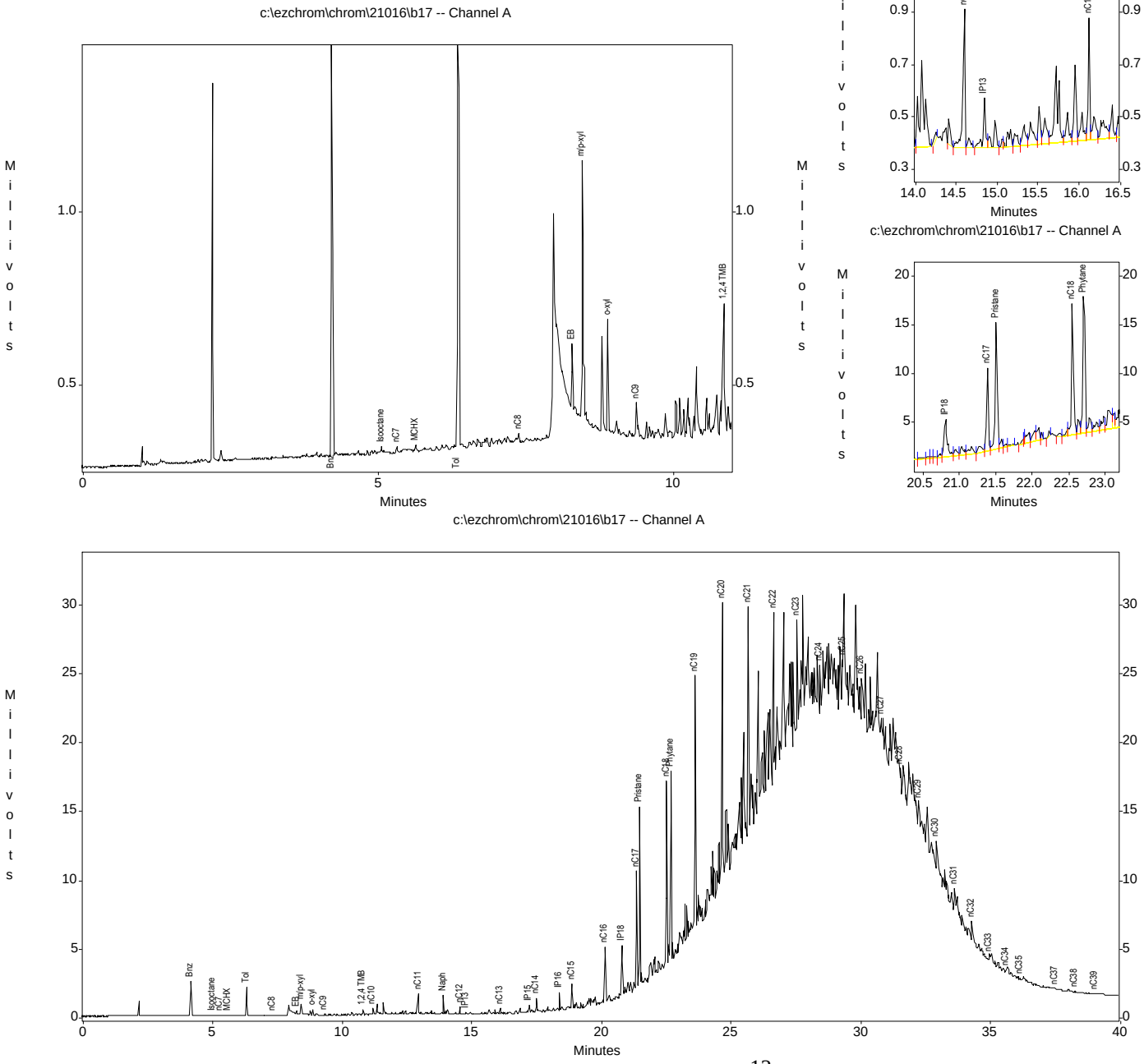


Figure 9, Gas chromatogram of laboratory standard (gasoline/diesel/wax mixture).

Sparrows Point IM, Sparrows Point, MD
Sample ID : B17 LNAPL
Acquired : Apr 06, 2021 08:53:38

Torkelson Geochemistry, Inc.
GC/FID



Channel A Results

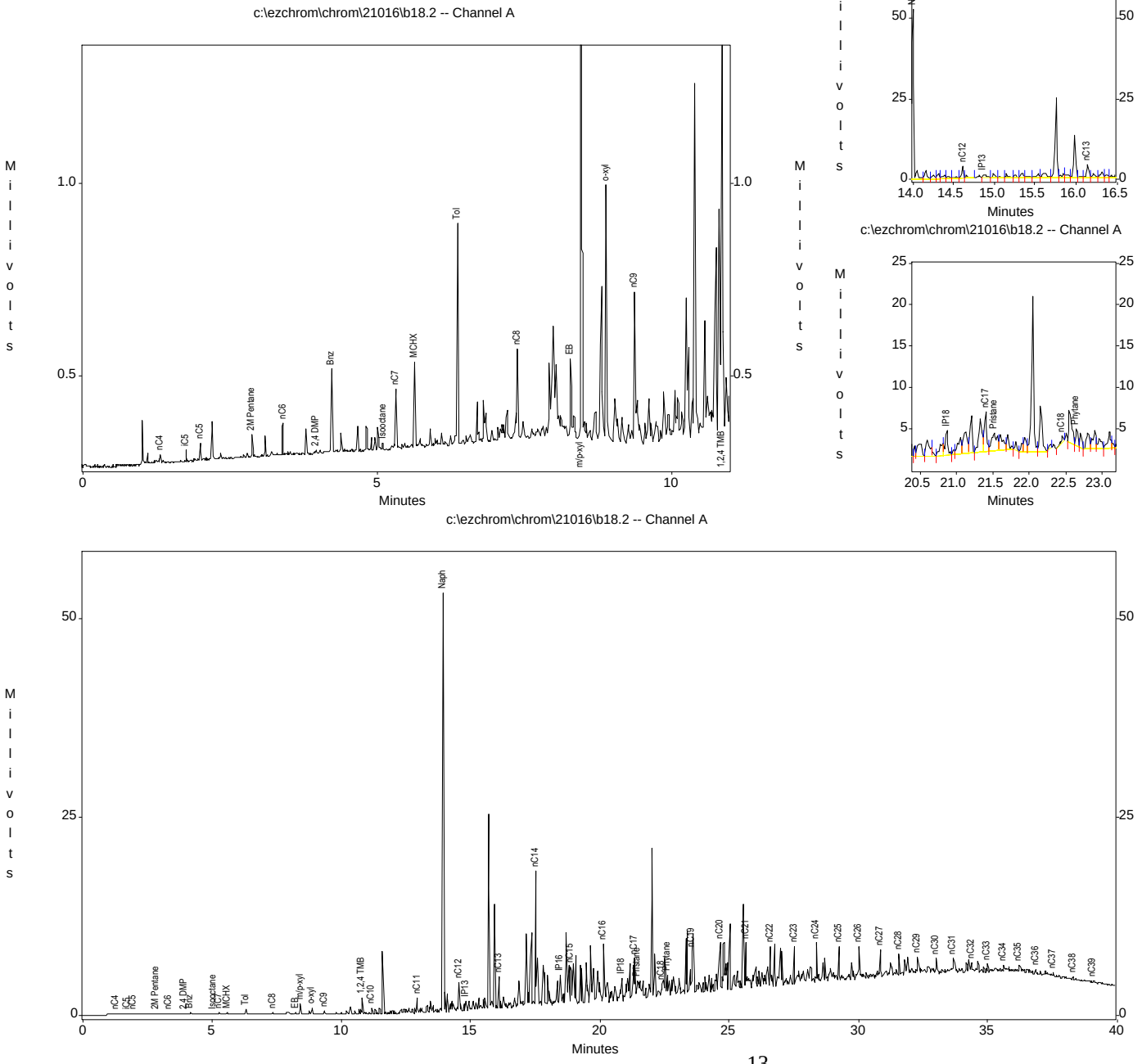
Peak	Area	Height
nC4	0	0
iC5	0	0
nC5	0	0
MTBE	0	0
2M Pentane	0	0
nC6	0	0
olefin a	0	0
olefin b	0	0
olefin c	0	0
2,4 DMP	0	0
Bnz	2594	2489
Isooctane	18	17
nC7	20	16
MCHX	23	19
Tol	2516	2103
nC8	24	19
EB	532	271
m/p-xyl	2051	801
o-xyl	517	344
nC9	247	108
1,2,4 TMB	841	382
nC10	849	427
nC11	2215	1454
Naph	2276	1416
nC12	903	534
IP13	376	192
IP14	0	0
nC13	677	470
IP15	810	497
nC14	2462	998
IP16	2257	1311
nC15	3333	1864
nC16	7157	4152
IP18	10599	3770
nC17	13407	8601
Pristane	26652	13088
nC18	23870	13405
Phytane	28731	14004
nC19	41771	19764
nC20	56274	23637
nC21	65602	22137
nC22	66234	20451
nC23	85880	18800
nC24	40476	14302
nC25	29755	13646
nC26	33507	11382
nC27	24745	7582
nC28	9250	2955
nC29	1606	806
nC30	4738	1871
nC31	3843	1426
nC32	2438	1272
nC33	153	142
nC34	119	95
nC35	176	88
nC36	0	0
nC37	295	72
nC38	55	15
nC39	59	18
nC40	0	0

Figure 10, Multipanel display of gas chromatogram of the B17 LNAPL sample.

Torkelson Geochemistry, Inc.

GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : B18 LNAPL
Acquired : Apr 06, 2021 15:41:57



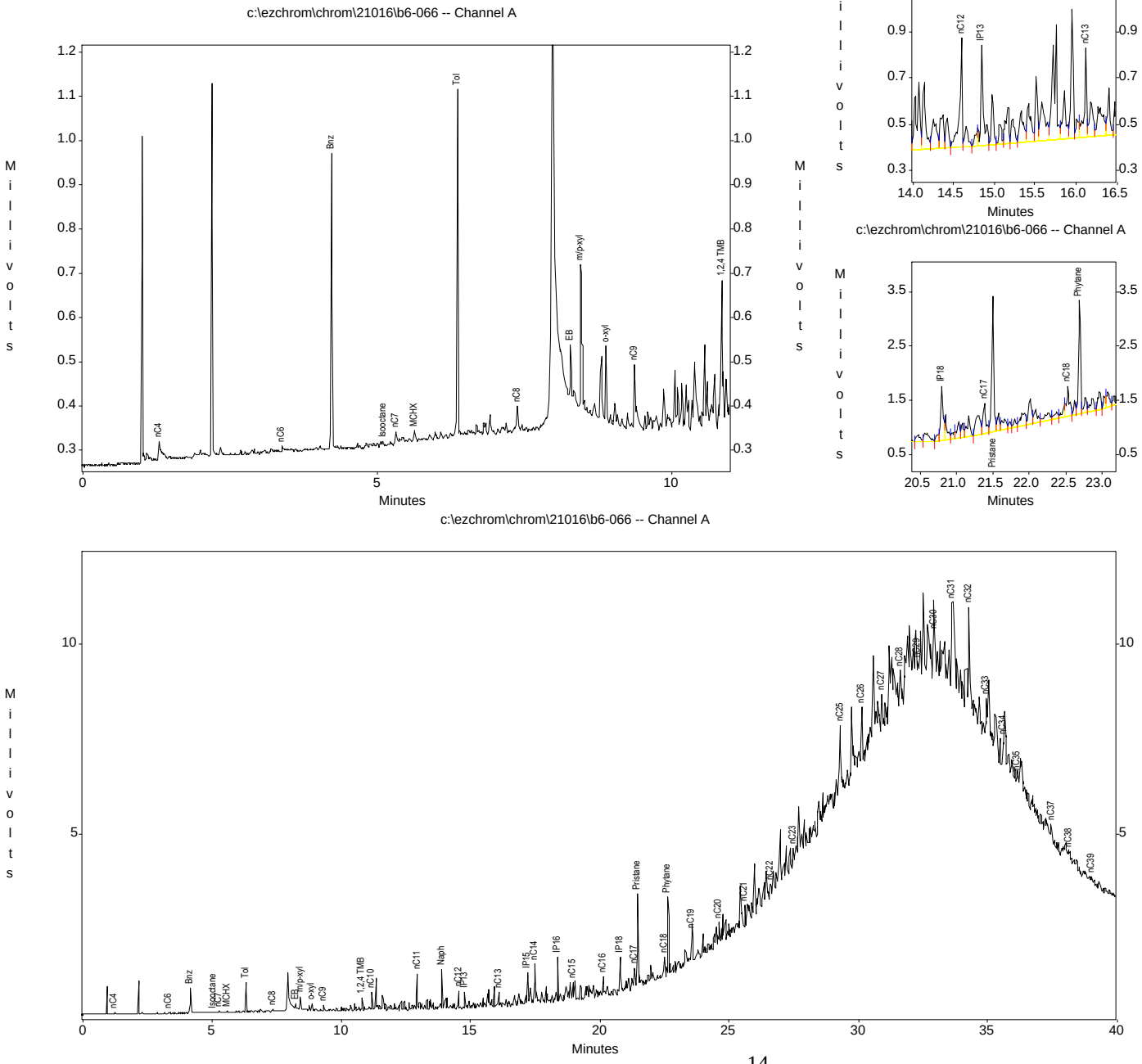
Channel A Results		
Peak	Area	Height
nC4	12	20
iC5	17	27
nC5	31	44
MTBE	0	0
2M Pentane	52	57
nC6	79	83
olefin a	0	0
olefin b	0	0
olefin c	0	0
2,4 DMP	11	8
Bnz	236	214
Isooctane	17	15
nC7	176	154
MCHX	264	222
Tol	739	576
nC8	290	235
EB	326	207
m/p-xyl	2215	1208
o-xyl	954	670
nC9	547	395
1,2,4 TMB	3055	1914
nC10	1107	733
nC11	3551	1869
Naph	113057	52776
nC12	5569	3537
IP13	4156	1163
IP14	0	0
nC13	7055	4102
IP15	0	0
nC14	25848	15397
IP16	10040	3245
nC15	13462	4490
nC16	13363	7111
IP18	7773	2922
nC17	11348	4910
Pristane	10800	2054
nC18	1231	622
Phytane	3478	2156
nC19	10446	5303
nC20	10747	6077
nC21	8563	5273
nC22	9961	5099
nC23	8751	4929
nC24	9421	5200
nC25	7271	4222
nC26	7630	3888
nC27	6411	3494
nC28	4625	2672
nC29	3087	1943
nC30	3273	1602
nC31	4702	1568
nC32	1920	1049
nC33	699	583
nC34	993	572
nC35	908	535
nC36	1076	425
nC37	893	395
nC38	760	289
nC39	408	156
nC40	0	0

Figure 11, Multipanel display of gas chromatogram of the B18 LNAPL sample.

Torkelson Geochemistry, Inc.

GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : B6-066 LNAPL
Acquired : Apr 06, 2021 09:44:19



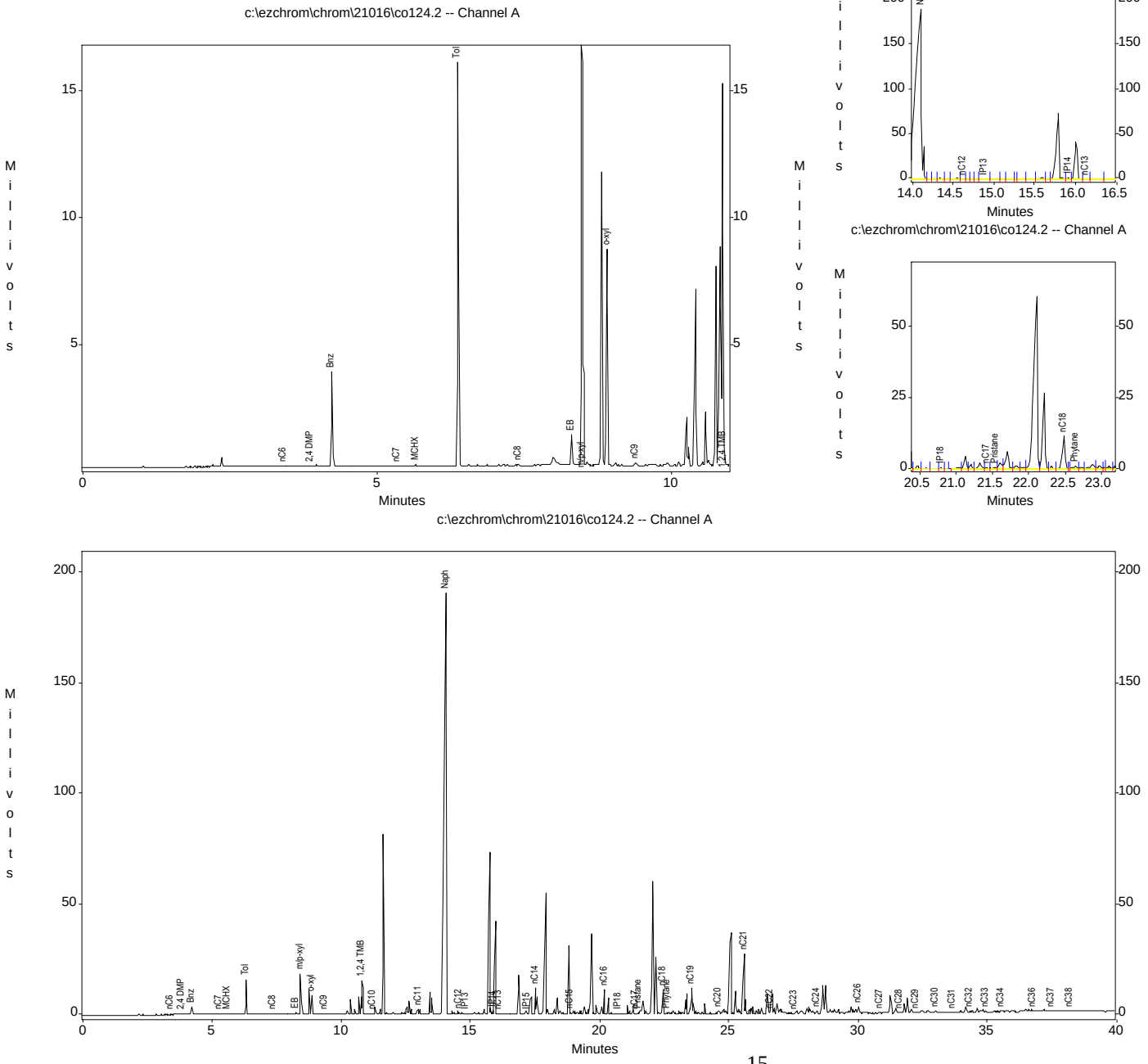
Channel A Results

Peak	Area	Height
nC4	52	38
iC5	0	0
nC5	0	0
MTBE	0	0
2M Pentane	0	0
nC6	12	10
olefin a	0	0
olefin b	0	0
olefin c	0	0
2,4 DMP	0	0
Bnz	702	668
Isooctane	19	10
nC7	39	26
MCHX	26	21
Tol	928	780
nC8	115	56
EB	381	186
m/p-xyl	1118	369
o-xyl	309	187
nC9	380	146
1,2,4 TMB	578	330
nC10	873	467
nC11	1790	947
Naph	1858	1056
nC12	1035	476
IP13	986	440
IP14	0	0
nC13	806	391
IP15	1674	867
nC14	2040	1060
IP16	1958	1196
nC15	692	424
nC16	928	481
IP18	2106	984
nC17	1364	559
Pristane	4887	2482
nC18	1564	553
Phytane	4258	2079
nC19	1352	799
nC20	1396	587
nC21	912	510
nC22	1217	408
nC23	983	478
nC24	0	0
nC25	8287	1924
nC26	4940	1564
nC27	3334	1118
nC28	2074	1048
nC29	265	210
nC30	440	155
nC31	2935	1236
nC32	4281	2187
nC33	1137	621
nC34	540	286
nC35	191	94
nC36	0	0
nC37	447	205
nC38	110	73
nC39	189	89
nC40	0	0

Figure 12, Multipanel display of gas chromatogram of the B6-066 LNAPL sample.

Sparrows Point IM, Sparrows Point, MD
Sample ID : CO124 DNAPL
Acquired : Apr 06, 2021 14:00:28

Torkelson Geochemistry, Inc.
GC/FID



Channel A Results

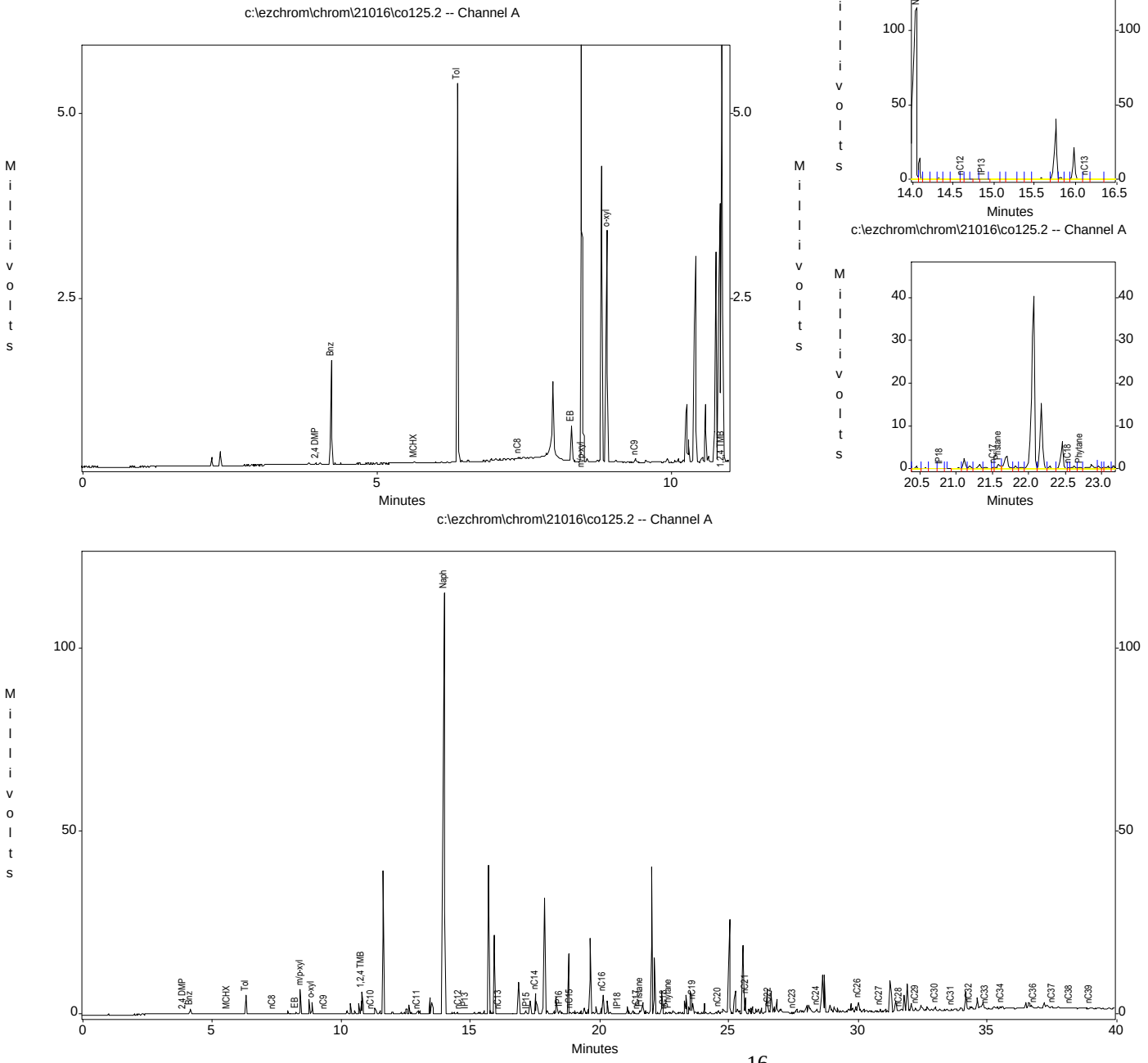
Peak	Area	Height
nC4	0	0
iC5	0	0
nC5	0	0
MTBE	0	0
2M Pentane	0	0
nC6	11	13
olefin a	0	0
olefin b	0	0
olefin c	0	0
2.4 DMP	32	31
Bnz	3909	3723
Isooctane	0	0
nC7	27	24
MCHX	69	54
Tol	18847	15821
nC8	63	46
EB	1579	1185
m/p-xyl	32466	18046
o-xyl	10902	8493
nC9	188	110
1.2.4 TMB	26643	15012
nC10	482	230
nC11	3663	2020
Naph	964319	190527
nC12	1385	615
IP13	1123	375
IP14	2846	1407
nC13	1298	529
IP15	1420	554
nC14	21515	11735
IP16	0	0
nC15	1701	741
nC16	20486	10910
IP18	648	244
nC17	1026	400
Pristane	2157	558
nC18	29134	11362
Phytane	3124	1075
nC19	28497	11895
nC20	3017	1201
nC21	78441	27297
nC22	2258	852
nC23	459	217
nC24	5656	1210
nC25	0	0
nC26	11564	2888
nC27	1354	547
nC28	478	243
nC29	2221	515
nC30	2019	722
nC31	747	301
nC32	926	492
nC33	988	219
nC34	672	149
nC35	0	0
nC36	66	0
nC37	491	168
nC38	30	14
nC39	0	0
nC40	0	0

Figure 13, Multipanel display of gas chromatogram of the CO124 DNAPL sample.

Torkelson Geochemistry, Inc.

GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : CO125 DNAPL
Acquired : Apr 06, 2021 12:17:21



Channel A Results

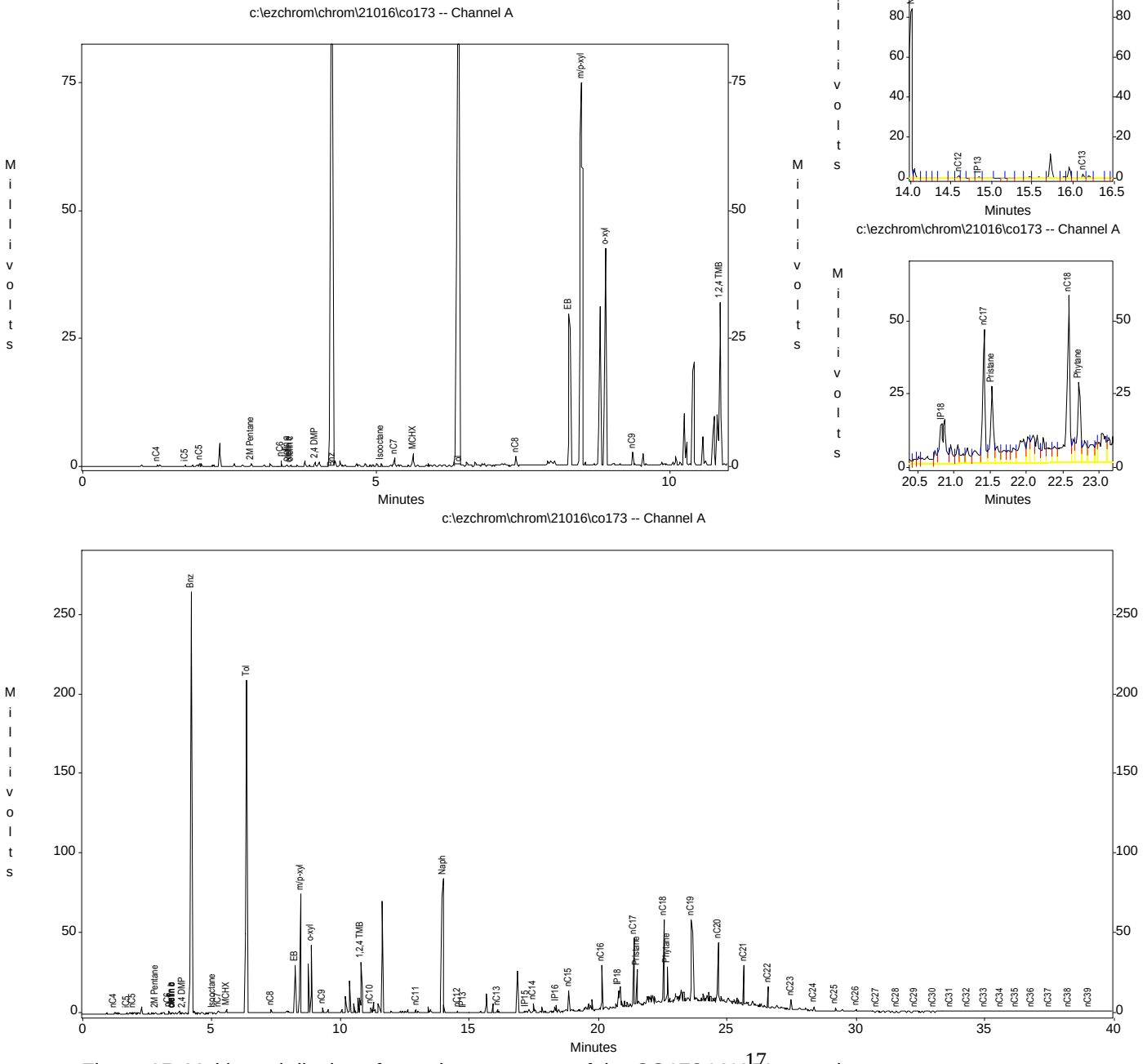
Peak	Area	Height
nC4	0	0
iC5	0	0
nC5	0	0
MTBE	0	0
2M Pentane	0	0
nC6	0	0
olefin a	0	0
olefin b	0	0
olefin c	0	0
2,4 DMP	24	22
Bnz	1460	1392
Isooctane	0	0
nC7	0	0
MCHX	23	20
Tol	6067	5093
nC8	63	39
EB	670	471
m/p-xyl	11243	6667
o-xyl	4032	3120
nC9	78	43
1,2,4 TMB	10263	5966
nC10	601	184
nC11	1642	219
Naph	370883	115171
nC12	494	263
IP13	427	151
IP14	0	0
nC13	562	246
IP15	564	252
nC14	10224	5605
IP16	1475	864
nC15	843	376
nC16	9686	5254
IP18	337	135
nC17	469	259
Pristane	2979	878
nC18	260	125
Phytane	821	340
nC19	6276	2660
nC20	1606	695
nC21	8481	4102
nC22	1504	565
nC23	369	176
nC24	4150	911
nC25	0	0
nC26	9945	2684
nC27	1314	554
nC28	421	230
nC29	2192	610
nC30	2827	1001
nC31	1088	444
nC32	1507	779
nC33	233	147
nC34	1268	352
nC35	0	0
nC36	69	0
nC37	1573	533
nC38	339	67
nC39	104	39
nC40	0	0

Figure 14, Multipanel display of gas chromatogram of the CO125 DNAPL sample.

Torkelson Geochemistry, Inc.

GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : CO173 LNAPL
Acquired : Apr 06, 2021 08:04:42



Channel A Results

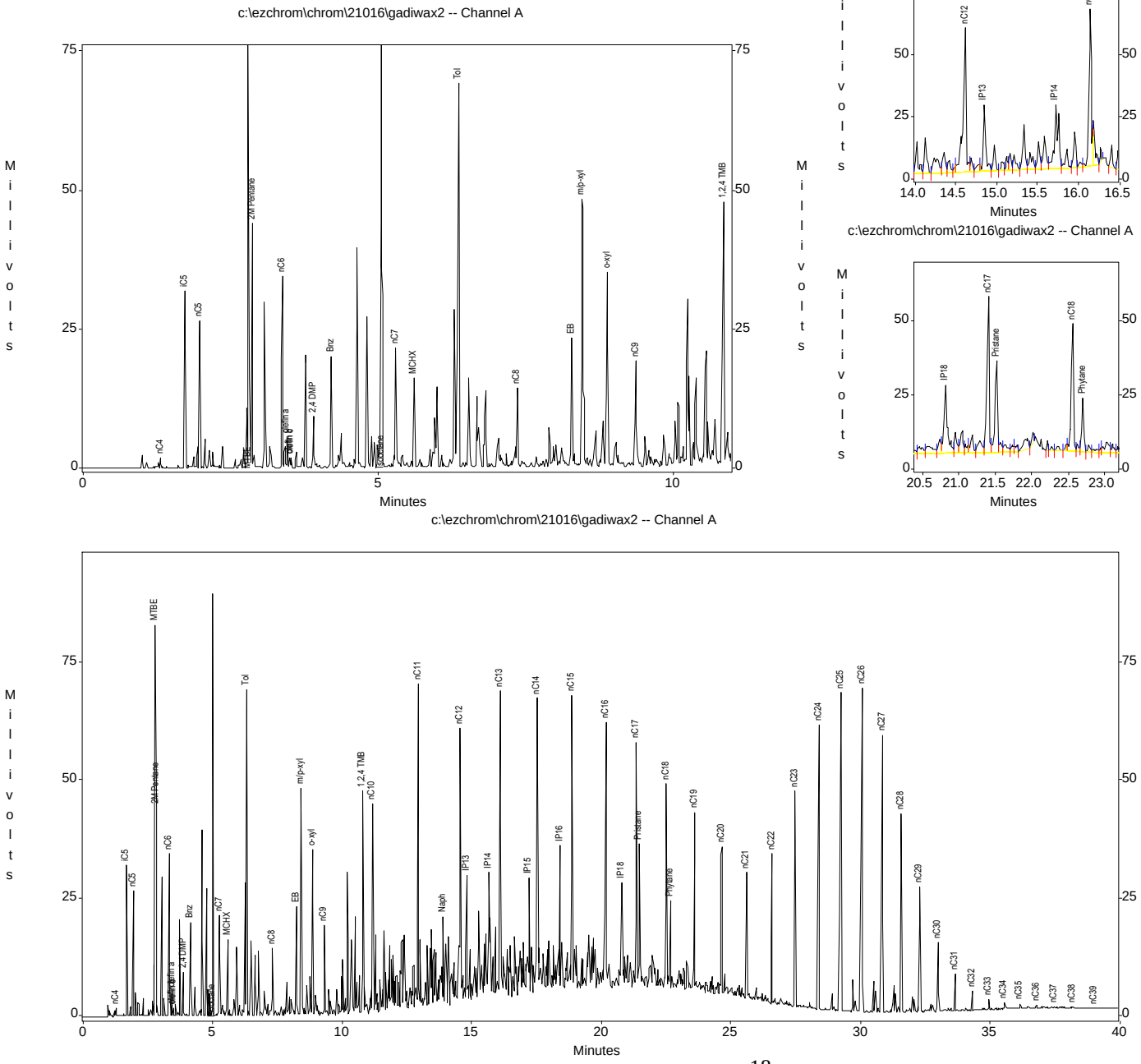
Peak	Area	Height
nC4	88	152
iC5	140	201
nC5	342	453
MTBE	0	0
2M Pentane	386	416
nC6	1124	1135
olefin a	132	89
olefin b	51	50
olefin c	89	72
2,4 DMP	963	866
Bnz	540876	264459
Isooctane	517	457
nC7	1885	1676
MCHX	2875	2368
Tol	536021	209565
nC8	2245	1816
EB	39352	29639
m/p-xyl	203543	75074
o-xyl	62153	42474
nC9	3457	2693
1,2,4 TMB	56528	31915
nC10	4557	2952
nC11	5037	2144
Naph	229103	84620
nC12	2343	1467
IP13	805	457
IP14	0	0
nC13	2527	1808
IP15	2013	931
nC14	10646	5535
IP16	7449	4300
nC15	20392	12717
nC16	56495	28294
IP18	72476	13573
nC17	102146	45389
Pristane	65920	25810
nC18	157667	56701
Phytane	77091	27247
nC19	140606	56147
nC20	105141	41985
nC21	55923	27362
nC22	24677	13184
nC23	11578	6141
nC24	4372	2656
nC25	3114	1756
nC26	1561	895
nC27	1089	580
nC28	938	497
nC29	451	301
nC30	431	277
nC31	596	257
nC32	368	197
nC33	305	160
nC34	121	65
nC35	120	68
nC36	110	54
nC37	101	42
nC38	197	42
nC39	158	30
nC40	0	0

Figure 15, Multipanel display of gas chromatogram of the CO173 LNAPL sample.

Torkelson Geochemistry, Inc.

GC/FID

Sparrows Point IM, Sparrows Point, MD
Sample ID : Gas/Dies/Wax std
Acquired : Apr 06, 2021 10:35:22



Channel A Results

Peak	Area	Height
nC4	936	1737
iC5	21249	31866
nC5	18624	26408
MTBE	79122	82880
2M Pentane	39748	44038
nC6	34618	34368
olefin a	5926	5224
olefin b	1727	1767
olefin c	2098	1789
2,4 DMP	9742	9273
Bnz	22255	19876
Isooctane	132234	89426
nC7	26173	21362
MCHX	19992	16022
Tol	120686	69156
nC8	17675	14139
EB	33040	23208
m/p-xyl	115617	48126
o-xyl	53186	35143
nC9	31442	19107
1,2,4 TMB	83931	47371
nC10	69605	44298
nC11	128658	68455
Naph	31452	18542
nC12	149650	58252
IP13	54331	26756
IP14	92527	25850
nC13	140048	63459
IP15	58577	24866
nC14	198196	62850
IP16	75306	31288
nC15	137246	63109
nC16	145395	56815
IP18	71126	22680
nC17	113647	52253
Pristane	68915	30626
nC18	91190	43114
Phytane	37507	18318
nC19	78094	37796
nC20	60045	31193
nC21	48775	26661
nC22	63730	31872
nC23	102634	45679
nC24	158930	60430
nC25	191653	67503
nC26	197849	68620
nC27	151235	58802
nC28	95146	42212
nC29	51756	26569
nC30	23509	14302
nC31	13473	7760
nC32	7103	4181
nC33	3810	2124
nC34	2412	1313
nC35	1267	739
nC36	827	413
nC37	584	229
nC38	331	110
nC39	249	70
nC40	0	0

Figure 16, Multipanel display of gas chromatogram of laboratory standard (gasoline/diesel/wax mixture).

Table 1. Results of physical property analyses.

Torkelson Geochemistry, Inc.							
Physical Properties Measurements							
Sample	TGI Job	Density of NAPL (gm/ml)	Viscosity of NAPL (centipoise)	Surface Tension Air/Water (dynes/cm)	Interfacial Tension NAPL/Water (dynes/cm)	Surface Tension Air/NAPL (dynes/cm)	Temperature of Measurements
CO173 LNAPL	21016	NR	6.2	NR	NR	NR	60F

NR = Not Requested

APPENDIX B

Appendix B - Parcel B17 Test Pit Photograph Log
Tradepoint Atlantic
Baltimore, Maryland

Former SW-026-MWS: Top view of test pit interior.

TP-D (former SW-026D-MWS): Top view of test pit interior.

TP-E (former SW-026E-MWS): Top view of test pit interior.

TP-G (former SW-026G-MWS): Top view of test pit interior.

TP-O (former TP-1 OP): Top view of test pit interior.

Appendix B - Parcel B17 Test Pit Photograph Log
Tradepoint Atlantic
Baltimore, Maryland

TP-B (former Geotech Boring): Top view of test pit interior.

APPENDIX C

ANALYTICAL REPORT

Lab Number:	L2329530
Client:	Tradepoint Atlantic 1600 Sparrows Point Boulevard Baltimore, MD 21219
ATTN:	Robert Tworkowski
Phone:	(443) 649-5073
Project Name:	B17 ABANDONMENT
Project Number:	Not Specified
Report Date:	06/09/23

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), OH (CL108), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2329530-01	SW-026-MWS	WATER	B17	05/25/23 11:00	05/25/23
L2329530-02	TB-WT-01	WATER	B17	05/25/23 00:00	05/25/23

Project Name:	B17 ABANDONMENT	**Lab Number:**	L2329530
Project Number:	Not Specified	**Report Date:**	06/09/23

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:	B17 ABANDONMENT	**Lab Number:**	L2329530
Project Number:	Not Specified	**Report Date:**	06/09/23

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: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 06/09/23

ORGANICS

VOLATILES

Project Name: B17 ABANDONMENT
Lab Number: L2329530
Project Number: Not Specified
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17
Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 06/03/23 10:46
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Chloromethane	ND		ug/l	2.5	0.20	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Bromomethane	ND		ug/l	1.0	0.26	1
Chloroethane	ND		ug/l	1.0	0.13	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15	1
Methylene chloride	ND		ug/l	2.5	0.68	1
Acetone	3.7	J	ug/l	5.0	1.5	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Cyclohexane	ND		ug/l	10	0.27	1
Chloroform	ND		ug/l	0.75	0.22	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
2-Butanone	ND		ug/l	5.0	1.9	1
Benzene	0.25	J	ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Toluene	0.27	J	ug/l	0.75	0.20	1

Project Name: B17 ABANDONMENT
Lab Number: L2329530
Project Number: Not Specified
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17
Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	ND		ug/l	0.50	0.18	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Styrene	ND		ug/l	1.0	0.36	1
Bromoform	ND		ug/l	2.0	0.25	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	113		70-130

Project Name: B17 ABANDONMENT
Lab Number: L2329530
Project Number: Not Specified
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17
Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D-SIM(M)
Analytical Date: 06/05/23 12:04
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,1,2,2-Tetrachloroethane	ND		ug/l	0.050	0.006	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
4-Bromofluorobenzene	96		70-130

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-02
Client ID: TB-WT-01
Sample Location: B17

Date Collected: 05/25/23 00:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D
Analytical Date: 06/03/23 07:59
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Dichlorodifluoromethane	ND		ug/l	5.0	0.24	1
Chloromethane	ND		ug/l	2.5	0.20	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Bromomethane	ND		ug/l	1.0	0.26	1
Chloroethane	ND		ug/l	1.0	0.13	1
Trichlorofluoromethane	ND		ug/l	2.5	0.16	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
Carbon disulfide	ND		ug/l	5.0	0.30	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15	1
Methylene chloride	ND		ug/l	2.5	0.68	1
Acetone	ND		ug/l	5.0	1.5	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16	1
Methyl Acetate	ND		ug/l	2.0	0.23	1
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
1,1-Dichloroethane	ND		ug/l	0.75	0.21	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19	1
Cyclohexane	ND		ug/l	10	0.27	1
Chloroform	ND		ug/l	0.75	0.22	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16	1
2-Butanone	ND		ug/l	5.0	1.9	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
Toluene	ND		ug/l	0.75	0.20	1

Project Name: B17 ABANDONMENT
Lab Number: L2329530
Project Number: Not Specified
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-02
Client ID: TB-WT-01
Sample Location: B17
Date Collected: 05/25/23 00:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Tetrachloroethene	ND		ug/l	0.50	0.18	1
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
2-Hexanone	ND		ug/l	5.0	0.52	1
Chlorobenzene	ND		ug/l	0.50	0.18	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Styrene	ND		ug/l	1.0	0.36	1
Bromoform	ND		ug/l	2.0	0.25	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	117		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	107		70-130

Project Name: B17 ABANDONMENT
Lab Number: L2329530
Project Number: Not Specified
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-02
Client ID: TB-WT-01
Sample Location: B17

Date Collected: 05/25/23 00:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260D-SIM(M)
Analytical Date: 06/03/23 05:58
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-SIM - Westborough Lab						
1,1,2,2-Tetrachloroethane	ND		ug/l	0.050	0.006	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
4-Bromofluorobenzene	103		70-130

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D-SIM(M)
Analytical Date: 06/03/23 04:44
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02 Batch: WG1787081-5					
1,1,2,2-Tetrachloroethane	ND		ug/l	0.050	0.006

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
4-Bromofluorobenzene	103		70-130

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/03/23 07:36
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1787129-5					
Dichlorodifluoromethane	ND		ug/l	5.0	0.24
Chloromethane	ND		ug/l	2.5	0.20
Vinyl chloride	ND		ug/l	1.0	0.07
Bromomethane	ND		ug/l	1.0	0.26
Chloroethane	ND		ug/l	1.0	0.13
Trichlorofluoromethane	ND		ug/l	2.5	0.16
1,1-Dichloroethene	ND		ug/l	0.50	0.17
Carbon disulfide	ND		ug/l	5.0	0.30
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	2.5	0.15
Methylene chloride	ND		ug/l	2.5	0.68
Acetone	ND		ug/l	5.0	1.5
trans-1,2-Dichloroethene	ND		ug/l	0.75	0.16
Methyl Acetate	ND		ug/l	2.0	0.23
Methyl tert butyl ether	ND		ug/l	1.0	0.17
1,1-Dichloroethane	ND		ug/l	0.75	0.21
cis-1,2-Dichloroethene	ND		ug/l	0.50	0.19
Cyclohexane	ND		ug/l	10	0.27
Chloroform	ND		ug/l	0.75	0.22
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	0.50	0.16
2-Butanone	ND		ug/l	5.0	1.9
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Trichloroethene	ND		ug/l	0.50	0.18
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Bromodichloromethane	ND		ug/l	0.50	0.19
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
Toluene	ND		ug/l	0.75	0.20
Tetrachloroethene	ND		ug/l	0.50	0.18

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/03/23 07:36
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1787129-5					
4-Methyl-2-pentanone	ND		ug/l	5.0	0.42
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1,2-Trichloroethane	ND		ug/l	0.75	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,2-Dibromoethane	ND		ug/l	2.0	0.19
2-Hexanone	ND		ug/l	5.0	0.52
Chlorobenzene	ND		ug/l	0.50	0.18
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Styrene	ND		ug/l	1.0	0.36
Bromoform	ND		ug/l	2.0	0.25
Isopropylbenzene	ND		ug/l	0.50	0.19
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
1,3-Dichlorobenzene	ND		ug/l	2.5	0.19
1,4-Dichlorobenzene	ND		ug/l	2.5	0.19
1,2-Dichlorobenzene	ND		ug/l	2.5	0.18
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.35
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.22
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.23

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 06/03/23 07:36
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02 Batch: WG1787129-5					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	108		70-130

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D-SIM(M)
Analytical Date: 06/05/23 10:42
Analyst: MCM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1787533-5					
1,1,2,2-Tetrachloroethane	ND		ug/l	0.050	0.006

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
4-Bromofluorobenzene	97		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02 Batch: WG1787081-3 WG1787081-4								
1,1,2,2-Tetrachloroethane	116		124		70-130	7		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		97		70-130
4-Bromofluorobenzene	102		103		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1787129-3 WG1787129-4								
Dichlorodifluoromethane	100		100		36-147	0		20
Chloromethane	91		95		64-130	4		20
Vinyl chloride	100		110		55-140	10		20
Bromomethane	57		56		39-139	2		20
Chloroethane	110		110		55-138	0		20
Trichlorofluoromethane	110		110		62-150	0		20
1,1-Dichloroethene	100		100		61-145	0		20
Carbon disulfide	100		100		51-130	0		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	110		110		70-130	0		20
Methylene chloride	98		100		70-130	2		20
Acetone	110		120		58-148	9		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Methyl Acetate	100		100		70-130	0		20
Methyl tert butyl ether	95		96		63-130	1		20
1,1-Dichloroethane	110		100		70-130	10		20
cis-1,2-Dichloroethene	100		98		70-130	2		20
Cyclohexane	97		98		70-130	1		20
Chloroform	110		100		70-130	10		20
Carbon tetrachloride	110		110		63-132	0		20
1,1,1-Trichloroethane	110		110		67-130	0		20
2-Butanone	100		120		63-138	18		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	110		110		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1787129-3 WG1787129-4								
Trichloroethene	99		98		70-130	1		20
1,2-Dichloropropane	100		100		70-130	0		20
Bromodichloromethane	100		100		67-130	0		20
cis-1,3-Dichloropropene	94		96		70-130	2		20
Toluene	98		100		70-130	2		20
Tetrachloroethene	100		100		70-130	0		20
4-Methyl-2-pentanone	89		96		59-130	8		20
trans-1,3-Dichloropropene	98		100		70-130	2		20
1,1,2-Trichloroethane	100		110		70-130	10		20
Dibromochloromethane	98		99		63-130	1		20
1,2-Dibromoethane	110		110		70-130	0		20
2-Hexanone	86		96		57-130	11		20
Chlorobenzene	100		100		75-130	0		20
Ethylbenzene	94		98		70-130	4		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	95		100		70-130	5		20
Styrene	100		100		70-130	0		20
Bromoform	92		96		54-136	4		20
Isopropylbenzene	95		100		70-130	5		20
1,1,2,2-Tetrachloroethane	100		110		67-130	10		20
1,3-Dichlorobenzene	100		110		70-130	10		20
1,4-Dichlorobenzene	100		100		70-130	0		20
1,2-Dichlorobenzene	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02 Batch: WG1787129-3 WG1787129-4								
1,2-Dibromo-3-chloropropane	100		95		41-144	5		20
1,2,4-Trichlorobenzene	95		100		70-130	5		20
1,2,3-Trichlorobenzene	95		100		70-130	5		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	114		115		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	100		102		70-130
Dibromofluoromethane	109		107		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1787533-3 WG1787533-4								
1,1,2,2-Tetrachloroethane	119		99		70-130	18		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		98		70-130
4-Bromofluorobenzene	94		96		70-130

SEMIVOLATILES

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17

Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E
Analytical Date: 06/04/23 20:57
Analyst: CMM

Extraction Method: EPA 3510C
Extraction Date: 05/31/23 21:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzaldehyde	ND		ug/l	5.0	0.53	1
Phenol	ND		ug/l	5.0	0.57	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Acetophenone	ND		ug/l	5.0	0.53	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
Hexachloroethane	ND		ug/l	2.0	0.58	1
Nitrobenzene	ND		ug/l	1.4	0.77	1
Isophorone	ND		ug/l	5.0	1.2	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
Naphthalene	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	3.7	1.1	1
Hexachlorobutadiene	ND		ug/l	2.0	0.66	1
Caprolactam	ND		ug/l	10	3.3	1
2-Methylnaphthalene	ND		ug/l	2.0	0.45	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	1.7	0.44	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Biphenyl	ND		ug/l	2.0	0.46	1
2-Chloronaphthalene	ND		ug/l	2.0	0.44	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1

Project Name: B17 ABANDONMENT
Lab Number: L2329530
Project Number: Not Specified
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17
Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthylene	ND		ug/l	2.0	0.46	1
Acenaphthene	ND		ug/l	2.0	0.53	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84	1
Diethyl phthalate	ND		ug/l	5.0	0.38	1
Fluorene	ND		ug/l	2.0	0.41	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
Hexachlorobenzene	ND		ug/l	2.0	0.46	1
Pentachlorophenol	ND		ug/l	10	1.8	1
Phenanthrene	ND		ug/l	2.0	0.33	1
Anthracene	ND		ug/l	2.0	0.33	1
Carbazole	ND		ug/l	2.0	0.49	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Fluoranthene	ND		ug/l	2.0	0.26	1
Pyrene	ND		ug/l	2.0	0.28	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
Benzo(a)anthracene	ND		ug/l	2.0	0.32	1
Chrysene	ND		ug/l	1.4	0.34	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Benzo(b)fluoranthene	ND		ug/l	2.0	0.35	1
Benzo(k)fluoranthene	ND		ug/l	2.0	0.37	1
Benzo(a)pyrene	ND		ug/l	2.0	0.41	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.40	1
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.32	1
Benzo(ghi)perylene	ND		ug/l	2.0	0.30	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	86		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	61		15-120
2,4,6-Tribromophenol	71		10-120
4-Terphenyl-d14	55		41-149

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17

Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270E-SIM
Analytical Date: 06/01/23 13:29
Analyst: CMM

Extraction Method: EPA 3510C
Extraction Date: 05/31/23 21:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.56		ug/l	0.10	0.05	1
2-Methylnaphthalene	0.80		ug/l	0.10	0.02	1
Acenaphthylene	0.05	J	ug/l	0.10	0.01	1
Acenaphthene	0.09	J	ug/l	0.10	0.01	1
Fluorene	0.21		ug/l	0.10	0.01	1
Pentachlorophenol	0.06	J	ug/l	0.10	0.01	1
Phenanthrene	0.66		ug/l	0.05	0.02	1
Anthracene	0.07	J	ug/l	0.10	0.01	1
Fluoranthene	0.08	J	ug/l	0.10	0.02	1
Pyrene	0.17		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.04	J	ug/l	0.05	0.02	1
Chrysene	0.25		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.03	J	ug/l	0.05	0.01	1
Benzo(k)fluoranthene	0.02	J	ug/l	0.10	0.01	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.01	J	ug/l	0.10	0.01	1
Dibenzo(a,h)anthracene	0.01	J	ug/l	0.05	0.01	1
Benzo(ghi)perylene	0.01	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		21-120
Phenol-d6	49		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	68		15-120
2,4,6-Tribromophenol	100		10-120
4-Terphenyl-d14	72		41-149

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 06/01/23 14:21
Analyst: CMM

Extraction Method: EPA 3510C
Extraction Date: 05/31/23 07:55

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1785258-1					
Benzaldehyde	ND		ug/l	5.0	0.53
Phenol	ND		ug/l	5.0	0.57
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
2-Chlorophenol	ND		ug/l	2.0	0.48
2-Methylphenol	ND		ug/l	5.0	0.49
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53
Acetophenone	ND		ug/l	5.0	0.53
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
Hexachloroethane	ND		ug/l	2.0	0.58
Nitrobenzene	ND		ug/l	1.4	0.77
Isophorone	ND		ug/l	5.0	1.2
2,4-Dimethylphenol	ND		ug/l	5.0	1.8
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50
2,4-Dichlorophenol	ND		ug/l	5.0	0.41
Naphthalene	ND		ug/l	2.0	0.46
4-Chloroaniline	ND		ug/l	3.7	1.1
Hexachlorobutadiene	ND		ug/l	2.0	0.66
Caprolactam	ND		ug/l	10	3.3
2-Methylnaphthalene	ND		ug/l	2.0	0.45
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
1,2,4,5-Tetrachlorobenzene	ND		ug/l	1.7	0.44
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Biphenyl	ND		ug/l	2.0	0.46
2-Chloronaphthalene	ND		ug/l	2.0	0.44
2-Nitroaniline	ND		ug/l	5.0	0.50
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93
Acenaphthylene	ND		ug/l	2.0	0.46

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 06/01/23 14:21
Analyst: CMM

Extraction Method: EPA 3510C
Extraction Date: 05/31/23 07:55

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1785258-1					
Acenaphthene	ND		ug/l	2.0	0.53
2,4-Dinitrophenol	ND		ug/l	20	6.6
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2
2,3,4,6-Tetrachlorophenol	ND		ug/l	5.0	0.84
Diethyl phthalate	ND		ug/l	5.0	0.38
Fluorene	ND		ug/l	2.0	0.41
4-Nitroaniline	ND		ug/l	5.0	0.80
NDPA/DPA	ND		ug/l	2.0	0.42
Hexachlorobenzene	ND		ug/l	2.0	0.46
Pentachlorophenol	ND		ug/l	10	1.8
Phenanthrene	ND		ug/l	2.0	0.33
Anthracene	ND		ug/l	2.0	0.33
Carbazole	ND		ug/l	2.0	0.49
Di-n-butylphthalate	ND		ug/l	5.0	0.39
Fluoranthene	ND		ug/l	2.0	0.26
Pyrene	ND		ug/l	2.0	0.28
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6
Benzo(a)anthracene	ND		ug/l	2.0	0.32
Chrysene	ND		ug/l	1.4	0.34
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5
Di-n-octylphthalate	ND		ug/l	5.0	1.3
Benzo(b)fluoranthene	ND		ug/l	2.0	0.35
Benzo(k)fluoranthene	ND		ug/l	2.0	0.37
Benzo(a)pyrene	ND		ug/l	2.0	0.41
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.40
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.32
Benzo(ghi)perylene	ND		ug/l	2.0	0.30

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 06/01/23 14:21
Analyst: CMM

Extraction Method: EPA 3510C
Extraction Date: 05/31/23 07:55

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1785258-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		21-120
Phenol-d6	52		10-120
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		15-120
2,4,6-Tribromophenol	82		10-120
4-Terphenyl-d14	67		41-149

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E-SIM
Analytical Date: 06/01/23 13:13
Analyst: CMM

Extraction Method: EPA 3510C
Extraction Date: 05/31/23 07:55

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1785259-1					
Naphthalene	ND		ug/l	0.10	0.05
2-Methylnaphthalene	ND		ug/l	0.10	0.02
Acenaphthylene	ND		ug/l	0.10	0.01
Acenaphthene	ND		ug/l	0.10	0.01
Fluorene	ND		ug/l	0.10	0.01
Pentachlorophenol	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Fluoranthene	ND		ug/l	0.10	0.02
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Dibenzo(a,h)anthracene	ND		ug/l	0.05	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		21-120
Phenol-d6	57		10-120
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	107		10-120
4-Terphenyl-d14	83		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1785258-2 WG1785258-3								
Benzaldehyde	78		62		40-140	23		30
Phenol	62		53		12-110	16		30
Bis(2-chloroethyl)ether	75		66		40-140	13		30
2-Chlorophenol	84		71		27-123	17		30
2-Methylphenol	86		73		30-130	16		30
Bis(2-chloroisopropyl)ether	84		70		40-140	18		30
Acetophenone	75		66		39-129	13		30
n-Nitrosodi-n-propylamine	84		72		29-132	15		30
3-Methylphenol/4-Methylphenol	97		80		30-130	19		30
Hexachloroethane	79		71		40-140	11		30
Nitrobenzene	86		74		40-140	15		30
Isophorone	82		69		40-140	17		30
2,4-Dimethylphenol	90		67		30-130	29		30
Bis(2-chloroethoxy)methane	75		66		40-140	13		30
2,4-Dichlorophenol	94		81		30-130	15		30
Naphthalene	80		63		40-140	24		30
4-Chloroaniline	86		72		40-140	18		30
Hexachlorobutadiene	82		64		40-140	25		30
Caprolactam	51		39		10-130	27		30
2-Methylnaphthalene	83		67		40-140	21		30
Hexachlorocyclopentadiene	77		65		40-140	17		30
1,2,4,5-Tetrachlorobenzene	72		60		2-134	18		30
2,4,6-Trichlorophenol	89		71		30-130	23		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1785258-2 WG1785258-3								
2,4,5-Trichlorophenol	100		76		30-130	27		30
Biphenyl	76		60		40-140	24		30
2-Chloronaphthalene	80		66		40-140	19		30
2-Nitroaniline	91		75		52-143	19		30
2,6-Dinitrotoluene	81		65		40-140	22		30
Acenaphthylene	89		70		45-123	24		30
Acenaphthene	80		68		37-111	16		30
2,4-Dinitrophenol	90		77		20-130	16		30
2,4-Dinitrotoluene	82		72		48-143	13		30
2,3,4,6-Tetrachlorophenol	92		75		54-145	20		30
Diethyl phthalate	84		71		40-140	17		30
Fluorene	80		70		40-140	13		30
4-Nitroaniline	91		72		51-143	23		30
NDPA/DPA	79		66		40-140	18		30
Hexachlorobenzene	81		68		40-140	17		30
Pentachlorophenol	101		82		9-103	21		30
Phenanthrene	78		62		40-140	23		30
Anthracene	80		65		40-140	21		30
Carbazole	85		68		55-144	22		30
Di-n-butylphthalate	87		70		40-140	22		30
Fluoranthene	81		64		40-140	23		30
Pyrene	80		65		26-127	21		30
3,3'-Dichlorobenzidine	76		62		40-140	20		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1785258-2 WG1785258-3								
Benzo(a)anthracene	87		71		40-140	20		30
Chrysene	87		71		40-140	20		30
Bis(2-ethylhexyl)phthalate	108		88		40-140	20		30
Di-n-octylphthalate	102		86		40-140	17		30
Benzo(b)fluoranthene	87		70		40-140	22		30
Benzo(k)fluoranthene	83		70		40-140	17		30
Benzo(a)pyrene	91		76		40-140	18		30
Indeno(1,2,3-cd)pyrene	81		69		40-140	16		30
Dibenzo(a,h)anthracene	84		71		40-140	17		30
Benzo(ghi)perylene	84		70		40-140	18		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	83		69		21-120
Phenol-d6	72		55		10-120
Nitrobenzene-d5	85		72		23-120
2-Fluorobiphenyl	83		68		15-120
2,4,6-Tribromophenol	97		83		10-120
4-Terphenyl-d14	77		61		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1785259-2 WG1785259-3								
Naphthalene	78		66		40-140	17		40
2-Methylnaphthalene	83		72		40-140	14		40
Acenaphthylene	90		78		40-140	14		40
Acenaphthene	82		70		37-111	16		40
Fluorene	85		73		40-140	15		40
Pentachlorophenol	101		90		9-103	12		40
Phenanthrene	80		68		40-140	16		40
Anthracene	90		76		40-140	17		40
Fluoranthene	86		77		40-140	11		40
Pyrene	84		76		26-127	10		40
Benzo(a)anthracene	97		80		40-140	19		40
Chrysene	88		74		40-140	17		40
Benzo(b)fluoranthene	88		74		40-140	17		40
Benzo(k)fluoranthene	87		76		40-140	13		40
Benzo(a)pyrene	96		82		40-140	16		40
Indeno(1,2,3-cd)pyrene	88		75		40-140	16		40
Dibenzo(a,h)anthracene	92		78		40-140	16		40
Benzo(ghi)perylene	90		75		40-140	18		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1785259-2 WG1785259-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	76		65		21-120
Phenol-d6	67		58		10-120
Nitrobenzene-d5	96		83		23-120
2-Fluorobiphenyl	82		71		15-120
2,4,6-Tribromophenol	**128**	Q	107		10-120
4-Terphenyl-d14	83		75		41-149

PETROLEUM HYDROCARBONS

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17

Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 06/03/23 14:46
Analyst: MEO

Extraction Method: EPA 3510C
Extraction Date: 06/01/23 07:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Diesel Range Organics - Westborough Lab						
Diesel Range Organics (C10-C28)	7600		ug/l	1200	180	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	55		40-140

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 06/03/23 13:01
Analyst: MEO

Extraction Method: EPA 3510C
Extraction Date: 06/01/23 07:57

Parameter	Result	Qualifier	Units	RL	MDL
Diesel Range Organics - Westborough Lab for sample(s): 01 Batch: WG1785792-1					
Diesel Range Organics (C10-C28)	220	J	ug/l	1200	180

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	64		40-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Diesel Range Organics - Westborough Lab	Associated sample(s): 01		Batch: WG1785792-2					
DRO (C10-C28)	65		-		60-140	-		

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	51				40-140

INORGANICS
&
MISCELLANEOUS

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

SAMPLE RESULTS

Lab ID: L2329530-01
Client ID: SW-026-MWS
Sample Location: B17
Sample Depth:
Matrix: Water
Date Collected: 05/25/23 11:00
Date Received: 05/25/23
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Oil & Grease, Hem-Grav	14000		ug/l	4000	4000	1	06/07/23 19:38	06/08/23 00:04	140,1664B	QJM

Project Name: B17 ABANDONMENT
Project Number: Not Specified
Lab Number: L2329530
Report Date: 06/09/23

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1788478-1										
Oil & Grease, Hem-Grav	ND		ug/l	4000	4000	1	06/07/23 19:38	06/08/23 01:51	140,1664B	QJM

Lab Control Sample Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1788478-2								
Oil & Grease, Hem-Grav	105		-		78-114	-		18

Matrix Spike Analysis
Batch Quality Control

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1788478-4 QC Sample: L2329286-44 Client ID: MS Sample												
Oil & Grease, Hem-Grav	ND	37700	35000	93		-	-		78-114	-		18

Lab Duplicate Analysis

Batch Quality Control

Project Name: B17 ABANDONMENT

Project Number: Not Specified

Lab Number: L2329530

Report Date: 06/09/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1788478-3 QC Sample: L2329286-43 Client ID: DUP Sample						
Oil & Grease, Hem-Grav	ND	ND	ug/l	NC		18

Project Name: B17 ABANDONMENT
Project Number: Not Specified

Lab Number: L2329530
Report Date: 06/09/23

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(*)
L2329530-01A	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)
L2329530-01B	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)
L2329530-01C	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)
L2329530-01D	Amber 250ml unpreserved	A	11	11	3.0	Y	Absent		PA-8270SIM-LVI(7),PA-8270-LVI(7)
L2329530-01E	Amber 250ml unpreserved	A	11	11	3.0	Y	Absent		PA-8270SIM-LVI(7),PA-8270-LVI(7)
L2329530-01F	Amber 500ml unpreserved	A	11	11	3.0	Y	Absent		TPH-DRO(7)
L2329530-01G	Amber 500ml unpreserved	A	11	11	3.0	Y	Absent		TPH-DRO(7)
L2329530-01H	Amber 1000ml HCl preserved	A	NA		3.0	Y	Absent		OG-1664-PPB(28)
L2329530-01I	Amber 1000ml HCl preserved	A	NA		3.0	Y	Absent		OG-1664-PPB(28)
L2329530-02A	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)
L2329530-02B	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)
L2329530-02C	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)
L2329530-02D	Vial HCl preserved	A	NA		3.0	Y	Absent		PA-8260-SIM(14),PA-8260(14)

*Values in parentheses indicate holding time in days

Project Name:	B17 ABANDONMENT	**Lab Number:**	L2329530
Project Number:	Not Specified	**Report Date:**	06/09/23

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:	B17 ABANDONMENT	**Lab Number:**	L2329530
Project Number:	Not Specified	**Report Date:**	06/09/23

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:	B17 ABANDONMENT	**Lab Number:**	L2329530
Project Number:	Not Specified	**Report Date:**	06/09/23

Data Qualifiers

Identified Compounds (TICs).

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

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

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:	B17 ABANDONMENT	**Lab Number:**	L2329530
Project Number:	Not Specified	**Report Date:**	06/09/23

REFERENCES

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

140 Method 1664,Revision B: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-10-001, February 2010.

LIMITATION OF LIABILITIES

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

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

Certification Information

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

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

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

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

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

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

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

CHAIN OF CUSTODY

PAGE 1 OF 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: 5/26/23

ALPHA Job #: L2324530

Client Information
Client: TPA
Address:
Phone:
Fax:
Email:
☐ These samples have been previously analyzed by Alpha

Project Information
Project Name: B17 ABANDONMENT
Project Location: B17
Project #:
Project Manager: BOB T.
ALPHA Quote #:

Turn-Around Time
☑ Standard ☐ RUSH (only confirmed if pre-approved)
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:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: VOC 8260	SVOC 8270 SIM	Oil & Grease 1664	TPH DRO	SAMPLE HANDLING	TOTAL # BOTTLES
24530-01	SW-026-MWS	5/25/23	1100	GW	TJP	X	X	X	X		9
-02	TB-WT-01	—	—	—	—	X					4

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

Sample Specific Comments

Container Type: V A
Preservative: B A

Relinquished By:	Date/Time	Received By:	Date/Time
ARM	5/25/23 1540		5/25/23 1635
	5/25/23 1800		5/25/23 1800
	5/25/23 2100		5/25 2100

5/26/23 0345
5/26/23 0345

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.