

PHASE II INVESTIGATION REPORT

**AREA A: PARCEL A18
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND**

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1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has completed a Phase II Investigation of a portion of the Tradepoint Atlantic property (formerly Sparrows Point Terminal, LLC) that has been designated as Area A: Parcel A18 (the Site). Parcel A18 is comprised of 27.3 acres of the approximately 3,100-acre former steel making facility (**Figure 1**). While the Site is largely vacant, several businesses operate immediately adjacent to the property boundary, including Chesapeake Specialty Products Inc. (east of the Site), C. Steinweg Group (south of the Site), and Universal Trade Solutions, Inc. and Caprock Grain (north and west of the Site within the former Central Receiving Warehouse (CRW)). The western portion of the Site is bounded to the south by the former Maintenance of Way Yard (within Parcel A10), and to the north by a stormwater pond (within Parcel A16).

The Phase II Investigation was performed in accordance with procedures outlined in the approved Phase II Investigation Work Plan for Area A: Parcel A18. The Work Plan (Revision 0 dated June 28, 2019) and a subsequent Comment Response Letter (dated December 26, 2019) were approved by the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) via email on February 3, 2020. The Work Plan was implemented in compliance with requirements pursuant to the following:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the MDE effective September 12, 2014; and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the USEPA effective November 25, 2014.

Parcel A18 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from the USEPA on September 12, 2014. Based on this agreement, the USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE's Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE and delivered on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial), and plans for the property include demolition and redevelopment over the next several years.

1.1. SITE HISTORY

From the late 1800s until 2012, the production and manufacturing of steel was conducted at Sparrows Point. Iron and steel production operations and processes at Sparrows Point included raw material handling, coke production, sinter production, iron production, steel production, and semi-finished and finished product preparation. In 1970, Sparrows Point was the largest steel facility in the United States, producing hot and cold rolled sheets, coated materials, pipes, plates, and rod and wire. The steel making operations at Sparrows Point ceased in fall 2012.

The Site is largely vacant and includes small paved and unpaved roadways, densely vegetated areas, two stormwater management ponds, and several active rail lines. Two rail lines lead to the nearby Greys Railyard on Parcel A13. Although there is limited historical information related to past uses of the Site, there is no evidence that significant iron and steel industrial processes were completed within the boundary of Parcel A18.

The Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants (dated May 19, 2014) states generically that fly dumping was known to occur outside of the main facility along roads and mainly in vacant and unmonitored areas. According to interviews conducted as part of the Phase I ESA, no hazardous materials or petroleum products were known to be dumped on the property. ARM located historically discarded drums in one area in the southern portion of the Site, which was targeted by this Phase II Investigation.

1.2. OBJECTIVES

The objective of this Phase II Investigation was to characterize the nature and extent of contamination at the Site. A summary table of the site investigation locations, including the sample identification numbers and the analyses performed, is provided as **Appendix A**. This report includes a summary of the work performed, including the environmental setting, site investigation methods, analytical results and data usability assessment, and findings and recommendations.

2.0 ENVIRONMENTAL SETTING

2.1. LAND USE AND SURFACE FEATURES

The Tradeport Atlantic property consists of the former Sparrows Point steel mill. According to the Phase I ESA prepared by Weaver Boos dated May 19, 2014, the property is zoned Manufacturing Heavy-Industrial Major (MH-IM). Surrounding property zoning classifications (beyond Tradeport Atlantic) include the following: Manufacturing Light (ML); Resource Conservation (RC); Density Residential (DR); Business Roadside (BR); Business Major (BM); Business Local (BL); and Residential Office (RO). Light industrial and commercial properties are located northeast of the property and northwest of the property across Bear Creek. Residential areas of Edgemere and Fort Howard are located northeast of the property across Jones Creek and to the southeast across Old Road Bay, respectively. Residential and commercial areas of Dundalk are located northwest of the property across Bear Creek.

Elevations on the Site are highly varied and range between approximately 10 and 50 feet above mean sea level (amsl) across the land area. The two on-site stormwater ponds are located several feet below the surrounding grade. The highest elevations (near 50 feet amsl) are located at the northern end of the Site near Maryland Route 158 (Bethlehem Boulevard), but most of the land area is positioned between 10 and 20 feet amsl. The areas immediately adjacent to the unpaved service road and rail lines slope steeply downward, and surface water from the Site appears to discharge to the two on-site stormwater ponds and the larger pond located on the adjacent Parcel A16. According to Figure B-2 of the Stormwater Pollution Prevention Plan (SWPPP) Revision 8 dated April 30, 2020, surface water runoff from the majority of the Site is conveyed to the Tin Mill Canal (TMC), and is ultimately discharged through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014 beyond the Humphrey Creek Wastewater Treatment Plant (HCWWTP), which discharges to Bear Creek. The easternmost portion of the Site appears to be located outside of the industrial drainage areas covered by the SWPPP.

2.2. REGIONAL GEOLOGY

The Site is located within the Atlantic Coastal Plain Physiographic Province (Coastal Plain). The western boundary of the Coastal Plain is the “Fall Line”, which separates the Coastal Plain from the Piedmont Plateau Province. The Fall Line runs from northeast to southwest along the western boundary of the Chesapeake Bay, passing through Elkton (MD), Havre de Grace (MD), Baltimore City (MD), and Laurel (MD). The eastern boundary of the Coastal Plain is the off-shore Continental Shelf.

The unconsolidated sediments beneath the Site belong to the Talbot Formation (Pleistocene), which is then underlain by the Cretaceous formations which comprise the Potomac Group (Patapsco Formation, Arundel Formation, and the Patuxent Formation). The Potomac Group

formations are comprised of unconsolidated sediments of varying thicknesses and types, which may be several hundred feet to several thousand feet thick. These unconsolidated formations may overlie deeper Mesozoic and/or Precambrian bedrock. Depth to bedrock is approximately 700 feet within the Site.

2.3. SITE GEOLOGY/HYDROGEOLOGY

Groundcover at the Site is comprised of approximately 47% natural soils and 53% non-native fill materials (i.e., slag), based on the approximate shoreline of the Sparrows Point Peninsula in 1916, as shown on **Figure 2** (adapted from Figure 2-20 in the Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure dated January 1998).

In general, the encountered subsurface geology included natural soils, which included fine-grained sediments (clays and silts) and coarse-grained sediments (sands and gravels), as well as non-native slag and other fill materials. Shallow groundwater was observed in soil cores at depths from 8.5 to 20 feet below ground surface (bgs) across the Site; however, groundwater was not encountered at every location. Soil boring observation logs are provided in **Appendix B**. Note that unless otherwise indicated, all Unified Soil Classification System (USCS) group symbols provided on the attached boring logs are from visual observations, and not from laboratory testing.

Groundwater was investigated at the Site via the installation of nine temporary groundwater sample collection points (commonly referred to as piezometers). Sample locations where piezometers were installed within Parcel A18 include: A18-002-PZ, A18-008-PZ, A18-009-PZ, A18-011-PZ, A18-013-PZ, A18-014-PZ, A18-015-PZ, A18-016-PZ, and A18-017-PZ. **Figure 3** shows an aerial view of the piezometers which were installed and sampled to characterize groundwater conditions in Parcel A18. A piezometer was originally specified to be installed at A18-005-SB; however, this location could not be installed due to equipment refusal and the presence of rail lines in the immediate vicinity which restricted further access. A18-008-PZ was installed as a replacement for the originally planned location.

The piezometers were surveyed by a Maryland-licensed surveyor, and the supporting documentation from the survey is included in **Appendix C**. A synoptic round of groundwater level measurements was completed on August 10, 2020. Surveyed top of casing (TOC) and ground surface elevations for all applicable locations can be found in **Table 1**, along with the depth to water (DTW) measurements from this date. Based on the recorded field measurements, a groundwater potentiometric surface map was constructed for the shallow hydrogeologic zone. The localized potentiometric map for shallow groundwater has been included on **Figure 3**. The elevation contours suggest that groundwater flows generally in the direction of the on-site stormwater ponds and the larger pond located on the adjacent Parcel A16.

3.0 SITE INVESTIGATION

A total of 45 soil samples (from 17 boring locations and four shallow sediment locations) and nine groundwater samples were collected for analysis between April 28 and July 9, 2020 as part of the Parcel A18 Phase II Investigation. This Phase II Investigation utilized methods and protocols that followed the procedures included in the Quality Assurance Project Plan (QAPP) dated April 5, 2016 which was approved by the agencies to support the investigation and remediation of the Tradepoint Atlantic property. Information regarding the project organization, field activities and sampling methods, sampling equipment, sample handling and management procedures, the selected laboratory and analytical methods, quality control and quality assurance procedures, investigation-derived waste (IDW) management methods, and reporting requirements are described in detail in the approved Parcel A18 Work Plan and the QAPP.

All site characterization activities were conducted under the property-wide Health and Safety Plan (HASP) provided as Appendix E of the approved Work Plan.

3.1. SAMPLE TARGET IDENTIFICATION

Previous activities within and around the buildings and facilities located on the Tradepoint Atlantic property may have been historical sources of environmental contamination. If present, source areas were identified as targets for sampling through a careful review of historical documents. When a sampling target was identified, a boring was placed at or next to its location using Geographic Information Systems (GIS) software (ArcMap Version 10.6).

Sampling targets included, as applicable, 1) Recognized Environmental Conditions (RECs) shown on the REC Location Map provided in Weaver Boos' Phase I ESA, 2) additional findings (non-RECs) from the Phase I ESA which were identified as potential environmental concerns, and 3) Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified from the DCC Report prepared by Rust Environment and Infrastructure. There were no RECs, SWMUs, or AOCs identified at the Site based on the Phase I ESA or DCC Report; however, one off-site REC (REC 28A; Finding 281) was identified due to the presence of two Underground Storage Tanks (USTs) located to the west of the northern portion of the Site. The REC is described in further detail in the Parcel A18 Work Plan. The off-site REC was investigated via site-wide coverage borings placed near the parcel boundary to characterize potential migration of contamination.

Four sets of historical drawings were also reviewed to identify potential sampling targets for the Site. These drawings included the 5000 Set (Plant Arrangement), the 5100 Set (Plant Index), the 5500 Set (Plant Sewer Lines), and a set of drawings indicating coke oven gas distribution drip leg locations. Drip legs are points throughout the distribution system where coke oven gas condensate was removed from the gas pipelines. The condensate from the drip legs was typically discharged to drums, although it is possible some spilled out of the drums and onto the ground. The drip legs

drawings did not provide coverage of Parcel A18, but based on the positions of other drip legs and known paths of the coke gas lines, it is unlikely that any coke gas lines or drip legs were present within the parcel boundary. Similarly, the historical 5000 Set, 5100 Set, and 5500 Set did not provide complete coverage of Parcel A18 (although the western and southern portions of the Site were covered), suggesting that significant steel-production operations did not historically occur within the parcel boundary.

A summary of the specific drawings covering the Site is presented in **Table 2**. No specific sampling targets were identified from the historical drawings because they depicted no industrial activities or specific features that may have been a likely source of environmental contamination within the Site. During a pre-investigation site visit completed by ARM personnel on March 28, 2019, historically discarded drums were located in one area in the southern portion of the Site designated as a Fly Dumping Area. The Fly Dumping Area was targeted during this Phase II Investigation by A18-001-SB and A18-002-SB. Due to the close proximity of Parcel A10 to the south, which was known to contain elevated groundwater concentrations of chlorinated volatile organic compounds (CVOCs), several soil borings and temporary groundwater piezometers were included along the southern boundary of Parcel A18. This included two supplemental locations at A18-016-SB and A18-017-SB which were specifically requested by the MDE. The MDE also identified the two on-site stormwater ponds as targets for sediment sampling, with two sediment samples collected from each pond as A18-018-SD through A18-021-SD. A summary table of the investigation plan, along with the applicable boring identification numbers and the analyses performed, has been provided as **Appendix A**. During the completion of fieldwork, it was necessary to shift some samples (in particular the sediment samples) from the approved locations given in the Work Plan. **Table 3** provides the identification numbers of the field adjusted samples, the coordinates of the proposed and final locations, and the distance/direction of the field shifts.

The density of soil borings met the requirements set forth in QAPP Worksheet 17 – Sampling Design and Rationale. Parcel A18 contains a total of 27.3 acres without engineered barriers (including 5.3 acres of stormwater ponds which were inaccessible for conventional soil sampling and excluded from the density requirement). A total of 15 soil borings were required to meet the density specification for the 22.0 acres of land area with non-engineered barriers; soil samples were collected from 17 soil borings and four additional sediment sample locations in the stormwater ponds during the Phase II Investigation.

3.2. SOIL INVESTIGATION

Continuous core soil borings were advanced at 17 locations across Parcel A18 to assess the presence or absence of soil contamination, and to assess the vertical distribution of any encountered contamination (**Figure 4**). Four sediment samples were also collected directly from the top 12 inches of sediment within the stormwater pond areas of Parcel A18. The sediment

samples (A18-018-SD through A18-021-SD) are also shown on **Figure 4**. Analytical soil and sediment samples were successfully collected from all proposed locations.

The 17 continuous core soil borings were advanced to a maximum depth of 26 feet bgs using the Geoprobe® MC-7 Macrocore soil sampler (surface to 10 feet bgs) and the Geoprobe® D-22 Dual-Tube Sampler (depths >10 feet bgs). At each of the 17 completed boring locations, each soil core was visually inspected and screened with a hand-held photoionization detector (PID) prior to logging soil types. Soil boring logs have been included as **Appendix B**, and the PID calibration log has been included as **Appendix D**. Unless otherwise indicated, all USCS group symbols provided on the attached boring logs are from visual observations.

In each boring, one shallow sample was collected from the 0 to 1 foot depth interval. If unsuitable surface cover materials (such as asphalt pavement) were present, the first 1 foot of soil beneath this layer was collected as the shallow sample. An underlying sample was collected from the 4 to 5 foot depth interval from each continuous core soil boring, but could be adjusted based on field observations. If the PID or other field observations indicated contamination to exist at a depth greater than 3 feet bgs but less than 9 feet bgs, and above the water table, the sample from the deeper 4 to 5 foot interval was shifted to the alternate depth interval. One additional set of samples was also collected from the 9 to 10 foot depth interval if groundwater had not been encountered. The 10-foot bgs samples were held by the laboratory prior to analysis in accordance with the requirements given in the Parcel A18 Work Plan. These project-specific requirements for the analysis of 10-foot bgs samples are further described below. It should be noted that soil samples were not collected from a depth that was below the water table.

Soil and sediment sampling activities were conducted in accordance with the procedures and methods referenced in **Field Standard Operating Procedure (SOP) Numbers 003, 008, 009, 012, and 013** provided in Appendix A of the QAPP. Down-hole sampling equipment was decontaminated after sampling had been concluded at each location, according to the procedures and methods referenced in **Field SOP Number 016** provided in Appendix A of the QAPP.

Each soil and sediment sample collected during this investigation was submitted to Pace Analytical Services, Inc. (PACE) for analysis. As stated above, the 10-foot bgs soil samples were held prior to analysis in accordance with the Parcel A18 Work Plan requirements. Excluding these deep samples, the remaining samples were analyzed for Target Compound List (TCL) semi-volatile organic compounds (SVOCs) via USEPA Method 8270, Oil & Grease via USEPA Method 9071, total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO) via USEPA Method 8015, Target Analyte List (TAL) Metals via USEPA Methods 6010 and 7471, hexavalent chromium via USEPA Method 7196, and cyanide via USEPA Method 9012. Additionally, the shallow soil samples collected across the Site from the 0 to 1 foot bgs interval and the sediment samples were analyzed for polychlorinated biphenyls (PCBs) via USEPA Method 8082. Soil samples from any depth interval with a sustained PID reading of greater than

10 ppm were also analyzed for TCL volatile organic compounds (VOCs) via USEPA Method 8260. The sediment samples were released to be analyzed for VOCs independent of PID readings. The soil and sediment samples were also submitted to Alpha Analytical, Inc. (Alpha) for analysis of polynuclear aromatic hydrocarbons (PAHs) via USEPA Method 8270 SIM. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

If the PID reading from the 9 to 10 foot bgs interval was less than 10 ppm (true for all 10-foot bgs samples collected in Parcel A18), all parameters were held by the laboratory pending the analysis of the overlying 0 to 1 and 4 to 5 foot bgs (or field adjusted interval) samples. If the preliminary laboratory results from the 4 to 5 foot bgs interval indicated exceedances of the Project Action Limits (PALs) for any constituents, the held sample from the 9 to 10 foot bgs interval was then released to be analyzed for those constituents that had PAL exceedances in the overlying sample.

3.3. GROUNDWATER INVESTIGATION

Nine shallow temporary groundwater piezometers (A18-002-PZ, A18-008-PZ, A18-009-PZ, A18-011-PZ, A18-013-PZ, A18-014-PZ, A18-015-PZ, A18-016-PZ, and A18-017-PZ) were included in the parcel-specific sampling plan to characterize groundwater and to support the definition of the groundwater potentiometric surface. A piezometer was originally specified to be installed at A18-005-SB; however, this location could not be installed due to equipment refusal and the presence of rail lines in the immediate vicinity which restricted further access. A18-008-PZ was installed as a replacement location. The locations where shallow groundwater samples were collected are provided on **Figure 3**.

Piezometer installation activities were conducted in accordance with the procedures and methods referenced in **Field SOP Number 028**. The piezometers were installed at each location using the Geoprobe® DT22 Dual Tube sampling system. During the installation of each piezometer, soil types were logged and screened with a hand-held PID. The piezometer construction logs have been included as part of **Appendix B**. Following the installation of each sample collection point, the 0-hour depth to water was documented and the collection point was checked for the presence of non-aqueous phase liquid (NAPL) using an oil-water interface probe in accordance with the methods referenced in **Field SOP Number 019** provided in Appendix A of the QAPP.

After the installation of each temporary groundwater sample collection point, down-hole equipment was decontaminated according to the procedures and methods referenced in **Field SOP Number 016** provided in Appendix A of the QAPP.

Groundwater samples were collected at each location in accordance with methods referenced in **Field SOP Number 006** provided in Appendix A of the QAPP; which employed the use of laboratory supplied sample containers and preservatives, a peristaltic pump, dedicated sample tubing, and a water quality multiparameter meter with a flow-through cell. Groundwater samples

submitted for analysis of dissolved metals were filtered in the field with an in-line 0.45-micron filter. The sampling and purge logs have been included in **Appendix E**. Calibration of the multiparameter meter was performed before the start of each day of the sampling event. Documentation of the multiparameter meter calibration is included in **Appendix E**.

Groundwater samples collected in Parcel A18 were submitted to PACE to be analyzed for TCL-VOCs via USEPA Method 8260, TCL-SVOCs via USEPA Methods 8270 and 8270 SIM, Oil & Grease via USEPA Method 1664, TPH-DRO/GRO via USEPA Methods 5030 and 8015, TAL-Dissolved Metals via USEPA Methods 6010 and 7470, dissolved hexavalent chromium via USEPA Method 7196, and total cyanide via USEPA Method 9012. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

3.4. MANAGEMENT OF INVESTIGATION-DERIVED WASTE (IDW)

In accordance with **Field SOP Number 005** provided in Appendix A of the QAPP, potentially impacted materials, or IDW, generated during this Phase II Investigation was containerized in 55-gallon (DOT-UN1A2) drums. The types of IDW that were generated during this Phase II Investigation included the following:

- soil cuttings generated from soil borings or the installation of groundwater sample points;
- purged groundwater;
- decontamination fluids; and
- used personal protective equipment

Following the completion of field activities, a composite sample was gathered with aliquots from each of the Parcel A18 Phase II IDW soil drums for waste characterization. Following this analysis, the waste soil was characterized as non-hazardous. A list of all results from the soil waste characterization procedure can be found in **Table 4**. IDW drums containing aqueous materials (including aqueous waste generated during the Parcel A18 Phase II Investigation) were characterized by preparing composite samples from randomly selected drums. The composite samples included aliquots from several individual drums that were chosen as a subset of the aqueous drums being staged on-site at the date of collection. Based on this analysis, the aqueous waste was characterized as non-hazardous. A list of all results from the aqueous waste characterization procedure can be found in **Table 5**.

The parcel-specific IDW drum log from this Phase II Investigation is included as **Appendix F**. All IDW procedures were carried out in accordance with methods referenced in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP.

4.0 ANALYTICAL RESULTS

4.1. SOIL CONDITIONS

This evaluation of soil conditions includes the sediment samples collected from A18-018-SD through A18-021-SD. Soil and sediment analytical results were screened against the soil PALs established in the property-wide QAPP (or other direct guidance from the agencies; i.e., TPH/Oil & Grease) to determine PAL exceedances. PALs are generally based on the USEPA's Regional Screening Levels (RSLs) for the Composite Worker exposure to soil. The Composite Worker is defined by the USEPA as a long-term receptor exposed during the workday who is a full-time employee that spends most of the workday conducting maintenance activities (which typically involve on-site exposures to surface soils) outdoors.

The analytical results for the detected parameters in soil (and sediment) are summarized and compared to the PALs in **Table 6** (Organics) and **Table 7** (Inorganics). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (DVRs) have been included as electronic attachments. The DVRs contain a glossary of qualifiers for the final flags assigned to individual results in the attached summary tables.

4.1.1. Soil Conditions: Organic Compounds

As provided on **Table 6**, two VOCs (carbon disulfide and toluene) were identified above the laboratory's method detection limits (MDLs) in the soil samples collected from across the Site. Except for the four sediment samples collected from the stormwater pond areas, only samples which exhibited PID readings greater than 10 ppm were analyzed for VOCs. There were no VOCs detected above their respective PALs.

Table 6 provides a summary of SVOCs detected above the laboratory's MDLs in the soil samples collected from across the Site. The PALs for relevant PAHs have been adjusted upward based on revised toxicity data published in the USEPA RSL Composite Worker Soil Table. Therefore, any soil exceedances for PAHs would be based on the adjusted PALs rather than those presented in the QAPP. Benzo[a]pyrene was the only SVOC detected above the PAL, and exceeded its PAL (2.1 mg/kg) in two soil samples (A18-003-SB-5 and A18-016-SB-5) with a maximum detection of 2.9 mg/kg in A18-003-SB-5. The SVOC PAL exceedances are shown on **Figure 5**.

Shallow soil samples collected across the Site from the 0 to 1 foot bgs interval (including the four sediment samples) were analyzed for PCBs. **Table 6** provides a summary of PCBs detected above the laboratory's MDLs. There were no PCBs detected above their respective PALs.

Table 6 provides a summary of the TPH/Oil & Grease detections above the laboratory's MDLs in the soil samples collected from across the Site. There were no detections of TPH-GRO in any soil samples, and no PAL exceedances of TPH-DRO or TPH-GRO. There was only one PAL

exceedance of Oil & Grease, which was detected in sediment sample A18-020-SD-1 at a concentration of 7,650 mg/kg slightly above the PAL of 6,200 mg/kg. The Oil & Grease PAL exceedance location and result is provided on **Figure 6**. A18-020-SD is positioned along an active rail line, and the observed Oil & Grease exceedance may be the result of drainage from the rail. No physical evidence of NAPL was observed in any soil cores completed during this investigation.

4.1.2. Soil Conditions: Inorganic Constituents

Table 7 provides a summary of inorganic constituents detected above the laboratory's MDLs in the soil samples collected from across the Site. Four inorganic constituents (arsenic, manganese, thallium, and vanadium) were detected above their respective PALs. Arsenic was detected above the PAL of 3 mg/kg in 23 soil samples analyzed for this constituent with a maximum detection of 18.1 mg/kg in A18-001-SB-10. Manganese was detected above the PAL of 26,000 mg/kg in seven soil samples with a maximum detection of 73,600 mg/kg in A18-006-SB-9. Thallium was detected above the PAL of 12 mg/kg in five soil samples with a maximum detection of 28.7 mg/kg in A18-009-SB-1. Vanadium was detected above the PAL of 5,800 mg/kg in three soil samples with a maximum detection of 11,300 mg/kg in A18-009-SB-1. The inorganic PAL exceedance locations and results have been provided on **Figure 7**.

4.1.3. Soil Conditions: Results Summary

Table 6 and **Table 7** provide summaries of the detected organic compounds and inorganics in the soil samples submitted for laboratory analysis, while **Figure 5** through **Figure 7** present the soil sample results that exceeded the PALs. PAL exceedances in soil within Parcel A18 were limited to benzo[a]pyrene (two samples), Oil & Grease (one sample), arsenic (23 samples), manganese (seven samples), thallium (five samples), and vanadium (three samples). **Table 8** provides a summary of results for all PAL exceedances in soil, including maximum values and detection frequencies. VOCs, PCBs, and TPH-DRO/GRO were not detected above their respective PALs and are not considered to be significant soil contaminants in Parcel A18.

Lead, PCBs, and TPH/Oil & Grease are subject to special requirements as designated by the agencies: lead results above 10,000 mg/kg are subject to additional delineation (and possible excavation), PCB results above 50 mg/kg are subject to delineation and excavation, and TPH/Oil & Grease results above 6,200 mg/kg should be evaluated for the potential presence and mobility of NAPL in any future development planning:

- There were no locations where detections of lead exceeded 10,000 mg/kg, the designated threshold at which delineation would be required.
- There were no locations where detections of PCBs exceeded 50 mg/kg, the designated threshold at which delineation and excavation would be required.

- There were no PAL exceedances of TPH-DRO/GRO in any of the soil samples collected at the Site. One sediment sample (A18-020-SD-1) had a detected concentration of Oil & Grease at 7,650 mg/kg slightly above the PAL of 6,200 mg/kg. No other soil/sediment samples exceeded the Oil & Grease PAL. No physical evidence of NAPL was observed in any soil cores completed during this investigation. A18-020-SD is positioned along an active rail line, and the observed Oil & Grease exceedance may be the result of drainage from the rail. If redevelopment is proposed on this Site, additional characterization of sediments may be required to ensure proper management of excavated sediments.

4.2. GROUNDWATER CONDITIONS

The analytical results for the detected parameters in groundwater are summarized and compared to the PALs in **Table 9** (Organics) and **Table 10** (Inorganics). The laboratory Certificates of Analysis (including Chains of Custody) and the associated DVR have been included as electronic attachments. The DVR contains a glossary of qualifiers for the final flags assigned to individual results in the attached summary tables.

4.2.1. Groundwater Conditions: Organic Compounds

Table 9 provides a summary of VOCs identified in groundwater samples above the laboratory's MDLs. Two VOCs (tetrachloroethene and trichloroethene) were identified above the PALs, with exceedances of both VOCs identified in three samples (A18-002-PZ, A18-015-PZ, and A18-017-PZ). The maximum concentrations of tetrachloroethene (57.5 µg/L) and trichloroethene (394 µg/L) were identified in A18-015-PZ and A18-002-PZ, respectively. The VOC PAL exceedances are shown on **Figure 8**. Each VOC exceedance is positioned in the southern portion of Parcel A18. Parcel A10 (to the south) is known to contain elevated groundwater concentrations of CVOCs. The elevated tetrachloroethene and trichloroethene concentrations identified in the Parcel A18 piezometers are believed to be associated with the same contaminant plumes, which may originate from sources off the Tradepoint Atlantic property. The CVOC impacts on Parcel A18 and Parcel A10 are being further addressed under separate cover.

Table 9 provides a summary of SVOCs identified in the groundwater samples above the laboratory's MDLs. Similar to the evaluation of soil data, the PALs for relevant PAHs have been adjusted upward based on revised toxicity data published in the USEPA RSL Resident Tapwater Table. Four SVOCs were identified above the PALs (benz[a]anthracene, benzo[b]fluoranthene, naphthalene, and pentachlorophenol). Benz[a]anthracene and benzo[b]fluoranthene had only one PAL exceedance each, both in A18-002-PZ, with concentrations of 0.081 µg/L and 0.29 µg/L, respectively. Pentachlorophenol had only one PAL exceedance at A18-016-PZ with a concentration of 5.3 µg/L. Naphthalene was the only SVOC with multiple PAL exceedances, and exceeded its PAL in two groundwater samples with concentrations of 0.14 µg/L at A18-002-PZ and 0.17 µg/L at A18-011-PZ. The SVOC PAL exceedances are shown on **Figure 8**.

Table 9 provides a summary of the TPH/Oil & Grease detections in groundwater at the Site. TPH-GRO and Oil & Grease exceeded the PAL in one groundwater sample each. TPH-GRO was detected at a concentration of 139 µg/L in A18-002-PZ, and Oil & Grease was detected at a concentration of 1,000 µg/L in A18-013-PZ. TPH-DRO exceeded its PAL in all nine groundwater samples, with a maximum detection of 285 µg/L in A18-008-PZ. The TPH/Oil & Grease PAL exceedances are shown on **Figure 8**. Each location was checked for the potential presence of NAPL using an oil-water interface probe prior to sampling. During these checks, NAPL was not detected in any of the groundwater sampling locations.

4.2.2. Groundwater Conditions: Inorganic Constituents

Table 10 provides a summary of inorganic constituents detected above the MDLs in the groundwater samples collected from across the Site. A total of five dissolved metals (hexavalent chromium, cobalt, manganese, thallium, and vanadium) were detected above their respective aqueous PALs. Cobalt, manganese, and vanadium each exhibited PAL exceedances at multiple sample locations. The maximum detections of each constituent in groundwater were 18.2 µg/L for hexavalent chromium (in A18-009-PZ), 190 µg/L for cobalt (in A18-017-PZ), 4,400 µg/L for manganese (in A18-017-PZ), 10 µg/L for thallium (in A18-009-PZ), and 829 µg/L for vanadium (in A18-009-PZ). The inorganic PAL exceedances are shown on **Figure 8**.

4.2.3. Groundwater Conditions: Results Summary

Table 9 and **Table 10** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure 8** presents the locations and aqueous results that exceeded the PALs. Aqueous PAL exceedances among the groundwater samples collected from Parcel A18 consisted of two VOCs (tetrachloroethene and trichloroethene), four SVOCs (benz[a]anthracene, benzo[b]fluoranthene, naphthalene, and pentachlorophenol), TPH-DRO, TPH-GRO, Oil & Grease, and five dissolved metals (hexavalent chromium, cobalt, manganese, thallium, and vanadium).

Groundwater data were screened to determine whether individual sample results may exceed the USEPA's Vapor Intrusion (VI) Screening Levels (Target Cancer Risk (TCR) of 1E-5 and Target Hazard Quotient (THQ) of 1) as determined by the Vapor Intrusion Screening Level (VISL) Calculator (<https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls>). The PALs specified in the QAPP are based upon drinking water use, which is not a potential exposure pathway for groundwater at the Site. Trichloroethene exceeded its individual VI TCR and THQ criteria (74 µg/L and 22 µg/L, respectively) at three sample locations (A18-002-PZ, A18-015-PZ, and A18-017-PZ), with a maximum concentration of 394 µg/L at A18-002-PZ.

A cumulative VI risk assessment was performed for each individual sample location, with the results separated by cancer risk versus non-cancer hazard. All compounds with detections (and corresponding VISLs) were included in the computation of the cumulative cancer risk, and all

compounds with detections exceeding 10% of the THQ level were included in the evaluation of non-cancer hazard. The cumulative VI cancer risks exceeded $1E-5$ at two locations (A18-002-PZ and A18-015-PZ) due primarily to the carcinogenic effect of trichloroethene. The identified concentrations of trichloroethene resulted in calculated Hazard Index (HI) values greater than 1 for multiple target organs at A18-002-PZ, A18-015-PZ, and A18-017-PZ. The results of the cumulative VI comparisons are provided in **Table 11**, with the exceedances highlighted.

The presence and absence of groundwater impacts within the Site boundaries have been adequately described. Groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). VI risks/hazards were evaluated and identified three locations which may be impacted by elevated CVOC concentrations. Each exceedance is positioned in the southern portion of Parcel A18. Parcel A10 (to the south) is known to contain elevated groundwater concentrations of CVOCs. The elevated tetrachloroethene and trichloroethene concentrations identified in the Parcel A18 piezometers are believed to be associated with the same contaminant plumes, which may originate from sources off the Tradepoint Atlantic property. The CVOC impacts on Parcel A18 and Parcel A10 are being further addressed under separate cover.

5.0 DATA USABILITY ASSESSMENT

The approved property-wide QAPP specified a process for evaluating data usability in the context of meeting project goals. Specifically, the goal of the Phase II Investigation is to determine if potentially hazardous substances or petroleum products (VOCs, SVOCs, PCBs, metals, cyanide, or TPH/Oil & Grease) are present in Site media (soil/sediment and groundwater) at concentrations that could pose an unacceptable risk to Site receptors. Individual results are compared to the PALs established in the QAPP (i.e., the USEPA RSLs) or based on other direct guidance from the agencies, to identify the presence of exceedances in each environmental medium.

Quality assurance and quality control (QA/QC) samples were collected during field studies to evaluate field/laboratory variability. A summary of QA/QC samples associated with this investigation has been included as **Appendix G**. The following QA/QC samples were required by the QAPP to support the data validation:

- Trip Blank – at a rate of one per cooler with VOC samples per day
 - Soil/Sediment – VOCs only
 - Water – VOCs only
- Blind Field Duplicate – at a rate of one per twenty samples
 - Soil/Sediment – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, PCBs, hexavalent chromium, and cyanide
 - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, hexavalent chromium, and cyanide
- Matrix Spike/Matrix Spike Duplicate – at a rate of one per twenty samples
 - Soil/Sediment – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, PCBs, and hexavalent chromium
 - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, and hexavalent chromium
- Field Blank and Equipment Blank – at a rate of one per twenty samples
 - Soil/Sediment – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, hexavalent chromium, and cyanide
 - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Oil & Grease, hexavalent chromium, and cyanide

The QA/QC samples were collected and analyzed in accordance with the QAPP Worksheet 12 – Measurement Performance Criteria, QAPP Worksheet 20 – Field Quality Control, and QAPP Worksheet 28 – Analytical Quality Control and Corrective Action.

5.1. DATA VERIFICATION

A verification review was performed on documentation generated during sample collection and analysis. The verification included a review of field log books, field data sheets, and Chains of Custody to ensure that all planned samples were collected, and to ensure consistency with the field methods and decontamination procedures specified in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. In addition, calibration logs were reviewed to ensure that field equipment was calibrated at the beginning of each day and re-checked as needed. The logs have been provided in **Appendix D** (PID calibration log) and **Appendix E** (multiparameter meter calibration logs). Documentation of the multiparameter meter end of the day calibration check was not recorded for this parcel.

The laboratory deliverables were reviewed to ensure that all records specified in the QAPP as well as necessary signatures and dates are present. Sample receipt records were reviewed to ensure that the sample condition upon receipt was noted, and any missing/broken sample containers (if any) were noted and reported according to plan. The data packages were compared to the Chains of Custody to verify that results were provided for all collected samples. The data package case narratives were reviewed to ensure that all exceptions (if any) are described.

5.2. DATA VALIDATION

USEPA Stage 2B data validation was completed for a representative 30% (minimum) of the environmental sample analyses performed by PACE and Alpha and supporting Level IV Data Package information by Environmental Data Quality Inc. (EDQI). The DVRs provided by EDQI have been included as electronic attachments.

Sample analyses have undergone an analytical quality assurance review to ensure adherence to the required protocols. The Stage 2B review was performed as outlined in “Guide for Labeling Externally Validated Laboratory Analytical Data for Superfund Use”, EPA-540-R-08-005. Results have been validated or qualified according to general guidance provided in “USEPA National Functional Guidelines for Inorganic Superfund Data Review (ISM02.1)”, USEPA October 2013. Region III references this guidance for validation requirements. This document specifies procedures for validating data generated for Contract Laboratory Program (CLP) analyses. The approved property-wide QAPP dated April 5, 2016 and the quality control requirements specified in the methods and associated acceptance criteria were also used to evaluate the non-CLP data.

The PACE-Greensburg (PA) laboratory facility implements quality assurance and reporting requirements through the TNI certification program with the State of Pennsylvania; which is accepted by Maryland. Since late-January 2017, these requirements include the flagging of contaminants with a “B” qualifier when an analyte is detected in an associated laboratory method blank, regardless of the level of the contaminant detected in the sample. A method blank is

analyzed at a rate of one blank for each 20 sample analytical batch. The USEPA has previously specified that results flagged with the “B” qualifier do not represent legitimate detections. They have also specified that results flagged with a “JB” qualifier are invalid, and any such results should be revised to display the “B” qualifier only.

Although elevated sample results may be “B” qualified by the laboratory as non-detects (due to low-level blank detections), EDQI corrects any erroneous “B” qualifiers during the data validation procedure to avoid under-reporting analytical detections. EDQI removes the “B” qualifiers for relevant samples according to the guidance given in the table below. Therefore, a result originally flagged with a “B” qualifier in the laboratory certificate may be reported as a legitimate detection without this qualifier. Likewise, a result originally flagged with a “JB” qualifier in the laboratory certificate may be reported as a “J” qualifier if the erroneous “B” qualifier can be eliminated, but would be reported as a “B” qualified non-detect result if the original “B” qualifier is legitimate.

Blank Result	Sample Result	Qualifying Action
Result less than RL	Result less than RL	Result is Qualified "B"
	Result greater than RL	Remove "B"
Result greater than RL	Result less than Blank Result	Result is Qualified "B"
	Result greater than Blank Result	Remove "B"

RL = Reporting Limit

As directed by EDQI, ARM has reviewed all non-validated laboratory reports (those which were not designated to be reviewed by EDQI), and applied the same validation corrections to any relevant “B” or “JB” qualified results. This review of the non-validated data ensures that any elevated detections of parameters, including those which may exceed the PALs, are not mistakenly reported as non-detect values simply because they did not undergo the formal validation procedure by EDQI. ARM has also revised the non-validated results to eliminate any laboratory-specific, non-standardized qualifiers (L2, 6c, ip, 4c, etc.), which are customarily removed by EDQI during the validation procedure.

5.3. DATA USABILITY

The data were evaluated with respect to the quality control elements of precision, bias, representativeness, comparability, completeness, and sensitivity relative to data quality indicators and performance measurement criteria outlined in QAPP Worksheet 12 – Measurement Performance Criteria. The following discussion details deviation from the performance measurement criteria, and the impact on data quality and usability.

The measurement performance criteria of precision and bias were evaluated in the data validation process as described in the DVRs provided as electronic attachments. Where appropriate, potential

limitations in the results have been indicated through final data flags. These flags indicate whether particular data points were quantitative estimates, biased high/low, associated with blank contamination, etc. Individual data flags are provided with the results in the detection summary tables. A qualifier code glossary is included with each DVR provided by EDQI. Particular results may have been marked with the “R” flag if the result was deemed to be unreliable and was not included in any further data evaluation. The analytical soil/sediment and groundwater results that were rejected during data validation are provided in **Table 12**. A discussion of data completeness (the proportion of valid data) is included below.

Representativeness is a measure of how accurately and precisely the data describe the Site conditions. Representativeness of the samples submitted for analysis was ensured by adherence to standard sampling techniques and protocols, as well as appropriate sample preservation prior to analysis. Sampling was conducted in accordance with the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. Specific Field SOPs applicable to the assessment of representativeness include **Field SOP Numbers 003, 006, 008, 009, 010, 011, 017, and 024**. Review of the field notes and laboratory sample receipt records indicated that sample collection at the Site was representative, with no significant deviations from the SOPs.

Comparability describes the degree of confidence in comparing two sets of data. Comparability is maintained across multiple datasets by the use of consistent sampling and analytical methods across multiple project phases. Comparability of sample results was ensured through the use of approved standard sampling and analysis methods outlined in the QAPP. QA/QC protocols help to maintain the comparability of datasets, and in this case were assessed via blind duplicates, blank samples, and spiked samples, where applicable. No significant deviations from the QAPP were noted in the dataset.

Sensitivity is a determination of whether the analytical methods and quantitation limits will satisfy the requirements of the project. The laboratory reports were reviewed to verify that reporting limits met the quantitation limits for specific analytes provided in QAPP Worksheet #15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits. In general, the laboratory reporting limits met the detection and quantitation limits specified in the QAPP.

Completeness is expressed as a ratio of the number of valid data points to the total number of analytical data results. Non-usable (“R” flagged) data results were determined through the data validation process. The approved QAPP specifies that the completeness of data is assessed by professional judgement, but should be greater than or equal to 90%. Data completeness for each compound is provided in **Appendix H**. This evaluation of completeness includes only the representative 30% (minimum) of sample results which were randomly selected for validation.

All groundwater compounds had an overall completeness ratio of 100%, with the exception of 3,3'-dichlorobenzidine which had an overall completeness of 66.7% due to one rejected sample in A18-014-PZ (out of a total of three validated groundwater results). The only soil/sediment

compound with an overall completeness ratio below 90% was 1,4-dioxane (0%). All six of the 1,4-dioxane soil/sediment results which underwent the validation procedure were rejected. The rejection of the results for 1,4-dioxane has not been uncommon for solid matrix data obtained from the Tradepoint Atlantic property. Groundwater data are available to evaluate the presence and significance of this compound in Parcel A18. Overall, the soil/sediment and groundwater data can be used as intended, and no significant data gaps were identified.

6.0 FINDINGS AND RECOMMENDATIONS

The objective of this Parcel A18 Phase II Investigation was to characterize the nature and extent of contamination at the Site. During the Phase II Investigation, a total of 45 soil samples (from 17 boring locations and four shallow sediment locations) and nine groundwater samples were collected and analyzed. The sampling and analysis plan for the parcel was developed to target specific features that represented a potential release of hazardous substances and/or petroleum products to the environment, as well as providing general site coverage. Soil samples (including sediments) were analyzed for VOCs, SVOCs, TPH-DRO/GRO, Oil & Grease, TAL-Metals, hexavalent chromium, and cyanide. Shallow soil samples collected from 0 to 1 foot bgs (and sediments) were additionally analyzed for PCBs. Groundwater samples were analyzed for VOCs, SVOCs, TPH-DRO/GRO, Oil & Grease, TAL-Dissolved Metals, dissolved hexavalent chromium, and total cyanide.

6.1. SOIL

The concentrations of constituents in the soil (and sediment) have been characterized by the Phase II Investigation to provide estimates of exposure point concentrations to support risk assessment.

PCB concentrations are below levels that would warrant delineation and evaluation of a removal remedy (50 mg/kg). Additionally, lead concentrations were below the mandatory delineation threshold (10,000 mg/kg). No further action is required with respect to PCBs or lead at the Site. There were no soil/sediment PAL exceedances identified for VOCs, PCBs, or TPH-DRO/GRO, indicating that these compounds are not significant contaminants in soil or sediment at the Site. No physical evidence of NAPL was observed in any soil cores completed during this investigation.

PAL exceedances in soil/sediment within Parcel A18 were limited to benzo[a]pyrene, Oil & Grease, arsenic, manganese, thallium, and vanadium. Benzo[a]pyrene was detected slightly above its PAL of 2.1 mg/kg in two samples with a maximum concentration of 2.9 mg/kg in A18-003-SB-5. Oil & Grease was detected slightly above the PAL of 6,200 mg/kg in one sediment sample (A18-020-SD-1) at a concentration of 7,650 mg/kg. A18-020-SD is positioned along an active rail line, and the observed Oil & Grease exceedance may be the result of drainage from the rail. Arsenic was the most common PAL exceedance in soil/sediment and was detected above its PAL of 3 mg/kg in 23 samples with a maximum concentration of 18.1 mg/kg in A18-001-SB-10. Manganese was detected above its PAL of 26,000 mg/kg in seven samples with a maximum concentration of 73,600 mg/kg in A18-006-SB-9. Thallium was detected above its PAL of 12 mg/kg in five samples with a maximum concentration of 28.7 mg/kg in A18-009-SB-1. Vanadium was detected above its PAL of 5,800 mg/kg in three samples with a maximum concentration of 11,300 mg/kg in A18-009-SB-1.

6.2. GROUNDWATER

The concentrations of constituents in the groundwater have also been characterized by the Phase II Investigation to provide estimates of exposure point concentrations to support risk assessment.

Exceedances of the PALs in groundwater within Parcel A18 consisted of two VOCs (tetrachloroethene and trichloroethene), four SVOCs (benz[a]anthracene, benzo[b]fluoranthene, naphthalene, and pentachlorophenol), TPH-DRO, TPH-GRO, Oil & Grease, and five dissolved metals (hexavalent chromium, cobalt, manganese, thallium, and vanadium). Tetrachloroethene and trichloroethene were both detected above their respective PALs in three piezometers (A18-002-PZ, A18-015-PZ, and A18-017-PZ) with maximum concentrations of 57.5 µg/L (A18-015-PZ) and 394 µg/L (A18-002-PZ), respectively. The VOC exceedances in groundwater are further discussed below. Benz[a]anthracene, benzo[b]fluoranthene, and pentachlorophenol had only one PAL exceedance each, at concentrations of 0.081 µg/L (A18-002-PZ), 0.29 µg/L (A18-002-PZ), and 5.3 µg/L (A18-016-PZ), respectively. Naphthalene was the only SVOC with multiple PAL exceedances (two), with a maximum concentration of 0.17 µg/L (A18-011-PZ). TPH-GRO and Oil & Grease exceeded the PAL in one groundwater sample each, at concentrations of 139 µg/L (A18-002-PZ) and 1,000 µg/L (A18-013-PZ), respectively. TPH-DRO exceeded its PAL in all nine groundwater samples collected at the Site, with a maximum concentration of 285 µg/L (A18-008-PZ). The maximum concentrations of hexavalent chromium, cobalt, manganese, thallium, and vanadium were 18.2 µg/L (A18-009-PZ), 190 µg/L (A18-017-PZ), 4,400 µg/L (A18-017-PZ), 10 µg/L (A18-009-PZ), and 829 µg/L (A18-009-PZ), respectively.

Each temporary groundwater sample collection point was checked for the potential presence of NAPL using an oil-water interface probe prior to sampling. During these checks, NAPL was not detected at any of the groundwater sampling locations. All temporary groundwater sample collection points remaining at the Site will be properly abandoned in accordance with COMAR 26.04.04.34 through 36. Each location will be gauged a final time on the abandonment date using the oil-water interface probe in accordance with MDE guidance.

Groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized); therefore, there is no potential for direct human exposure for a Composite Worker. In the event that future construction/excavation leads to a potential Construction Worker exposure to groundwater, health and safety plans should be implemented to limit exposure risk. The groundwater data were screened to determine whether any cumulative (or individual) sample results exceeded the USEPA VI TCR (carcinogen) or THQ (non-carcinogen) Screening Levels. Cumulative VI cancer risks exceeding 1E-5 were identified at A18-002-PZ and A18-015-PZ due primarily to the carcinogenic effect of trichloroethene. Cumulative VI non-cancer HI values exceeding 1 were identified for multiple target organs at A18-002-PZ, A18-015-PZ, and A18-017-PZ also due to trichloroethene. Further assessment or mitigation is recommended to address the potential VI risks/hazards at A18-002-PZ, A18-015-PZ, and A18-017-PZ if an enclosed structure

is proposed in the vicinity. The selection of appropriate response measures, based on the specific development plan for the parcel, should be addressed in a project-specific Response and Development Work Plan.

The PAL exceedances for VOCs (tetrachloroethene and trichloroethene) and the associated VI risks/hazards were identified at three piezometers positioned in the southern portion of Parcel A18. Parcel A10 (to the south) is known to contain elevated groundwater concentrations of CVOCs. The elevated tetrachloroethene and trichloroethene concentrations identified in the Parcel A18 piezometers are believed to be associated with the same contaminant plumes, which may originate from sources off the Tradepoint Atlantic property. The CVOC impacts on Parcel A18 and Parcel A10 are being further addressed under separate cover.

6.3. RECOMMENDATIONS

Sufficient remedial investigation data has been collected to evaluate the nature and extent of possible constituents of concern in Parcel A18. The presence and absence of soil and groundwater impacts within Parcel A18 have been adequately described and further site-wide investigation is not warranted to characterize overall conditions. Recommendations for the Site are as follows:

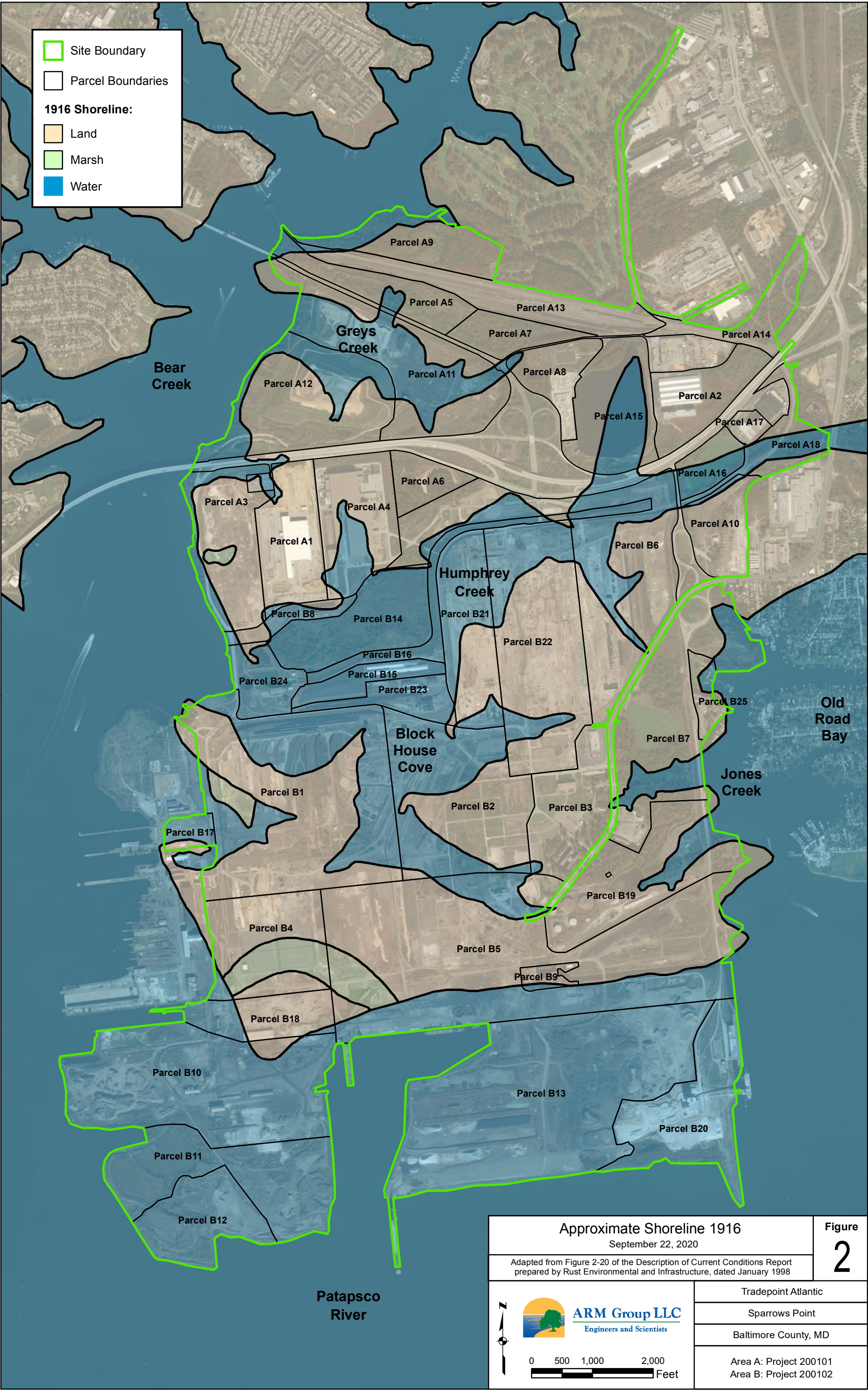
- The CVOC impacts (tetrachloroethene and trichloroethene) in groundwater on Parcel A18 are believed to be associated with the same contaminant plumes previously identified in Parcel A10. The identified contaminants may originate from sources off the Tradepoint Atlantic property. The CVOC impacts on Parcel A18 and Parcel A10 are being further addressed under separate cover.
- If an enclosed structure is proposed for construction in the vicinity of A18-002-PZ, A18-015-PZ, or A18-017-PZ, further assessment or mitigation is recommended to address the potential VI risks/hazards. The selection of appropriate response measures, based on the specific development plan for the parcel, should be addressed in a project-specific Response and Development Work Plan.
- Due to the absence of observed NAPL impacts in soil cores or piezometers, and the absence of elevated TPH/Oil & Grease analytical detections, there does not appear to be significant risk of petroleum impacts in soils on Parcel A18. One sediment sample (A18-020-SD-1) exceeded the Oil & Grease PAL with a detection of 7,650 mg/kg. A18-020-SD is positioned along an active rail line, and the observed Oil & Grease exceedance may be the result of drainage from the rail. If redevelopment is proposed on this Site, additional characterization of sediments may be required to ensure proper management of excavated sediments. If necessary, any response actions will be coordinated in the future with the MDE under a project-specific Response and Development Work Plan.

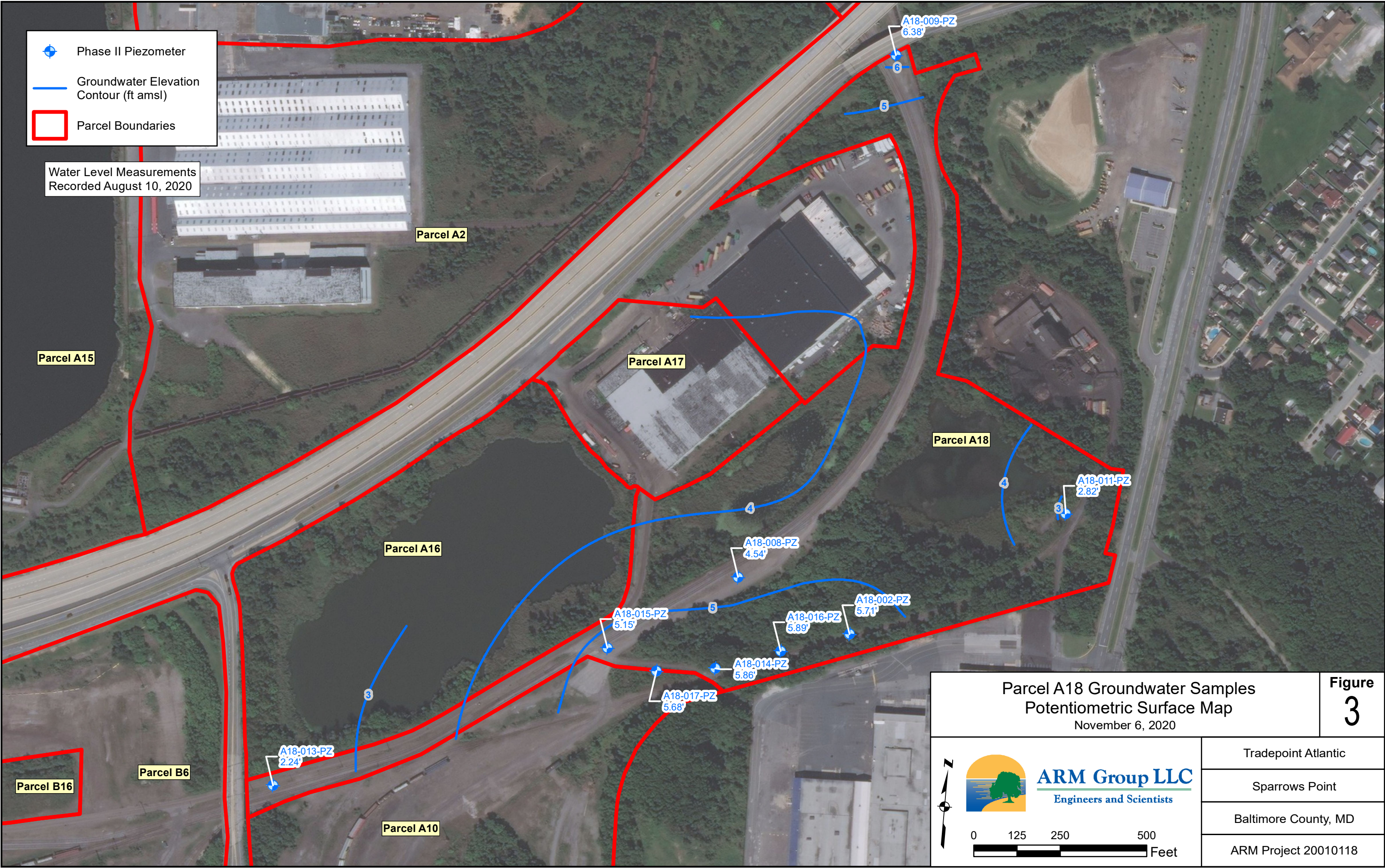
7.0 REFERENCES

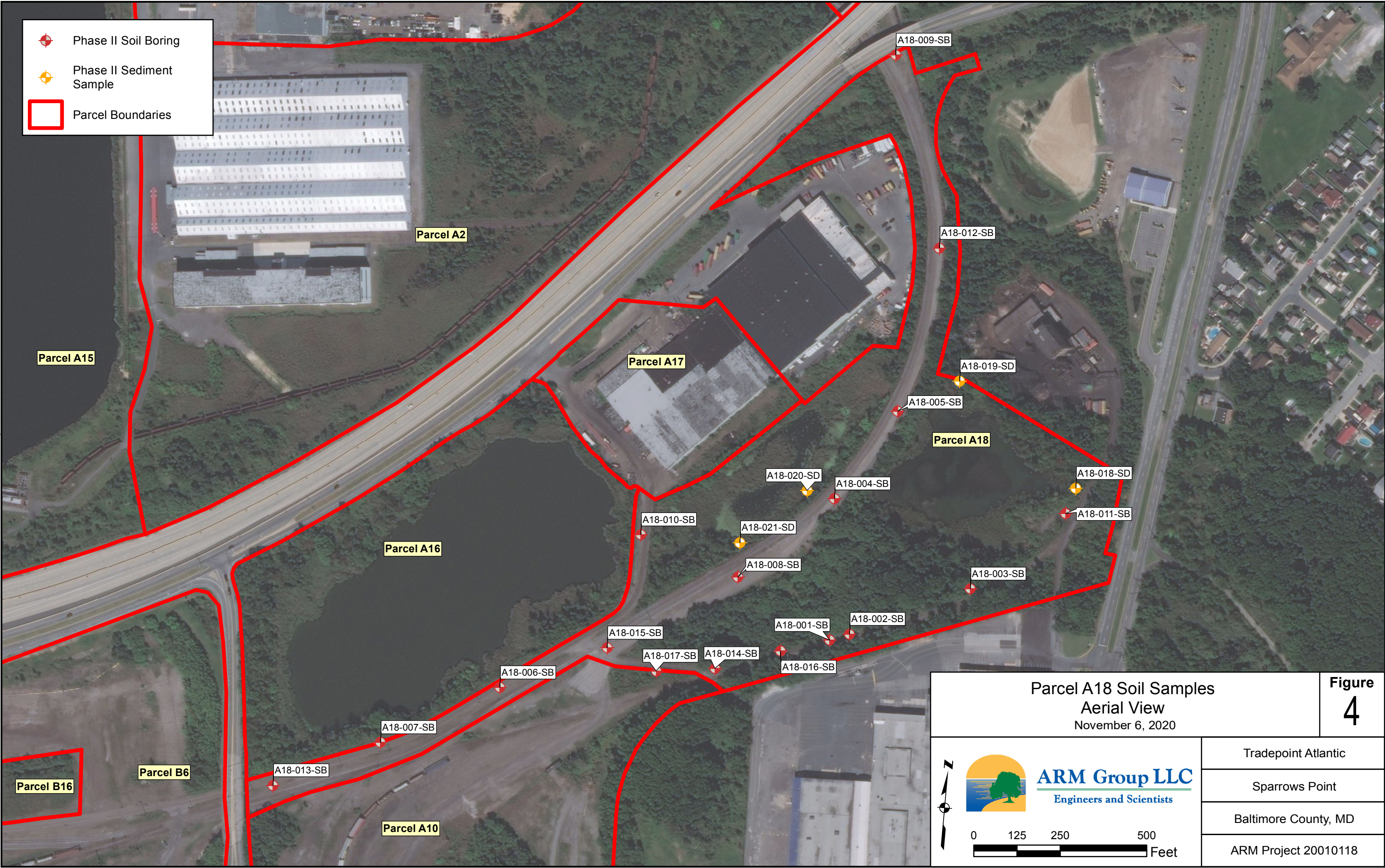
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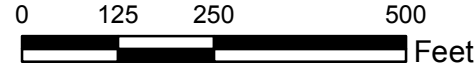
FIGURES









Parcel A18 Soil Samples Aerial View November 6, 2020		Figure 4
 ARM Group LLC Engineers and Scientists	Tradepoint Atlantic	
	Sparrows Point	
	Baltimore County, MD	
		ARM Project 20010118





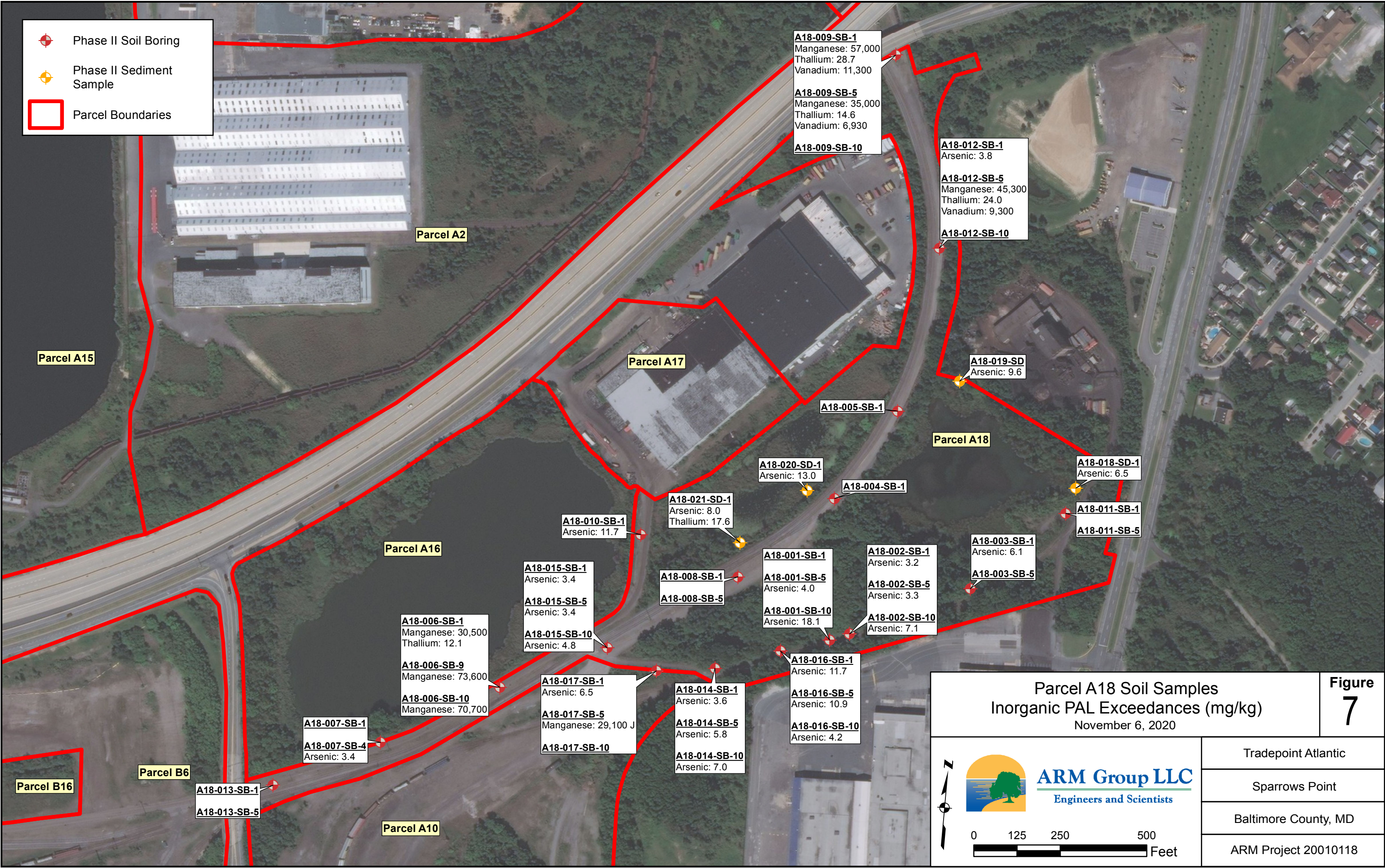
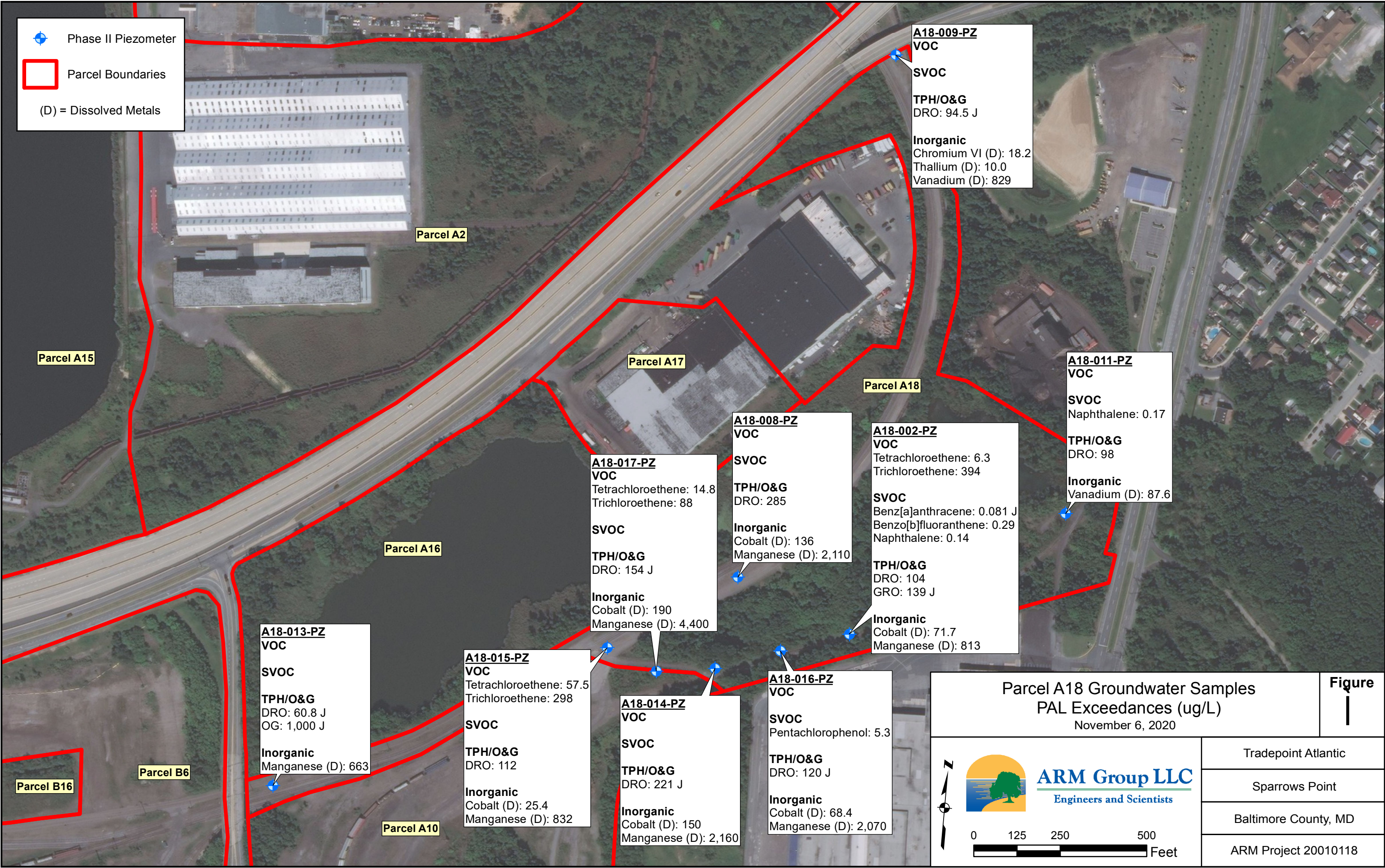


Figure
7



TABLES

**Table 1 - Parcel A18
Groundwater Elevation Data**

<u>Location Name</u>	<u>TOC Elevation (feet AMSL)</u>	<u>Ground Elevation (feet AMSL)</u>	<u>Measured DTW (feet)</u>	<u>Groundwater Elevation (feet AMSL)</u>
A18-002-PZ	17.97	14.88	12.26	5.71
A18-008-PZ	15.66	12.56	11.12	4.54
A18-009-PZ	24.10	21.46	17.72	6.38
A18-011-PZ	15.43	11.97	12.61	2.82
A18-013-PZ	13.65	10.87	11.41	2.24
A18-014-PZ	18.29	15.07	12.43	5.86
A18-015-PZ	17.57	14.26	12.42	5.15
A18-016-PZ	17.24	14.41	11.35	5.89
A18-017-PZ	17.43	14.37	11.75	5.68

DTW = Depth to water

TOC = Top of casing

AMSL = Above mean sea level

DTW measurements recorded August 10, 2020

**Table 2 - Parcel A18
Historical Site Drawing Details**

<u>Set Name</u>	<u>Typical Features Shown</u>	<u>Drawing Number</u>	<u>Original Date Drawn</u>	<u>Latest Revision Date</u>
Plant Arrangement	Roads, water bodies, building/structure footprints, electric lines, above-ground pipelines (e.g.: steam, nitrogen, etc.)	5052 5052A	6/30/1959 1/17/1966	3/11/1982 3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5152 5152A	<i>Unknown</i> <i>Unknown</i>	2/25/2008 2/27/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5552 5552A	9/16/1959 2/22/1962	3/9/1976 12/15/1987

Table 3 - Parcel A18
Field Shifted Sample Locations

<u>Location ID</u>	<u>Sample Target</u>	<u>Proposed Location*</u>		<u>Final Location*</u>		<u>Relocation Distance (ft.) & Direction</u>	
		<u>Northing</u>	<u>Easting</u>	<u>Northing</u>	<u>Easting</u>		
A18-004-SB	Parcel Coverage	572,909	1,465,519	572,907	1,465,511	9	W
A18-007-SB	Parcel Coverage	572,075	1,464,271	572,091	1,464,265	17	NW
A18-009-SB	Parcel Coverage	574,096	1,465,604	574,200	1,465,575	108	N
A18-014-SB	Parcel Coverage	572,379	1,465,208	572,388	1,465,209	9	N
A18-015-SB	Parcel Coverage	572,414	1,464,870	572,420	1,464,893	24	E
A18-016-SB	Parcel A10 CVOC Detections	572,449	1,465,398	572,455	1,465,393	7	NW
A18-017-SB	Parcel A10 CVOC Detections	572,386	1,465,041	572,366	1,465,040	20	S
A18-018-SD	Stormwater Pond Areas	572,932	1,465,625	572,998	1,466,203	581	E
A18-019-SD	Stormwater Pond Areas	573,214	1,465,775	573,277	1,465,841	91	NE
A18-020-SD	Stormwater Pond Areas	573,067	1,465,516	572,924	1,465,430	168	SW
A18-021-SD	Stormwater Pond Areas	572,774	1,465,224	572,757	1,465,249	31	SE

*Reported northings and eastings are not survey accurate. Coordinates are reported in NAD 1983 Maryland State Plane (US feet).

Table 4 - Parcel A18
Characterization Results for Solid IDW

<u>Sample ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>LOQ</u> (mg/L)
A18 IDW 5/19/2020	1,1-Dichloroethene	0.05	0.7	no	U	0.05
	1,2-Dichloroethane	0.05	0.5	no	U	0.05
	1,4-Dichlorobenzene	0.5	7.5	no	U	0.5
	2,4,5-Trichlorophenol	5	400	no	U	5
	2,4,6-Trichlorophenol	0.1	2	no	U	0.1
	2,4-Dinitrotoluene	0.1	0.13	no	U	0.1
	2-Butanone (MEK)	0.1	200	no	U	0.1
	2-Methylphenol	2	200	no	U	2
	3&4-Methylphenol(m&p Cresol)	2	200	no	U	2
	Arsenic	0.025	5	no	U	0.025
	Barium	0.24	100	no		0.05
	Benzene	0.05	0.5	no	U	0.05
	Cadmium	0.015	1	no	U	0.015
	Carbon tetrachloride	0.05	0.5	no	U	0.05
	Chlorobenzene	0.05	100	no	U	0.05
	Chloroform	0.05	6	no	U	0.05
	Chromium	0.0023	5	no	J	0.025
	Hexachlorobenzene	0.1	0.13	no	U	0.1
	Hexachloroethane	0.2	3	no	U	0.2
	Lead	0.05	5	no	U	0.05
	Mercury	0.001	0.2	no	U	0.001
	Nitrobenzene	0.1	2	no	U	0.1
	Pentachlorophenol	5	100	no	U	5
	Selenium	0.04	1	no	U	0.04
	Silver	0.03	5	no	U	0.03
	Tetrachloroethene	0.05	0.7	no	U	0.05
	Trichloroethene	0.05	0.5	no	U	0.05
	Vinyl chloride	0.05	0.2	no	U	0.05

J: The positive result for this analyte is a quantitative estimate below the laboratory LOQ.

U: The analyte was not detected in the sample. This numeric value represents the sample LOQ.

TCLP: Toxicity Characteristic Leaching Procedure

LOQ: Limit of Quantitation

Table 5 - Parcel A18
Characterization Results for Liquid IDW

<u>Sample ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>LOQ</u> (mg/L)
Water IDW 5/19/20	1,1-Dichloroethene	0.001	0.7	no	U	0.001
	1,2-Dichloroethane	0.001	0.5	no	U	0.001
	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
	2,4,5-Trichlorophenol	0.0025	400	no	U	0.0025
	2,4,6-Trichlorophenol	0.00099	2	no	U	0.00099
	2,4-Dinitrotoluene	0.00099	0.13	no	U	0.00099
	2-Butanone (MEK)	0.01	200	no	U	0.01
	2-Methylphenol	0.00099	200	no	U	0.00099
	3&4-Methylphenol(m&p Cresol)	0.002	200	no	U	0.002
	Arsenic	0.005	5	no	U	0.005
	Barium	0.0623	100	no		0.01
	Benzene	0.0063	0.5	no		0.001
	Cadmium	0.0061	1	no		0.003
	Carbon tetrachloride	0.001	0.5	no	U	0.001
	Chlorobenzene	0.001	100	no	U	0.001
	Chloroform	0.001	6	no	U	0.001
	Chromium	0.0023	5	no	J	0.005
	Hexachlorobenzene	0.00099	0.13	no	U	0.00099
	Hexachloroethane	0.00099	3	no	U	0.00099
	Lead	0.005	5	no	U	0.005
	Mercury	0.0002	0.2	no	U	0.0002
	Nitrobenzene	0.00099	2	no	U	0.00099
	Pentachlorophenol	0.0025	100	no	U	0.0025
	Selenium	0.008	1	no	U	0.008
	Silver	0.006	5	no	U	0.006
	Tetrachloroethene	0.001	0.7	no	U	0.001
	Trichloroethene	0.00092	0.5	no	J	0.001
	Vinyl chloride	0.001	0.2	no	U	0.001

**Table 5 - Parcel A18
Characterization Results for Liquid IDW**

<u>Sample ID</u>	<u>Parameter</u>	<u>Result</u> (mg/L)	<u>TCLP Limit</u> (mg/L)	<u>TCLP</u> <u>Exceedance</u>	<u>Laboratory</u> <u>Flag</u>	<u>LOQ</u> (mg/L)
Liquid IDW 10/8/20	1,1-Dichloroethene	0.005	0.7	no	U	0.005
	1,2-Dichloroethane	0.005	0.5	no	U	0.005
	1,4-Dichlorobenzene	0.005	7.5	no	U	0.005
	2,4,5-Trichlorophenol	0.001	400	no	U	0.001
	2,4,6-Trichlorophenol	0.001	2	no	U	0.001
	2,4-Dinitrotoluene	0.001	0.13	no	U	0.001
	2-Butanone (MEK)	0.025	200	no	U	0.025
	2-Methylphenol	0.001	200	no	U	0.001
	4-Methylphenol(p Cresol)	0.001	200	no	U	0.001
	Arsenic	0.005	5	no	U	0.005
	Benzene	0.001	0.5	no	U	0.001
	Cadmium	0.038	1	no		0.005
	Carbon tetrachloride	0.005	0.5	no	U	0.005
	Chlorobenzene	0.005	100	no	U	0.005
	Chloroform	0.005	6	no	U	0.005
	Chromium	0.005	5	no	U	0.005
	Hexachlorobenzene	0.001	0.13	no	U	0.001
	Hexachloroethane	0.001	3	no	U	0.001
	Lead	0.005	5	no	U	0.005
	Mercury	0.001	0.2	no	U	0.001
	Nitrobenzene	0.001	2	no	U	0.001
	Pentachlorophenol	0.005	100	no	U	0.005
	Selenium	0.005	1	no	U	0.005
	Silver	0.005	5	no	U	0.005
	Tetrachloroethene	0.005	0.7	no	U	0.005
	Trichloroethene	0.005	0.5	no	U	0.005
	Vinyl chloride	0.001	0.2	no	U	0.001

J: The positive result reported for this analyte is a quantitative estimate below the laboratory LOQ.

U: The analyte was not detected in the sample. The numeric value represents the sample LOQ.

TCLP: Toxicity Characteristic Leaching Procedure

LOQ: Limit of Quantitation

Table 6 - Parcel A18
Summary of Organics Detected in Soil

Parameter	Units	PAL	A18-001-SB-1*	A18-001-SB-5*	A18-002-SB-1*	A18-002-SB-5*	A18-003-SB-1*	A18-003-SB-5*	A18-003-SB-10*	A18-004-SB-1	A18-005-SB-1*	A18-006-SB-1
			5/1/2020	5/1/2020	5/1/2020	5/1/2020	5/1/2020	5/1/2020	5/1/2020	4/28/2020	4/29/2020	4/28/2020
Volatile Organic Compounds												
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^												
1,1-Biphenyl	mg/kg	200	0.05 J	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 U	0.07 U	0.68 U
2,4-Dimethylphenol	mg/kg	16,000	0.023 J	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 UJ	0.07 U	0.68 R
2,4-Dinitrotoluene	mg/kg	7.4	0.1 U	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 U	0.07 U	0.68 U
2-Chloronaphthalene	mg/kg	60,000	0.1 U	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 U	0.07 U	0.68 U
2-Methylnaphthalene	mg/kg	3,000	0.26	0.03	0.15	0.03 J	0.042	0.3	N/A	0.09	0.026	0.07
2-Methylphenol	mg/kg	41,000	0.026 J	0.11 U	0.083 U	0.099 U	0.18 J	0.12 U	N/A	0.069 UJ	0.07 U	0.68 R
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.05 J	0.21 U	0.17 U	0.2 U	0.42 J	0.24 U	N/A	0.14 UJ	0.14 U	1.4 R
Acenaphthene	mg/kg	45,000	0.011 U	0.016 U	0.0087 J	0.031 U	0.016 U	0.031	N/A	0.013	0.003 J	0.0074
Acenaphthylene	mg/kg	45,000	0.057	0.0038 J	0.32	0.008 J	0.016 U	1.3	N/A	0.025	0.011	0.0026 J
Acetophenone	mg/kg	120,000	0.051 J	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 U	0.07 U	0.68 U
Anthracene	mg/kg	230,000	0.062	0.0096 J	0.39	0.016 J	0.003 J	0.88	N/A	0.06	0.018	0.02
Benz[a]anthracene	mg/kg	21	0.27	0.036	1.2	0.068	0.012 J	3.6	N/A	0.12	0.057	0.075
Benzaldehyde	mg/kg	120,000	0.068 J	0.11 U	0.083 U	0.099 U	0.21 J	0.12 U	N/A	0.069 U	0.07 U	0.68 U
Benzo[a]pyrene	mg/kg	2.1	0.2	0.017	1	0.012 J	0.0071 J	2.9	0.0091 U	0.1	0.057	0.082
Benzo[b]fluoranthene	mg/kg	21	0.34	0.027	1.8	0.017 J	0.01 J	4.9	N/A	0.22	0.087	0.13
Benzo[g,h,i]perylene	mg/kg		0.15	0.012 J	0.66	0.01 J	0.0066 J	2.1	N/A	0.1	0.036	0.073
Benzo[k]fluoranthene	mg/kg	210	0.1	0.0067 J	0.53	0.0035 J	0.0032 J	0.96	N/A	0.059	0.027	0.038
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.038 J	0.045 J	0.025 J	0.038 J	0.78 U	0.029 J	N/A	0.06 B	0.037 J	0.68 U
Caprolactam	mg/kg	400,000	0.059 J	0.27 U	0.21 U	0.25 U	0.33 J	0.3 U	N/A	0.17 U	0.18 U	1.7 U
Carbazole	mg/kg		0.072 J	0.033 J	0.031 J	0.099 U	0.19 J	0.12 U	N/A	0.027 J	0.07 U	0.68 U
Chrysene	mg/kg	2,100	0.21	0.037	0.98	0.024 J	0.011 J	2.2	N/A	0.14	0.068	0.095
Dibenz[a,h]anthracene	mg/kg	2.1	0.045	0.0048 J	0.2	0.0038 J	0.0021 J	0.65	N/A	0.028	0.0096	0.019
Diethylphthalate	mg/kg	660,000	0.1 U	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 U	0.018 J	0.68 U
Di-n-butylphthalate	mg/kg	82,000	0.13	0.15	0.093	0.15	0.78 U	0.13	N/A	0.12	0.15	0.68 U
Fluoranthene	mg/kg	30,000	0.2	0.026	0.6	0.017 J	0.0084 J	2.2	N/A	0.2	0.087	0.2
Fluorene	mg/kg	30,000	0.011 U	0.002 J	0.012 U	0.031 U	0.016 U	0.08	N/A	0.0098	0.0028 J	0.002 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.16	0.011 J	0.79	0.0068 J	0.006 J	2.3	N/A	0.11	0.04	0.082
Naphthalene	mg/kg	8.6	0.21	0.017	0.12	0.015 J	0.029	0.32	N/A	0.074	0.021	0.45
N-Nitrosodiphenylamine	mg/kg	470	0.1 U	0.11 U	0.083 U	0.099 U	0.78 U	0.12 U	N/A	0.069 U	0.07 U	0.68 U
Phenanthrene	mg/kg		0.25	0.061	0.22	0.07	0.027	0.82	N/A	0.15	0.068	0.23
Phenol	mg/kg	250,000	0.035 J	0.11 U	0.083 U	0.099 U	0.25 J	0.12 U	N/A	0.069 UJ	0.07 U	0.68 R
Pyrene	mg/kg	23,000	0.19	0.025	0.71	0.019 J	0.0088 J	2.4	N/A	0.19	0.081	0.14
PCBs												
Aroclor 1248	mg/kg	0.94	0.12 U	N/A	0.11 U	N/A	0.19 U	N/A	N/A	0.085 U	0.018 U	0.17 U
Aroclor 1254	mg/kg	0.97	0.12 U	N/A	0.11 U	N/A	0.19 U	N/A	N/A	0.085 U	0.018 U	0.17 U
Aroclor 1268	mg/kg		0.12 U	N/A	0.11 U	N/A	0.19 U	N/A	N/A	0.079 J	0.038	0.17 U
PCBs (total)	mg/kg	0.97	1.1 U	N/A	0.95 U	N/A	1.8 U	N/A	N/A	0.77 U	0.16 U	1.6 U
TPH/Oil & Grease												
Diesel Range Organics	mg/kg	6,200	328	34.2	63.9	26.9	528	21.5	N/A	34.2	26	243
Oil & Grease	mg/kg	6,200	61.8 J	159 J	128 U	68 J	108 J	176 J	N/A	210	128	1,200

Detections in bold

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

N/A indicates that the parameter was not analyzed for this sample

*indicates non-validated data

^PAH compounds were analyzed via SIM

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.

B: This analyte was not detected substantially above the level of the associated method blank 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 6 - Parcel A18
Summary of Organics Detected in Soil

Parameter	Units	PAL	A18-006-SB-9	A18-007-SB-1	A18-007-SB-4	A18-008-SB-1	A18-008-SB-5	A18-009-SB-1*	A18-009-SB-5*	A18-010-SB-1*	A18-011-SB-1*
			4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/29/2020	4/29/2020	5/1/2020	5/1/2020
Volatile Organic Compounds											
Carbon disulfide	mg/kg	3,500	0.0055 UJ	0.0063 U	0.0025 J	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	0.0055 UJ	0.0063 U	0.0062 U	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^											
1,1-Biphenyl	mg/kg	200	0.069 U	0.032 J	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.038 J	0.08 U
2,4-Dimethylphenol	mg/kg	16,000	0.069 R	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
2,4-Dinitrotoluene	mg/kg	7.4	0.069 U	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
2-Chloronaphthalene	mg/kg	60,000	0.069 U	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
2-Methylnaphthalene	mg/kg	3,000	0.0023 J	0.028	0.0092 U	0.0049 J	0.008 U	0.013	0.0082 U	0.064	0.004 J
2-Methylphenol	mg/kg	41,000	0.069 R	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 R	0.14 U	0.14 U	0.15 U	0.16 U	0.14 U	0.15 U	0.14 U	0.16 U
Acenaphthene	mg/kg	45,000	0.0079 U	0.013	0.0019 J	0.0085 U	0.008 U	0.0078	0.0082 U	0.0075 J	0.0081 U
Acenaphthylene	mg/kg	45,000	0.0079 U	0.0033 J	0.0092 U	0.0059 J	0.002 J	0.054	0.0082 U	0.0037 J	0.0024 J
Acetophenone	mg/kg	120,000	0.069 U	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
Anthracene	mg/kg	230,000	0.00083 J	0.011	0.0012 J	0.0058 J	0.002 J	0.074	0.00095 J	0.026	0.0016 J
Benz[a]anthracene	mg/kg	21	0.0042 J	0.066	0.014	0.013	0.0055 J	0.19	0.0045 J	0.091	0.01
Benzaldehyde	mg/kg	120,000	0.069 U	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
Benzo[a]pyrene	mg/kg	2.1	0.0039 J	0.1	0.046	0.017	0.0054 J	0.19	0.0047 J	0.091	0.0077 J
Benzo[b]fluoranthene	mg/kg	21	0.0068 J	0.14	0.052	0.031	0.007 J	0.3	0.0061 J	0.12	0.012
Benzo[g,h,i]perylene	mg/kg		0.0035 J	0.09	0.054	0.015	0.0038 J	0.072	0.0032 J	0.068	0.0064 J
Benzo[k]fluoranthene	mg/kg	210	0.0021 J	0.036	0.015	0.0072 J	0.0021 J	0.12	0.0021 J	0.04	0.0045 J
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.015 B	0.034 B	0.024 B	0.041 B	0.033 B	0.03 J	0.02 J	0.024 J	0.08 U
Caprolactam	mg/kg	400,000	0.17 U	0.17 U	0.18 U	0.19 U	0.2 U	0.027 J	0.19 U	0.18 U	0.2 U
Carbazole	mg/kg		0.069 U	0.023 J	0.071 U	0.038 J	0.079 U	0.07 U	0.077 U	0.045 J	0.08 U
Chrysene	mg/kg	2,100	0.0043 J	0.068	0.014	0.015	0.0041 J	0.17	0.0042 J	0.091	0.007 J
Dibenz[a,h]anthracene	mg/kg	2.1	0.0012 J	0.025	0.013	0.004 J	0.001 J	0.021	0.00087 J	0.018	0.0017 J
Diethylphthalate	mg/kg	660,000	0.069 U	0.069 U	0.071 U	0.076 U	0.079 U	0.018 J	0.077 U	0.071 U	0.08 U
Di-n-butylphthalate	mg/kg	82,000	0.07 B	0.14	0.12	0.14	0.16	0.14	0.1 B	0.056 B	0.05 B
Fluoranthene	mg/kg	30,000	0.0072 J	0.086	0.012	0.022	0.0093	0.32	0.0074 J	0.17	0.011
Fluorene	mg/kg	30,000	0.0079 U	0.0022 J	0.0092 U	0.0085 U	0.0011 J	0.0083	0.0082 U	0.0031 J	0.0081 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0042 J	0.1	0.057	0.017	0.0045 J	0.092	0.0037 J	0.076	0.0069 J
Naphthalene	mg/kg	8.6	0.0041 J	0.15	0.0037 J	0.014	0.0076 J	0.014	0.0028 J	0.33	0.011
N-Nitrosodiphenylamine	mg/kg	470	0.069 U	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
Phenanthrene	mg/kg		0.0057 J	0.069	0.0064 J	0.015	0.0078 J	0.15	0.0043 J	0.25	0.0072 J
Phenol	mg/kg	250,000	0.069 R	0.069 U	0.071 U	0.076 U	0.079 U	0.07 U	0.077 U	0.071 U	0.08 U
Pyrene	mg/kg	23,000	0.0051 J	0.083	0.011	0.02	0.0066 J	0.28	0.0056 J	0.12	0.008 J
PCBs											
Aroclor 1248	mg/kg	0.94	N/A	0.053 J	N/A	0.094 U	N/A	0.018 U	N/A	0.089 U	0.02 U
Aroclor 1254	mg/kg	0.97	N/A	0.088 U	N/A	0.094 U	N/A	0.018 U	N/A	0.089 U	0.02 U
Aroclor 1268	mg/kg		N/A	0.088 U	N/A	0.094 U	N/A	0.019	N/A	0.089 U	0.02 U
PCBs (total)	mg/kg	0.97	N/A	0.79 U	N/A	0.84 U	N/A	0.16 U	N/A	0.8 U	0.18 U
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	14.3	37.7	17.7	14.7 J	8.9	13.4	12.3	55.2	10.9
Oil & Grease	mg/kg	6,200	52.3 J	140	183	145	95.7 J	109 U	119 U	119	90.9 J

Detections in bold

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

N/A indicates that the parameter was not analyzed for this sample

*indicates non-validated data

^PAH compounds were analyzed via SIM

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.

B: This analyte was not detected substantially above the level of the associated method blank 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 6 - Parcel A18
Summary of Organics Detected in Soil

Parameter	Units	PAL	A18-011-SB-5*	A18-012-SB-1*	A18-012-SB-5*	A18-013-SB-1	A18-013-SB-5	A18-014-SB-1	A18-014-SB-5	A18-015-SB-1	A18-015-SB-4
			5/1/2020	4/29/2020	4/29/2020	4/28/2020	4/28/2020	5/4/2020	5/4/2020	5/4/2020	5/4/2020
Volatile Organic Compounds											
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^											
1,1-Biphenyl	mg/kg	200	0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
2,4-Dimethylphenol	mg/kg	16,000	0.083 U	0.73 U	0.07 U	0.71 U	0.083 UJ	0.71 U	0.077 U	0.08 U	0.071 U
2,4-Dinitrotoluene	mg/kg	7.4	0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
2-Chloronaphthalene	mg/kg	60,000	0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
2-Methylnaphthalene	mg/kg	3,000	0.0093	0.019	0.0072 U	0.068	0.0048 J	0.017	0.0072 U	0.025	0.017
2-Methylphenol	mg/kg	41,000	0.083 U	0.73 U	0.07 U	0.71 U	0.083 UJ	0.71 U	0.077 U	0.08 U	0.071 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.17 U	1.5 U	0.14 U	1.4 U	0.17 UJ	1.4 U	0.15 U	0.16 U	0.14 U
Acenaphthene	mg/kg	45,000	0.0085 U	0.0069 J	0.0072 U	0.021	0.0087 U	0.0024 J	0.0072 U	0.0024 J	0.0045 J
Acenaphthylene	mg/kg	45,000	0.0033 J	0.013	0.0072 U	0.14	0.0012 J	0.088	0.0072 U	0.02	0.045
Acetophenone	mg/kg	120,000	0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
Anthracene	mg/kg	230,000	0.0045 J	0.031	0.0032 J	0.12	0.0026 J	0.066	0.0072 U	0.024	0.074
Benz[a]anthracene	mg/kg	21	0.013	0.11	0.018	0.77	0.024	0.32	0.0072 U	0.088	0.42
Benzaldehyde	mg/kg	120,000	0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
Benzo[a]pyrene	mg/kg	2.1	0.0085	0.11	0.015	0.78	0.031	0.33	0.00093 B	0.068	0.31
Benzo[b]fluoranthene	mg/kg	21	0.012	0.17	0.02	1	0.049	0.56	0.00079 B	0.11	0.45
Benzo[g,h,i]perylene	mg/kg		0.006 J	0.072	0.01	0.55	0.026	0.18	0.014	0.05	0.11
Benzo[k]fluoranthene	mg/kg	210	0.0038 J	0.059	0.006 J	0.32	0.014	0.19	0.0072 U	0.036	0.17
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.083 U	0.73 U	0.028 J	0.71 U	0.019 B	0.71 U	0.077 U	0.08 U	0.071 U
Caprolactam	mg/kg	400,000	0.21 U	1.8 U	0.18 U	1.8 U	0.21 U	1.8 U	0.19 U	0.029 B	0.18 U
Carbazole	mg/kg		0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.022 J
Chrysene	mg/kg	2,100	0.0081 J	0.11	0.016	0.68	0.024	0.21	0.00064 B	0.06	0.31
Dibenz[a,h]anthracene	mg/kg	2.1	0.0018 J	0.02	0.0031 J	0.16	0.0084 J	0.037	0.00097 J	0.0081	0.036
Diethylphthalate	mg/kg	660,000	0.083 U	0.73 U	0.015 J	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
Di-n-butylphthalate	mg/kg	82,000	0.057 B	0.73 U	0.13	0.71 U	0.099	0.71 U	0.022 B	0.049 B	0.043 B
Fluoranthene	mg/kg	30,000	0.012	0.19	0.029	0.96	0.025	0.15	0.0072 U	0.08	0.54
Fluorene	mg/kg	30,000	0.0085 U	0.0056 J	0.0072 U	0.013	0.0014 J	0.0079 U	0.0012 J	0.0026 J	0.017
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0069 J	0.078	0.012	0.67	0.032	0.19	0.0077	0.045	0.16
Naphthalene	mg/kg	8.6	0.022	0.018	0.0026 J	0.52	0.0057 J	0.021	0.0072 U	0.023	0.038
N-Nitrosodiphenylamine	mg/kg	470	0.083 U	0.73 U	0.07 U	0.71 U	0.083 U	0.71 U	0.077 U	0.08 U	0.071 U
Phenanthrene	mg/kg		0.012	0.098	0.016	0.55	0.011	0.043	0.0072 U	0.038	0.25
Phenol	mg/kg	250,000	0.083 U	0.73 U	0.07 U	0.71 U	0.083 UJ	0.71 U	0.077 U	0.08 U	0.071 U
Pyrene	mg/kg	23,000	0.0091	0.19	0.023	0.81	0.02	0.19	0.0072 U	0.076	0.41
PCBs											
Aroclor 1248	mg/kg	0.94	N/A	0.092 U	N/A	0.088 U	N/A	0.18 U	N/A	0.02 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.086 J	N/A	0.088 U	N/A	0.18 U	N/A	0.02 U	N/A
Aroclor 1268	mg/kg		N/A	0.19	N/A	0.088 U	N/A	0.18 U	N/A	0.02 U	N/A
PCBs (total)	mg/kg	0.97	N/A	0.28 J	N/A	0.8 U	N/A	1.6 U	N/A	0.18 U	N/A
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	12	53.4	15.1	50.9	10.8	56.7 J	4.8 B	8 J	17.6 J
Oil & Grease	mg/kg	6,200	88.9 J	367	54.1 J	257	139	844	82.7 J	108 J	158

Detections in bold

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

N/A indicates that the parameter was not analyzed for this sample

*indicates non-validated data

^PAH compounds were analyzed via SIM

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.

B: This analyte was not detected substantially above the level of the associated method blank 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 6 - Parcel A18
Summary of Organics Detected in Soil

Parameter	Units	PAL	A18-016-SB-1	A18-016-SB-5	A18-016-SB-10	A18-017-SB-1	A18-017-SB-5	A18-018-SD-1	A18-019-SD*	A18-020-SD-1	A18-021-SD-1
			5/4/2020	5/4/2020	5/4/2020	5/4/2020	5/4/2020	5/4/2020	5/13/2020	5/7/2020	5/13/2020
Volatile Organic Compounds											
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	N/A	N/A	0.043 U	0.026 U	0.048 U	0.066 U
Toluene	mg/kg	47,000	N/A	N/A	N/A	N/A	N/A	0.043 U	0.026 U	0.048 U	0.014 J
Semi-Volatile Organic Compounds^											
1,1-Biphenyl	mg/kg	200	0.032 J	0.37 J	N/A	0.72 U	0.17	0.54 U	2.2 U	5.1 U	0.73 U
2,4-Dimethylphenol	mg/kg	16,000	0.073 U	0.17 J	N/A	0.72 U	0.073 UJ	0.54 U	2.2 U	5.1 U	0.73 U
2,4-Dinitrotoluene	mg/kg	7.4	0.073 U	0.31 J	N/A	0.72 U	0.073 U	0.54 U	2.2 U	5.1 U	0.73 U
2-Chloronaphthalene	mg/kg	60,000	0.073 U	1.2	N/A	0.72 U	0.073 U	0.54 U	2.2 U	5.1 U	0.73 U
2-Methylnaphthalene	mg/kg	3,000	0.33	1.2	N/A	0.095	0.055	0.042 J	0.023 U	0.087 U	0.23 U
2-Methylphenol	mg/kg	41,000	0.073 U	0.2 J	N/A	0.72 U	0.073 UJ	0.54 U	2.2 U	5.1 U	0.73 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 U	0.49 J	N/A	1.4 U	0.15 UJ	1.3	4.4 U	10.2 U	1.5 U
Acenaphthene	mg/kg	45,000	0.0097	0.042 J	N/A	0.053	0.0084	0.054 J	0.023 U	0.029 J	0.23 U
Acenaphthylene	mg/kg	45,000	0.12	0.24	N/A	0.087	0.014	0.072 J	0.022 J	0.026 J	0.23 U
Acetophenone	mg/kg	120,000	0.031 J	0.79 U	N/A	0.72 U	0.073 U	0.54 U	2.2 U	5.1 U	0.73 U
Anthracene	mg/kg	230,000	0.29	0.63	N/A	0.14	0.027	0.099 J	0.026	0.087 U	0.057 J
Benz[a]anthracene	mg/kg	21	0.72	3.2	N/A	0.64	0.15	0.41	0.19	0.34	0.13 B
Benzaldehyde	mg/kg	120,000	0.032 J	0.2 J	N/A	0.72 U	0.073 U	0.24 J	0.7 J	5.1 U	0.84 J
Benzo[a]pyrene	mg/kg	2.1	0.47	2.2	0.046	0.7	0.14	0.32	0.22	0.28	0.12 J
Benzo[b]fluoranthene	mg/kg	21	0.67	3.1	N/A	0.91	0.19	0.53	0.3	0.41	0.2 B
Benzo[g,h,i]perylene	mg/kg		0.18	1.4	N/A	0.38	0.078	0.18	0.15	0.18	0.091 B
Benzo[k]fluoranthene	mg/kg	210	0.23	1	N/A	0.35	0.064	0.14	0.086	0.12	0.052 J
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.073 U	0.79 U	N/A	0.72 U	0.073 U	0.27 B	2.2 U	5.1 U	0.42 B
Caprolactam	mg/kg	400,000	0.11 B	2 U	N/A	1.8 U	0.18 U	1.4 U	5.6 U	12.8 U	1.8 U
Carbazole	mg/kg		0.026 J	0.41 J	N/A	0.72 U	0.027 J	0.54 U	2.2 U	5.1 U	0.73 U
Chrysene	mg/kg	2,100	0.71	2.5	N/A	0.52	0.12	0.3	0.16	0.4	0.12 B
Dibenz[a,h]anthracene	mg/kg	2.1	0.06	0.51	N/A	0.1	0.017	0.042 J	0.034	0.044 J	0.23 U
Diethylphthalate	mg/kg	660,000	0.073 U	0.79 U	N/A	0.72 U	0.073 U	0.54 U	2.2 U	5.1 U	0.73 U
Di-n-butylphthalate	mg/kg	82,000	0.051 B	0.79 U	N/A	0.72 U	0.043 B	0.69 J	2.2 U	5.1 U	1.1 J
Fluoranthene	mg/kg	30,000	0.52	3.4	N/A	0.57	0.18	0.7	0.24	0.42	0.17 B
Fluorene	mg/kg	30,000	0.013	0.088	N/A	0.02	0.0036 J	0.07 J	0.023 U	0.087 U	0.23 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.22	1.6	N/A	0.46	0.084	0.21	0.16	0.18	0.094 J
Naphthalene	mg/kg	8.6	0.23	0.76	N/A	0.14	0.15	0.12 B	0.021 J	0.018 B	0.23 U
N-Nitrosodiphenylamine	mg/kg	470	0.073 U	0.27 J	N/A	0.72 U	0.073 U	0.54 U	2.2 U	5.1 U	0.73 U
Phenanthrene	mg/kg		0.54	3	N/A	0.32	0.12	0.19	0.028	0.083 B	0.087 B
Phenol	mg/kg	250,000	0.073 U	0.27 J	N/A	0.72 U	0.073 UJ	0.54 U	2.2 U	5.1 U	0.19 J
Pyrene	mg/kg	23,000	0.51	2.6	N/A	0.58	0.14	0.55	0.24	0.56	0.16 B
PCBs											
Aroclor 1248	mg/kg	0.94	0.09 U	N/A	N/A	0.09 U	N/A	0.68 U	0.28 U	0.65 U	0.91 U
Aroclor 1254	mg/kg	0.97	0.09 U	N/A	N/A	0.14	N/A	0.68 U	0.28 U	0.65 U	0.91 U
Aroclor 1268	mg/kg		0.09 U	N/A	N/A	0.09 U	N/A	0.68 U	0.28 U	0.65 U	0.91 U
PCBs (total)	mg/kg	0.97	0.81 U	N/A	N/A	0.81 U	N/A	6.1 U	2.5 U	5.8 U	8.2 U
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	90.9 J	392 J	N/A	58.1 J	49.1 J	339 J	120	333	170
Oil & Grease	mg/kg	6,200	154	180	N/A	451	151	5,460	776	7,650	3,240

Detections in bold

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

N/A indicates that the parameter was not analyzed for this sample

*indicates non-validated data

^PAH compounds were analyzed via SIM

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.

B: This analyte was not detected substantially above the level of the associated method blank 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 7 - Parcel A18
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A18-001-SB-1*	A18-001-SB-5*	A18-001-SB-10*	A18-002-SB-1*	A18-002-SB-5*	A18-002-SB-10*	A18-003-SB-1*
			5/1/2020	5/1/2020	5/1/2020	5/1/2020	5/1/2020	5/1/2020	5/1/2020
Metal									
Aluminum	mg/kg	1,100,000	49,700	84,600	N/A	29,100	81,500	N/A	18,600
Arsenic	mg/kg	3	2.1 U	4	18.1	3.2	3.3	7.1	6.1
Barium	mg/kg	220,000	460	739	N/A	172	584	N/A	165
Beryllium	mg/kg	2,300	1.9	3.2	N/A	1.5	3.5	N/A	1.1 J
Cadmium	mg/kg	980	0.55 J	0.66 J	N/A	0.45 J	0.68 J	N/A	0.34 J
Chromium	mg/kg	120,000	1,830	320	N/A	201	348	N/A	508
Chromium VI	mg/kg	6.3	0.78 J	0.86 J	N/A	0.64 J	1.5 U	N/A	0.66 J
Cobalt	mg/kg	350	90.3	2.2 J	N/A	4.5 J	4.5 J	N/A	7.5
Copper	mg/kg	47,000	183	22.4	N/A	24.7	23.8	N/A	37
Iron	mg/kg	820,000	82,100	3,080	N/A	7,200	4,710	N/A	18,200
Lead	mg/kg	800	3.6 U	3.9 U	N/A	13.3	3.4 U	N/A	20.1
Manganese	mg/kg	26,000	1,320	1,920	N/A	1,100	1,840	N/A	3,340
Mercury	mg/kg	350	0.15 U	0.15 U	N/A	0.23	0.14 U	N/A	0.025 J
Nickel	mg/kg	22,000	864	12.6 J	N/A	28.3	31.3	N/A	32.6
Selenium	mg/kg	5,800	5.7 U	6.4	N/A	4.7 U	6.9	N/A	4.4 U
Thallium	mg/kg	12	8.6 U	9.3 U	N/A	11.8 U	8.3 U	N/A	10.9 U
Vanadium	mg/kg	5,800	47.3	28.8	N/A	25.8	15.6	N/A	63.6
Zinc	mg/kg	350,000	9	7.6 B	N/A	31.4	4.4 B	N/A	48.4
Other									
Cyanide	mg/kg	150	27.8	20	N/A	5	15.2	N/A	4.1

Detections in bold

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

N/A indicates that the parameter was not analyzed for this sample

*indicates non-validated data

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 low.

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 7 - Parcel A18
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A18-003-SB-5*	A18-004-SB-1	A18-005-SB-1*	A18-006-SB-1	A18-006-SB-9	A18-006-SB-10*	A18-007-SB-1
			5/1/2020	4/28/2020	4/29/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
Metal									
Aluminum	mg/kg	1,100,000	77,400	19,700	29,500	8,430	8,410	N/A	6,670
Arsenic	mg/kg	3	2.6 U	2.3 U	2.4 U	2.4 U	2.4 U	N/A	2.4 U
Barium	mg/kg	220,000	630	193	278	120	130	N/A	106
Beryllium	mg/kg	2,300	3.6	2.6	4.6	1.3	1.1	N/A	0.76 J
Cadmium	mg/kg	980	0.73 J	0.46 J	0.62 J	0.77 J	2.2	N/A	1.2 J
Chromium	mg/kg	120,000	625	407	311	1,420	1,340	N/A	977
Chromium VI	mg/kg	6.3	1 J	1 UJ	0.54 J	3.6 J-	1.9 J-	N/A	0.78 B
Cobalt	mg/kg	350	5.2 J	1.8 J	2.5 J	13.7	9.1	N/A	7.7
Copper	mg/kg	47,000	28.4	23.8 J	17.7	177 J	56.9 J	N/A	42.3 J
Iron	mg/kg	820,000	6,410	88,100	62,000	184,000	191,000	N/A	168,000
Lead	mg/kg	800	4.6	26.8	17.3	52.9	39.1	N/A	60.2
Manganese	mg/kg	26,000	2,830	8,820	8,570	30,500	73,600	70,700	21,700
Mercury	mg/kg	350	0.096 J	0.031 J	0.0085 J	0.097 U	0.1 U	N/A	0.019 J
Nickel	mg/kg	22,000	33.3	12.8	12.1	24.4	17.3	N/A	17.8
Selenium	mg/kg	5,800	6.3 J	3.7 U	3.9 U	3.8 U	3.8 U	N/A	3.8 U
Thallium	mg/kg	12	10.2 U	9.3 U	9.7 U	12.1	4.6 B	N/A	9.6 U
Vanadium	mg/kg	5,800	25.8	299	205	3,690	2,890	N/A	1,690
Zinc	mg/kg	350,000	17.1	135 J	61.4	156 J	300 J	N/A	234 J
Other									
Cyanide	mg/kg	150	12.2	1.3 J-	0.69 J	1.6 J-	0.34 J-	N/A	1.3 J-

Detections in bold

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

N/A indicates that the parameter was not analyzed for this sample

*indicates non-validated data

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 low.

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 7 - Parcel A18
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A18-007-SB-4 4/28/2020	A18-008-SB-1 4/28/2020	A18-008-SB-5 4/28/2020	A18-009-SB-1* 4/29/2020	A18-009-SB-5* 4/29/2020	A18-009-SB-10* 4/29/2020	A18-010-SB-1* 5/1/2020
Metal									
Aluminum	mg/kg	1,100,000	38,400	38,600	36,800	10,800	21,800	N/A	11,500
Arsenic	mg/kg	3	3.4	2.6 U	2.8 U	2.5 U	2.6 U	N/A	11.7
Barium	mg/kg	220,000	351	440	454	221	461	N/A	150
Beryllium	mg/kg	2,300	5.3	3.6	3.6	4.2	4.3	N/A	1.8
Cadmium	mg/kg	980	0.33 J	0.52 J	0.41 J	0.69 J	0.53 J	N/A	1.1 J
Chromium	mg/kg	120,000	28.9	364	429	2,000	1,100	N/A	1,090
Chromium VI	mg/kg	6.3	1.1 UJ	1.1 UJ	0.63 B	1.3	0.65 J	N/A	0.96 J
Cobalt	mg/kg	350	1.1 J	58.1	68.8	3.4 J	4.9 J	N/A	40.2
Copper	mg/kg	47,000	4.2 J	15.5 J	12.3 J	44.1	37.3	N/A	503
Iron	mg/kg	820,000	15,900	28,000	40,100	128,000	110,000	N/A	220,000
Lead	mg/kg	800	4.5	41.2	10.8	40.1	15.9	N/A	127
Manganese	mg/kg	26,000	2,250	6,410	6,090	57,000	35,000	47.4	23,300
Mercury	mg/kg	350	0.1 U	0.032 J	0.12 U	0.1 U	0.039 J	N/A	0.1 U
Nickel	mg/kg	22,000	1.7 J	427	536	12.3	24.4	N/A	32.7
Selenium	mg/kg	5,800	2.8 J	4.1 U	4.4 U	4 U	4.2 U	N/A	4
Thallium	mg/kg	12	9.6 U	10.3 U	11.1 U	28.7	14.6	9.3 U	9.9
Vanadium	mg/kg	5,800	86.1	130	119	11,300	6,930	32.7	2,940
Zinc	mg/kg	350,000	10.7 J	67.3 J	32.1 J	68.2	23	N/A	247
Other									
Cyanide	mg/kg	150	1.1 J-	3.4 J-	1.2 J-	0.42 J	0.71 J	N/A	1.9

Detections in bold

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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 low.

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 7 - Parcel A18
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A18-011-SB-1*	A18-011-SB-5*	A18-012-SB-1*	A18-012-SB-5*	A18-012-SB-10*	A18-013-SB-1	A18-013-SB-5
			5/1/2020	5/1/2020	4/29/2020	4/29/2020	4/29/2020	4/28/2020	4/28/2020
Metal									
Aluminum	mg/kg	1,100,000	40,500	44,900	34,500	18,200	N/A	6,810	26,000
Arsenic	mg/kg	3	2.9	2.9	3.8	2.4 U	N/A	2.4 U	2.9 U
Barium	mg/kg	220,000	609	1,920	416	364	N/A	119	937
Beryllium	mg/kg	2,300	3.3	3.4	5.5	3.9	N/A	0.9 J	2.9
Cadmium	mg/kg	980	0.52 J	0.42 J	0.64 J	0.48 J	N/A	0.8 J	0.49 J
Chromium	mg/kg	120,000	48.4	41.5	143	1,740	N/A	861	976
Chromium VI	mg/kg	6.3	0.62 J	0.75 J	1.1 U	0.88 J	N/A	0.71 B	1.2 B
Cobalt	mg/kg	350	2.3 J	5.1 J	3 J	2.2 J	N/A	7.5	4.9 J
Copper	mg/kg	47,000	7.1	12.6	24.8	31.4	N/A	77.7 J	25.4 J
Iron	mg/kg	820,000	8,890	14,600	48,500	95,700	N/A	164,000	81,500
Lead	mg/kg	800	12.3	9.4	35	9.2	N/A	94.8	159
Manganese	mg/kg	26,000	6,720	6,320	5,450	45,300	99.1	20,200	24,100
Mercury	mg/kg	350	0.11 U	0.12 U	0.15	0.1 U	N/A	0.042 J	0.13 U
Nickel	mg/kg	22,000	5.7 J	16.1	10.5	8.5 J	N/A	21.7	10.3 J
Selenium	mg/kg	5,800	4.3 U	4.6 U	4 U	3.9 U	N/A	3.8 U	4.6 U
Thallium	mg/kg	12	10.8 U	11.6 U	10.1 U	24	9.5 U	3.5 B	10.2 B
Vanadium	mg/kg	5,800	218	260	112	9,300	34.3	1,760	5,090
Zinc	mg/kg	350,000	27.9	18.2	125	25.6	N/A	214 J	28.6 J
Other									
Cyanide	mg/kg	150	1.9	2.4	0.83 J	0.33 J	N/A	2.4 J-	1.1 J-

Detections in bold

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J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 7 - Parcel A18
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A18-014-SB-1 5/4/2020	A18-014-SB-5 5/4/2020	A18-014-SB-10 5/4/2020	A18-015-SB-1 5/4/2020	A18-015-SB-4 5/4/2020	A18-015-SB-10 5/4/2020	A18-016-SB-1 5/4/2020	A18-016-SB-5 5/4/2020
Metal										
Aluminum	mg/kg	1,100,000	49,000	16,900	N/A	49,500	27,900	N/A	27,500	6,310
Arsenic	mg/kg	3	3.6	5.8	7	3.4	3.4	4.8	11.7	10.9
Barium	mg/kg	220,000	383 J	33.1 J	N/A	400 J	463 J	N/A	274 J	96 J
Beryllium	mg/kg	2,300	6.7	0.74 J	N/A	8.2	3.4	N/A	1.3	0.38 J
Cadmium	mg/kg	980	0.34 J	1.4 U	N/A	0.39 J	1.2 J	N/A	6.5	1.5 U
Chromium	mg/kg	120,000	5.7	22.8	N/A	13.5	809	N/A	185	78.9
Chromium VI	mg/kg	6.3	0.6 B	1.2 UJ	N/A	0.76 B	0.81 B	N/A	0.59 B	1.2 UJ
Cobalt	mg/kg	350	0.63 J	6.2	N/A	0.8 J	18.1	N/A	23.8	4.3 J
Copper	mg/kg	47,000	5.6	12	N/A	6.3	42	N/A	397	29.8
Iron	mg/kg	820,000	7,940	18,800	N/A	11,100	100,000	N/A	68,400	19,900
Lead	mg/kg	800	4.7	12	N/A	2.7	64.5	N/A	427	9.8
Manganese	mg/kg	26,000	1,400 J	120 J	N/A	3,560 J	20,500 J	N/A	1,720 J	154 J
Mercury	mg/kg	350	0.034 J	0.12 U	N/A	0.12 U	0.12	N/A	0.03 J	0.01 J
Nickel	mg/kg	22,000	1.1 J	14	N/A	1.6 J	97.5	N/A	124	13.8
Selenium	mg/kg	5,800	4	3.6 U	N/A	3.7 U	3.5 U	N/A	3.5 U	3.9 U
Thallium	mg/kg	12	8.5 U	9 U	N/A	9.2 U	8.7 U	N/A	8.7 U	9.7 U
Vanadium	mg/kg	5,800	15	29	N/A	29.6	2,110	N/A	40.7	5.5
Zinc	mg/kg	350,000	11.3 J	32.4 J	N/A	8.4 J	142 J	N/A	3,080 J	19.2 J
Other										
Cyanide	mg/kg	150	1.3	0.22 J	N/A	0.77 J	0.76 J	N/A	4.6	3.4

Detections in bold

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B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 7 - Parcel A18
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	A18-016-SB-10	A18-017-SB-1	A18-017-SB-5	A18-017-SB-10	A18-018-SD-1	A18-019-SD*	A18-020-SD-1	A18-021-SD-1
			5/4/2020	5/4/2020	5/4/2020	5/4/2020	5/13/2020	5/7/2020	5/13/2020	5/13/2020
Metal										
Aluminum	mg/kg	1,100,000	N/A	20,600	6,530	N/A	3,800	10,200	31,900	6,550
Arsenic	mg/kg	3	4.2	6.5	2.2 U	N/A	6.5	9.6	13	8
Barium	mg/kg	220,000	N/A	190 J	82.5 J	N/A	57.5 J	52.4	185	73.8 J
Beryllium	mg/kg	2,300	N/A	2.9	1.6	N/A	6.4 U	0.84 J	1.3 J	8.7 U
Cadmium	mg/kg	980	N/A	1.3	0.69 J	N/A	9.6 U	4 U	9.1 U	13 U
Chromium	mg/kg	120,000	N/A	199	1,150	N/A	173	57	81.2	111
Chromium VI	mg/kg	6.3	N/A	0.83 B	0.99 B	N/A	16.8 U	2.3 J	15.8 U	23.5 U
Cobalt	mg/kg	350	N/A	9.3	2.8 J	N/A	31.8 U	23.7	26.5 J	6.5 J
Copper	mg/kg	47,000	N/A	57.7	34.2	N/A	64.1	42.2	73.9	73.4
Iron	mg/kg	820,000	N/A	83,400	176,000	N/A	68,400	52,900	64,900	36,300
Lead	mg/kg	800	N/A	96.5	29.2	N/A	59.5	36.9	174	65.7
Manganese	mg/kg	26,000	N/A	6,020 J	29,100 J	35.7	500	380	220	573
Mercury	mg/kg	350	N/A	0.58	0.0065 J	N/A	0.11 J	0.019 J	0.37 J	1.7
Nickel	mg/kg	22,000	N/A	20.8	11.5	N/A	21.6 J	40.4	53.2 J	26.1 J
Selenium	mg/kg	5,800	N/A	3.4 U	3.5 U	N/A	25.5 U	10.6 U	24.4 U	32.8 J
Thallium	mg/kg	12	N/A	8.5 U	6.8 J	N/A	4.4 J	10.6 U	12.2 U	17.6
Vanadium	mg/kg	5,800	N/A	519	3,470	N/A	406	191	299	1,280
Zinc	mg/kg	350,000	N/A	532 J	149 J	N/A	198	306	702	188
Other										
Cyanide	mg/kg	150	N/A	1.7	0.72 J	N/A	2.1 J	0.72 J	2 J	2.3 J

Detections in bold

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B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 8 - Parcel A18
Summary of Soil PAL Exceedances

<u>Parameter</u>	<u>CAS#</u>	<u>Frequency of Detections (%)</u> *	<u>Frequency of Exceedances (%)</u> *	<u>Sample ID of Max Result</u>	<u>Max Result (mg/kg)</u>	<u>PAL Solid (mg/kg)</u>
Arsenic	7440-38-2	63%	58%	A18-001-SB-10	18.1	3
Benzo[a]pyrene	50-32-8	95%	5%	A18-003-SB-5	2.9	2.1
Manganese	7439-96-5	100%	18%	A18-006-SB-9	73,600	26,000
Oil & Grease	O&G	91%	3%	A18-020-SD-1	7,650	6,200
Thallium	7440-28-0	22%	14%	A18-009-SB-1	28.7	12
Vanadium	7440-62-2	100%	8%	A18-009-SB-1	11,300	5,800

*Frequency of detections and exceedances calculated as a percentage based on the total number of samples analyzed for the parameter (excluding any rejected data results).

Table 9 - Parcel A18
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	A18-002-PZ*	A18-008-PZ*	A18-009-PZ*	A18-011-PZ*	A18-013-PZ*	A18-014-PZ	A18-015-PZ*	A18-016-PZ	A18-017-PZ
			7/9/2020	7/7/2020	7/7/2020	7/9/2020	7/9/2020	7/8/2020	7/7/2020	7/8/2020	7/8/2020
Volatile Organic Compounds											
1,1-Dichloroethane	µg/L	2.7	1 U	0.4 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	7	2.7	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U
1,2-Dichlorobenzene	µg/L	600	1 U	1 U	1 U	1 U	1 U	1 U	9.4	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	36	2 U	2 U	2 U	2 U	2 U	4.3	2 U	1.5 J
1,4-Dichlorobenzene	µg/L	75	1 U	1 U	1 U	1 U	1 U	1 U	0.96 J	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	33.3	1 U	1 U	1 U	1 U	1 U	4.2	1 U	1.5
Methyl tert-butyl ether (MTBE)	µg/L	14	4.1	0.3 J	1 U	1 U	1 U	1 U	1.2	1 U	1 U
Tetrachloroethene	µg/L	5	6.3	1 U	1 U	1 U	1 U	1 U	57.5	1.3	14.8
trans-1,2-Dichloroethene	µg/L	100	2.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	5	394	1 U	1 U	1 U	1 U	1 U	298	1	88
Vinyl chloride	µg/L	2	0.48 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Semi-Volatile Organic Compounds^											
1,4-Dioxane	µg/L	0.46	0.1 U	0.17	0.099 U	0.098 U	0.1 U	0.14	0.12	0.25	0.15
2,4-Dinitrophenol	µg/L	39	2.5 U	0.86 J	2.5 U	2.5 U	2.5 U	2.4 U	2.5 U	2.5 U	2.5 U
Anthracene	µg/L	1,800	0.1 U	0.1 U	0.074 J	0.098 U	0.048 J	0.098 U	0.099 U	0.1 U	0.098 U
Benz[a]anthracene	µg/L	0.03	0.081 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Benzo[a]pyrene	µg/L	0.2	0.12	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Benzo[b]fluoranthene	µg/L	0.25	0.29	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Benzo[g,h,i]perylene	µg/L		0.087 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Benzo[k]fluoranthene	µg/L	2.5	0.27	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	0.44 J	0.99 U	0.42 J	1 U	0.4 B	4.4	0.47 B	0.98 U
Caprolactam	µg/L	9,900	2.5 U	2.5 U	2.5 U	2.5 U	0.35 J	2.4 U	0.39 J	2.5 U	2.5 U
Chrysene	µg/L	25	0.088 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Di-n-butylphthalate	µg/L	900	1 U	0.44 J	0.43 J	0.33 J	1 U	0.33 B	0.99 U	0.35 B	0.98 U
Di-n-octylphthalate	µg/L	200	1 U	1 U	0.99 U	0.98 U	1 U	0.98 U	0.27 J	1 U	0.98 U
Fluoranthene	µg/L	800	0.07 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Indeno[1,2,3-c,d]pyrene	µg/L	0.25	0.078 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Naphthalene	µg/L	0.12	0.14	0.1 U	0.099 U	0.17	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Pentachlorophenol	µg/L	1	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.4 U	2.5 U	5.3	2.5 U
Phenanthrene	µg/L		0.047 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
Pyrene	µg/L	120	0.078 J	0.1 U	0.099 U	0.098 U	0.1 U	0.098 U	0.099 U	0.1 U	0.098 U
TPH/Oil & Grease											
Diesel Range Organics	µg/L	47	104	285	94.5 J	98	60.8 J	221 J	112	120 J	154 J
Gasoline Range Organics	µg/L	47	139 J	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
Oil & Grease	µg/L	47	4,750 U	4,750 U	4,750 U	4,750 U	1,000 J	4,750 U	4,750 U	4,750 U	4,750 U

Detections in bold

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

*indicates non-validated data

^PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

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

B: This analyte was not detected substantially above the level of the associate method blank or field blank.

Table 10 - Parcel A18
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	A18-002-PZ*	A18-008-PZ*	A18-009-PZ*	A18-011-PZ*	A18-013-PZ*	A18-014-PZ	A18-015-PZ*	A18-016-PZ	A18-017-PZ
			7/9/2020	7/7/2020	7/7/2020	7/9/2020	7/9/2020	7/8/2020	7/7/2020	7/8/2020	7/8/2020
Dissolved Metals											
Aluminum, Dissolved	µg/L	20,000	388	330	50 U	765	50 U	502	22.6 J	27.9 J	32.3 J
Barium, Dissolved	µg/L	2,000	36.4	23	34.8	80.3	37.4	24.3	38.1	29.8	46.3
Beryllium, Dissolved	µg/L	4	1.7	0.72 J	1 U	1 U	1 U	1.6	1 U	1 U	0.29 J
Cadmium, Dissolved	µg/L	5	0.89 J	0.93 J	3 U	3 U	3 U	1.4 J	0.55 J	0.49 J	0.71 J
Chromium VI, Dissolved	µg/L	0.035	10 U	10 U	18.2	10 U	10 U	500 U	10 U	10 U	10 U
Chromium, Dissolved	µg/L	100	0.78 J	1.9 J	20.6	4.5 J	4.6 J	0.62 B	0.88 J	5 U	0.93 B
Cobalt, Dissolved	µg/L	6	71.7	136	5 U	5 U	5 U	150	25.4	68.4	190
Iron, Dissolved	µg/L	14,000	328	6,930	70 U	70 U	4,510	10,900	2,440	9,510	9,540
Manganese, Dissolved	µg/L	430	813	2,110	38.1	5 U	663	2,160	832	2,070	4,400
Mercury, Dissolved	µg/L	2	0.2 U	0.2 U	0.2 U	0.03 J	0.03 J	0.2 U	0.2 U	0.2 U	0.2 U
Nickel, Dissolved	µg/L	390	95.3	122	10 U	10 U	3.1 J	169	38.5	44.9	126
Thallium, Dissolved	µg/L	2	10 U	10 U	10	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium, Dissolved	µg/L	86	5 U	1.1 J	829	87.6	20.4	0.58 J	74.2	5 U	1.3 J
Zinc, Dissolved	µg/L	6,000	147	165	10 U	10 U	10 U	296	30.9	54.4	84.2

Detections in bold

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

*indicates non-validated data

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

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

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

Table 11 - Parcel A18
Cumulative Vapor Intrusion Criteria Comparison

				A18-002-PZ 7/9/2020		A18-008-PZ 7/7/2020		A18-009-PZ 7/7/2020		A18-011-PZ 7/9/2020		A18-013-PZ 7/9/2020		A18-014-PZ 7/8/2020		A18-015-PZ 7/7/2020		A18-016-PZ 7/8/2020		A18-017-PZ 7/8/2020	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																					
1,1-Dichloroethane	VOC		330	1 U	0	0.4 J	1.2E-08	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.96 J	8.7E-08	1 U	0	1 U	0
1,4-Dioxane	SVOC		130,000	0.1 U	0	0.17	1.3E-11	0.099 U	0	0.098 U	0	0.1 U	0	0.14	1.1E-11	0.12	9.2E-12	0.25	1.9E-11	0.15	1.2E-11
Methyl tert-butyl ether	VOC		20,000	4.1	2.1E-09	0.3 J	1.5E-10	1 U	0	1 U	0	1 U	0	1 U	0	1.2	6.0E-10	1 U	0	1 U	0
Naphthalene	SVOC		200	0.14	7.0E-09	0.1 U	0	0.099 U	0	0.17	8.5E-09	0.1 U	0	0.098 U	0	0.099 U	0	0.1 U	0	0.098 U	0
Vinyl chloride	VOC		25	0.48 J	1.9E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Tetrachloroethene	VOC		650	6.3	9.7E-08	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	57.5	8.8E-07	1.3	2.0E-08	14.8	2.3E-07
Trichloroethene	VOC		74	394	5.3E-05	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	298	4.0E-05	1	1.4E-07	88	1.2E-05
Cumulative Vapor Intrusion Cancer Risk				5E-05		1E-08		0		9E-09		0		1E-11		4E-05		2E-07		1E-05	
Non-Cancer Hazard																					
Tetrachloroethene	VOC	Nervous; Ocular	240	6.3	0.03	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	57.5	0.2	1.3	0.005	14.8	0.06
Cumulative Vapor Intrusion Non-Cancer Hazard				0		0		0		0		0		0		0		0		0	
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	394	18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	298	14	1	0.05	88	4
Cumulative Vapor Intrusion Non-Cancer Hazard				18		0		0		0		0		0		14		0		4	

Highlighted values indicate exceedances of the cumulative vapor intrusion criteria: TCR>1E-05 or THI>1
Conc. = Concentration
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.

**Table 12 - Parcel A18
Rejected Analytical Results**

<u>Sample ID</u>	<u>Parameter</u>	<u>Result</u> (mg/kg)	<u>Flag</u>	<u>PAL</u> (mg/kg)	<u>Exceeds PAL?</u>
A18-006-SB-1	2,3,4,6-Tetrachlorophenol	0.68	R	25,000	no
	2,4,5-Trichlorophenol	1.7	R	82,000	no
	2,4,6-Trichlorophenol	0.68	R	210	no
	2,4-Dichlorophenol	0.68	R	2,500	no
	2,4-Dimethylphenol	0.68	R	16,000	no
	2,4-Dinitrophenol	1.7	R	1,600	no
	2-Chlorophenol	0.68	R	5,800	no
	2-Methylphenol	0.68	R	41,000	no
	3&4-Methylphenol(m&p Cresol)	1.4	R	41,000	no
	Pentachlorophenol	1.7	R	4	no
	Phenol	0.68	R	250,000	no
A18-006-SB-9	1,4-Dioxane	0.11	R	24	no
	2,3,4,6-Tetrachlorophenol	0.069	R	25,000	no
	2,4,5-Trichlorophenol	0.17	R	82,000	no
	2,4,6-Trichlorophenol	0.069	R	210	no
	2,4-Dichlorophenol	0.069	R	2,500	no
	2,4-Dimethylphenol	0.069	R	16,000	no
	2,4-Dinitrophenol	0.17	R	1,600	no
	2-Chlorophenol	0.069	R	5,800	no
	2-Methylphenol	0.069	R	41,000	no
	3&4-Methylphenol(m&p Cresol)	0.14	R	41,000	no
	Pentachlorophenol	0.17	R	4	no
	Phenol	0.069	R	250,000	no
A18-007-SB-1	1,4-Dioxane	0.13	R	24	no
A18-007-SB-4	1,4-Dioxane	0.12	R	24	no
A18-018-SD-1	1,4-Dioxane	0.86	R	24	no
A18-020-SD-1	1,4-Dioxane	0.97	R	24	no
A18-021-SD-1	1,4-Dioxane	1.3	R	24	no

<u>Sample ID</u>	<u>Parameter</u>	<u>Result</u> (ug/L)	<u>Flag</u>	<u>PAL</u> (ug/L)	<u>Exceeds PAL?</u>
A18-014-PZ	3,3'-Dichlorobenzidine	0.98	R	0.12	YES

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APPENDIX A

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**Parcel A18 Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland**

Table 1 - Soil/Sediment Sampling Summary

Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	Rationale	Number of Locations	Sample Locations	Boring Depth	Sample Depth	Analytical Parameters: Soil and Sediment Samples
Fly Dumping Area		Site Visit	Investigate potential impacts related to drums of unknown contents which appear to have been disposed of at the Site (potential leaks or releases).	2	A18-001 and A18-002	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC [^] , SVOC, Metals, DRO/GRO, O&G, PCBs (0-1')
Parcel A18 Coverage			Investigate potential impacts related to unknown historical activities, and characterize soil in areas not previously sampled.	13	A18-003 through A18-015	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC [^] , SVOC, Metals, DRO/GRO, O&G, PCBs (0-1')
Parcel A10 CVOC Detections		MDE Requested	Investigate potential impacts related to the previous detections of CVOCs in groundwater in adjacent parcel A10.	2	A18-016 and A18-017	Total depth of 20 feet or groundwater.	0-1', 4-5', 9-10' bgs. 4-5' interval may be adjusted in the field based on observations or field screening.	VOC [^] , SVOC, Metals, DRO/GRO, O&G, PCBs (0-1')
Stormwater Pond Areas		MDE Requested	Investigate potential impacts related to any historical activities which may have occurred in the retention basins (potential leaks or releases).	4	A18-018 through A18-021	Total depth of 12 inches.	Top 12" of sediment at each location	VOC, SVOC, Metals, DRO/GRO, O&G, PCBs
Total:				21				

Soil Borings Sampling Density Requirements (from **Worksheet 17 - Sampling Design and Rationale**)

No Engineered Barrier (16-40 acres): 1 boring per 1.5 acres with no less than 15 borings.

Engineered Barrier (N/A)

No Engineered Barrier (22.0 acres) = **15 Borings Required, 17 Completed (+4 Sediment)**

Stormwater Ponds (5.3 acres)

Building Footprints (0 acres)

VOCs - Volatile Organic Compounds (Target Compound List)

[^]VOCs are only collected if the PID reading exceeds 10 ppm

SVOCs - Semivolatile Organic Compounds (Target Compound List)

Metals - (Target Analyte List plus Hexavalent Chromium and Cyanide)

O&G - Oil & Grease

DRO/GRO - Diesel Range Organics/Gasoline Range Organics

PCBs - Polychlorinated Biphenyls

bgs - Below Ground Surface

**Parcel A18 Sampling Plan Summary
Former Sparrows Point Steel Mill
Sparrows Point, Maryland**

Table 2 - Groundwater Sampling Summary

Source Area/ Description	REC & Finding/ SWMU/ AOC	Figure or Drawing of Reference	Condition of Existing Well	Number of Locations	Sample Locations	Boring Depth	Screen Interval	Analytical Parameters: Groundwater Samples
Fly Dumping Area		Site Visit	N/A	1	A18-002	Total depth of 7 feet below water table.	7 feet below water table to 3 feet above water table.	VOC, SVOC, Metals (dissolved), Cyanide (total), O&G, DRO/GRO
Parcel A18 Coverage			N/A	6	A18-008, A18-009, A18-011, A18-013, A18-014, and A18-015	Total depth of 7 feet below water table.	7 feet below water table to 3 feet above water table.	VOC, SVOC, Metals (dissolved), Cyanide (total), O&G, DRO/GRO
Parcel A10 CVOC Detections		MDE Requested	N/A	2	A18-016 and A18-017	Total depth of 7 feet below water table.	7 feet below water table to 3 feet above water table.	VOC, SVOC, Metals (dissolved), Cyanide (total), O&G, DRO/GRO
			Total:	9				

Field measurements include pH, DO, ORP, conductivity, temperature.
Metals analysis will include dissolved hexavalent chromium

VOCs - Volatile Organic Compounds (Target Compound List)
SVOCs - Semivolatile Organic Compounds (Target Compound List)
Metals - (Target Analyte List plus Hexavalent Chromium and Cyanide)
O&G - Oil & Grease
DRO/GRO - Diesel Range Organics/Gasoline Range Organics

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APPENDIX B

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ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 05/01/2020
Weather : Cloudy, 60's

Northing (US ft) : 572498.68
Easting (US ft) : 1465531.89

Boring ID: A18-001-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS		
0	40	-	A18-001-SB-1	(0-0.3') SILT with SAND, soft, dark brown, dry, no plasticity, no cohesion	ML	trace organics present		
1		-		(0.3-2.5') Cinder ballast, loose to medium dense, black, dry, no plasticity, no cohesion	NA			
2		-		(2.5-3') CLAYEY SAND, medium dense, light brown, dry, no plasticity, no cohesion	SC			
3		0.1		(3-5') SAND, medium to coarse, with small SLAG GRAVEL layer at 4' bgs, loose to medium dense, yellow and trace dark brown, dry, no plasticity, no cohesion	SW			
4	94	0.0	A18-001-SB-5	(5-16.5') CLAY, soft then very firm to hard at 5.7' bgs, pale brown with some reddish yellow mottling, very moist then dry at 5.7' bgs, low plasticity, cohesive	CL	Wet at 16.5' bgs		
5		0.2						
6		0.4						
7		0.2						
8		0.2						
9		0.2	A18-001-SB-10					
10	80	-					(16.5-20') SAND, fine to medium, yellowish red, wet, no plasticity, no cohesion	SW
11		0.0						
12		0.0						
13		0.1						
14		0.2						
15		0.1						
16	96	0.1						
17		0.1						
18		0.1						
19		0.3						
20	End of Boring							

Total Borehole Depth: 20' bgs due to water



ARM Group LLC

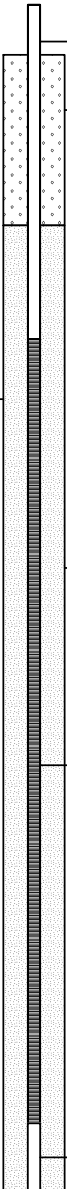
Engineers and Scientists

Client : Tradepoint Atlantic
 ARM Project No. : 20010118
 Project Description : Sparrows Point - Parcel A18
 Site Location : Sparrows Point, MD
 ARM Representative : L. Perrin
 Checked by : M. Hritz, E.I.T.
 Drilling Company : GSI
 Driller : D. Marchese
 Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 05/01/2020
 Piezometer Installation Date : 05/01/2020
 Casing/Riser/Screen Type : PVC
 Borehole Diameter : 2.25"
 Riser/Screen Diameter : 1"
 Northing (US ft) : 572520.54
 Easting (US ft) : 1465587.49
 Static DTW : 12.26' TOC
 No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-002-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS		REMARKS
0		-	A18-002-SB-1	(0-0.5') SAND, fine to coarse, loose, yellow, dry, no plasticity, no cohesion	SW		Wet at 15' bgs
	64	-		(0.5-1.3') SILT with SAND, organic matter, soft, black, moist, no plasticity, no cohesion	ML		
		0.0		(1.3-3') SLAG, SAND and GRAVEL sized, medium dense, gray and light gray, dry, no plasticity, no cohesion	SW/GW		
		0.0		(3-3.9') SLAG, SAND and GRAVEL sized, medium dense, black, shimmery, dry, no plasticity, no cohesion	SW/GW		
5		0.0	A18-002-SB-5	(3.9-5') SAND, fine to coarse, loose, yellow, dry to very moist, no plasticity, no cohesion	SW		
		0.0		(3.9-5') SAND, fine to coarse, loose, yellow, dry to very moist, no plasticity, no cohesion	CL		
	94	0.1		(5-6.3') CLAY with SAND, soft, pale brown, very moist to wet, no plasticity, no cohesion	SC		
		0.0		(6.3-6.7') Clayey SAND, medium dense, pale brown, very moist to wet, no plasticity, no cohesion	CL		
		0.0		(6.7-10') CLAY, hard, pale brown with reddish yellow, dry, low plasticity, cohesive	CL		
10		0.0	A18-002-SB-10	(6.7-10') CLAY, hard, pale brown with reddish yellow, dry, low plasticity, cohesive	SC		
		0.1		(10-10.5') CLAYEY SAND, loose to medium dense, pale brown, wet, no plasticity, no cohesion	CL		
	90	0.0		(10.5-15') CLAY with SAND grading to CLAY with trace SAND, soft grading to firm, pale brown with some gray, very moist, low plasticity, cohesive	CL		
		0.0					
		0.0					
15		-		(15-20') SAND, very fine to medium, medium dense, yellowish red then very pale brown and reddish yellow at 16.5' bgs, wet, no plasticity, no cohesion	SW		
	90	0.0					
		0.0					
		0.0					
20		0.0					
				End of Boring			

Boring terminated at 20' bgs due to water and piezometer installation
 TOC: Top of PVC casing
 DTW: Depth to water
 bgs: Below ground surface

Riser Stickup: 3.1' ags
 Riser: 0 - 5' bgs
 Screen: 5 - 20' bgs [Slot Size: 0.010"]
 Sand Pack: 3 - 20' bgs [Grain Size: WG #2]
 Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 05/01/2020
Weather : Cloudy, 60's

Northing (US ft) : 572681.61
Easting (US ft) : 1465923.90

Boring ID: A18-003-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS	
0	86	-	A18-003-SB-1	(0-0.5') Silty SAND, with trace organics and GRAVEL, loose dark brown, moist, no plasticity, no cohesion	SM	Wet at 20' bgs	
1		0.3		(0.5-1.7') Non-native SAND with some SLAG GRAVEL, medium dense, black, dry, no plasticity, no cohesion	SW		
2				(1.7-2.6') SAND, fine to coarse, medium dense to loose, yellow, dry, no plasticity, no cohesion	SW		
3				(2.6-3.8') Non-native SAND with some SLAG GRAVEL, medium dense, black, dry, no plasticity, no cohesion	SW		
4				0.3	A18-003-SB-5		(3.8-5.7') SAND, fine to coarse, medium dense to loose, yellow, dry, no plasticity, no cohesion
5	100	0.2					(5.7-10') CLAY, hard, pale brown with some reddish yellow, dry, low plasticity, cohesive
6							
7							
8							
9		0.3	A18-003-SB-10				
10	100						
11							
12							
13							
14		0.2			(10.3-10.5') Sandy CLAY, soft, pale brown, very moist, low plasticity, cohesive		CL
15							
16	0.2			(10.5-12.5') CLAY, soft, with trace SAND, pale brown with some reddish yellow, dry, low plasticity, cohesive	CL		
17							
18	0.2			(12.5-13.5') Sandy CLAY, soft, pale brown, very moist, low plasticity, cohesive	CL		
19							
20	54	-		(13.5-17.5') CLAY, soft, pale brown with some reddish yellow, dry, low plasticity, cohesive	CL		
16		-					
17		0.1					
18		0.2				(17.5-18') Sandy CLAY, soft, pale brown, very moist, low plasticity, cohesive	CL
19							
20	0.2	(18-20') SAND, very fine to medium, medium dense, reddish yellow and pale brown then yellowish red at 19.2' bgs, wet, no plasticity, no cohesion	SW				
End of Boring							

Total Borehole Depth: 20' bgs due to water



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 04/28/2020
Weather : Cloudy, 50s

Northing (US ft) : 572907.27
Easting (US ft) : 1465510.60

Boring ID: A18-004-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0.6-2.2') Non-native SAND with SLAG, SAND and GRAVEL-sized, medium dense, dark brown with brown, red, and gray, dry, no plasticity, no cohesion	SW/GW	No water encountered
		10.0	A18-004-SB-1			
1						
	83	0.0				
2				End of Boring		
		0.0				
3						
4						
5						

Total Borehole Depth: 3' bgs due to multiple refusals.



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 04/29/2020
Weather : Sunny, 70s

Northing (US ft) : 573174.87
Easting (US ft) : 1465670.24

Boring ID: A18-005-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		1.2	A18-005-SB-1	(0-1.3') Non-native SAND with BRICK and SLAG GRAVEL, fine to coarse, medium dense, red and light brownish gray, dry, no plasticity, no cohesion	SW/GW	No water encountered
1	100	0.1		(1.3-2.5') Cinder ballast, medium dense, black, dry, no plasticity, no cohesion	NA	
2		0.1		(2.5-3') SLAG GRAVEL, fine to coarse, loose, light gray and light brownish gray, dry, no plasticity, no cohesion	GW	
3				End of Boring		
4						
5						

Total Borehole Depth: 3' bgs due to multiple refusals.



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 04/28/2020
Weather : Cloudy, 50s

Northing (US ft) : 572278.78
Easting (US ft) : 1464594.20

Boring ID: A18-006-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-006-SB-1	(0-0.2') ASPHALT	NA	
	92	1.2		(0.2-12') Non-native SAND with SLAG GRAVEL, medium dense, dark brown with red, gray and trace yellow, dry, non-plastic, non-cohesive, gravel size increased at 9-10' bgs		
		9.0				
		1.2				
		0.0				
5		-			SW/GW	
		0.9				
	74	3.4				
		23.4	A18-006-SB-9			
		2.8	A18-006-SB-10			
10		-				
		14.1				
	70	0.3		(12-14.5') CLAY with trace SAND, soft, grayish brown to pale brown with reddish yellow at 14.5' bgs, very moist, low plasticity, cohesive	CL	
		0.0				
		0.0		(14.5-16') SANDY CLAY, soft, light gray, very moist, low plasticity, cohesive	CL	
15		-				
		-		(16-18.2') SAND with some CLAY, very fine to medium, reddish yellow and pale brown, wet, non-plastic, non-cohesive	SW	
	54	-				
		0.0		(18.2-18.8') CLAYEY SAND, medium dense, light brownish gray and reddish yellow, wet, no plasticity, no cohesion	SC	
		0.0		(18.8-20') SAND, very fine to medium, medium dense, very pale brown then yellowish red at 19.7' bgs, wet, no plasticity, no cohesion	SW	
20				End of Boring		

Boring terminated at 20' bgs due to water



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 04/28/2020
Weather : Cloudy, 50s

Northing (US ft) : 572090.65
Easting (US ft) : 1464264.50

Boring ID: A18-007-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	88	0.0	A18-007-SB-1	(0-2.2') Non-native SAND with SLAG GRAVEL, fine to coarse with trace cobbles, loose to medium dense, brown and gray, dry, no plasticity, no cohesion	SW/GW	No water encountered
1						
2		22.1				
3		158.9		(2.2-5') SLAG, SAND and GRAVEL-sized, medium dense, light gray and white, dry, non-plastic, non-cohesive	SW/GW	
4	17.5	A18-007-SB-4				
5	0.0					
6	100	16.9		(5-7') Non-native SAND with SLAG GRAVEL, fine to coarse, medium dense, brown and light gray, dry, non-plastic, non-cohesive, slag gravel size increase with depth, trace cobbles at depth	SW/GW	
7		0.8				
End of Boring						
8						

Total Borehole Depth: 7' bgs due to multiple refusals.



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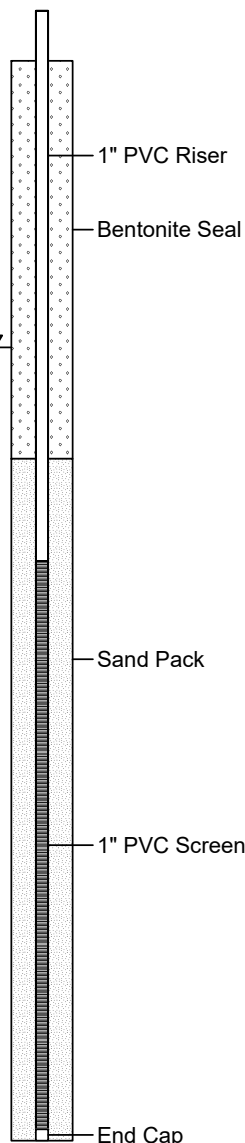
Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 04/28/2020
Piezometer Installation Date : 04/28/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 572657.31
Easting (US ft) : 1465252.39
Static DTW : 11.12' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-008-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-008-SB-1	(0-0.3') BRICK GRAVEL, fine to coarse, loose, red, dry, non-plastic, non-cohesive	GW	
	70	0.0		(0.3-2') Non-native SAND and SLAG GRAVEL, medium dense, brown with gray, dry, non-plastic, non-cohesive	SW/GW	
		0.0		(2-6.9') SLAG GRAVEL, fine to coarse, with some SAND-sized SLAG, medium dense, gray and light gray, dry to very moist, non-plastic, non-cohesive	GW/SW	
5		0.0	A18-008-SB-5			
	70	0.0		(6.9-7.3') CLAYEY SAND, medium dense, reddish yellow, very moist, non-plastic, non-cohesive	SC	
		0.0		(7.3-11.5') CLAY with SAND grading to CLAY, soft then hard at 7.8' bgs, grayish brown then grayish brown with reddish yellow at 7.8' bgs, very moist then dry at 7.8' bgs, low plasticity, cohesive	CL	
10		-				
	90	0.0		(11.5-12.5') SAND with CLAY, medium dense, reddish yellow, wet, non-plastic, non-cohesive	SW-SC	
		0.0		(12.5-14.7') CLAY, hard, reddish yellow and light grayish brown, dry to moist, low plasticity, cohesive	CL	
15		0.0		(14.7-15') SAND, very fine to medium, medium dense, yellow, wet, non-plastic, non-cohesive	SW	
	0	-		(15-19') NO RECOVERY due to heaving sands	SW	
		-				
		-				
		-				
20				End of Boring		



Boring terminated at 19' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.04' ags
Riser: 0 - 9' bgs
Screen: 9 - 19' bgs [Slot Size: 0.010"]
Sand Pack: 7 - 19' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 7' bgs [Grain Size: bentonite chips]



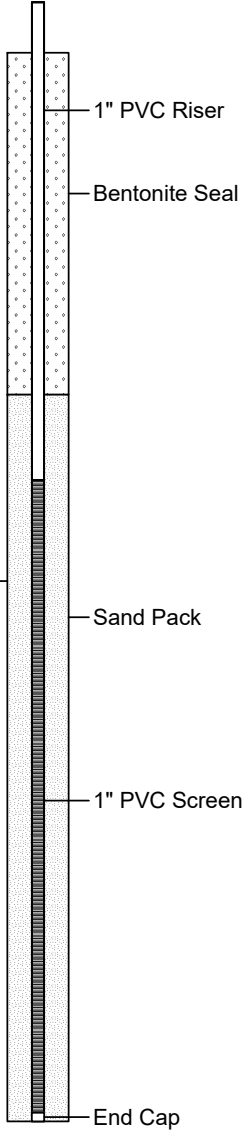
ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 04/29/2020
Piezometer Installation Date : 04/29/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 574199.53
Easting (US ft) : 1465575.06
Static DTW : 17.72' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-009-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-009-SB-1	(0-2.5') Non-native SAND with SLAG GRAVEL, medium dense, dark brown, gray, and red, dry, no plasticity, no cohesion	SW/GW	 <p>1" PVC Riser</p> <p>Bentonite Seal</p> <p>Sand Pack</p> <p>1" PVC Screen</p> <p>End Cap</p> <p>Wet at 18' bgs</p>
2.7	80	5.3		(2.5-5') SLAG GRAVEL, fine to coarse, gray and light gray with trace brown, dry grading to very moist, no plasticity, no cohesion	GW	
5.3		1.9	A18-009-SB-5	(5-7.5') CLAY, soft grading to very firm, reddish yellow and pale brown, very moist grading to dry, low plasticity, cohesive	CL	
6.3		0.0		(7.5-8.2') CLAYEY SAND, medium dense, reddish yellow, moist, no plasticity, no cohesion	SC	
1.9		1.1	A18-009-SB-10	(8.2-15') CLAY, hard, reddish yellow with pale brown, dry, low plasticity, cohesive	CL	
0.0	100	0.0		(15-18') No recovery	NR	
0.0		-		(18-20') SAND, very fine to medium, medium dense, yellow, wet, no plasticity, no cohesion	SW	
0.0		-		(20-22.3') NO RECOVERY, heaving SANDS	SW	
0.0		-		(22.3-23') CLAYEY SAND, medium dense, light yellowish brown, wet, no plasticity, no cohesion	SC	
0.0		-		(23-24') CLAY with SAND, soft to firm, light yellowish brown, very moist to wet, low plasticity, cohesive	CL	
0.0		-		(24-25') SAND with CLAY, loose to medium, light yellowish brown, wet, no plasticity, no cohesion	SW-SC	
0.0		-				
0.0		-				
0.0		-				
0.0		-				

Boring terminated at 25' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.68' ags
Riser: 0 - 5' bgs
Screen: 5 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 25' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 05/01/2020
Weather : Cloudy, 60s

Northing (US ft) : 572754.82
Easting (US ft) : 1464961.36

Boring ID: A18-010-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-2') SLAG GRAVEL with SAND-sized SLAG/BRICK, loose to medium dense, dark brown with red and gray, dry, non-plastic, non-cohesive	GW/SW	No water encountered
		0.0	A18-010-SB-1			
1	75	0.0				
2				End of Boring		
3						
4						
5						

Total Borehole Depth: 2' bgs due to multiple refusals.



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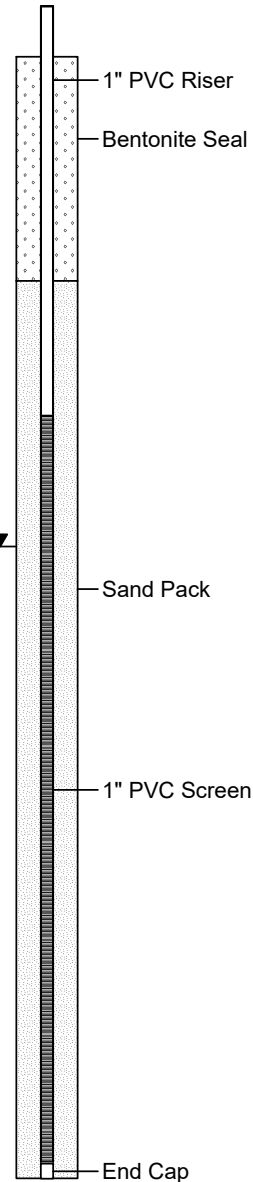
Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 05/01/2020
Piezometer Installation Date : 05/01/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 572922.11
Easting (US ft) : 1466180.32
Static DTW : 12.61' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-011-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-011-SB-1	(0-0.5') CLAYEY SAND with trace ORGANICS and GRAVEL, medium dense, brown, moist, non-plastic, non-cohesive	SC	
	86	0.4		(0.5-15') SLAG, SAND and GRAVEL-sized, medium dense, brown, dark brown, and gray, dry to moist then wet at 8.5' bgs, non-plastic, non-cohesive, thin sand layer at 9' bgs		
		0.2				
		0.1				
		0.0	A18-011-SB-5			
5		-				
	84	0.2			GW/SW	
		0.2				
		0.2				
		53.3				
10		-				
	76	0.0				
		0.0				
		0.0				
		0.0				
15				End of Boring		



Wet at 8.5' bgs

Boring terminated at 15' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.03'
Riser: 0 - 5' bgs
Screen: 5 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Date : 04/29/2020
Weather : Sunny, 70's

Northing (US ft) : 573654.93
Easting (US ft) : 1465749.58

Boring ID: A18-012-SB

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	78	-	A18-012-SB-1	(0-2.2') Non-native SAND with some BRICK and SLAG GRAVEL, loose to medium dense, red then grayish brown at 1.3' bgs then dark brown at 1.9' bgs, dry, no plasticity, no cohesion	SW	
1		0.8				
2		0.2		(2.2-3.5') Cinder ballast, medium dense, black, dry, no plasticity, no cohesion	NA	
3		0.6		(3.5-5.3') SLAG, SAND and GRAVEL sized, medium dense, very dark gray and gray, dry to very moist, no plasticity, no cohesion	SW/GW	
4		0.4	A18-012-SB-5			
5	100	0.3		(5.3-6.2') CLAY with trace SAND, soft, grayish brown and black, very moist, low plasticity, cohesive	CL	
6		0.0		(6.2-16') CLAY, hard to very firm, pale brown and reddish yellow, dry, low plasticity, cohesive		
7		3.7				
8		1.9				
9		1.8	A18-012-SB-10			
10	100	0.0		(16-20') SAND, very fine to medium, medium dense, reddish yellow then yellow at 17.6' bgs, wet, no plasticity, no cohesion	CL	
11		0.0				
12		0.0				
13		0.0				
14		0.0				
15	56	-		(16-20') SAND, very fine to medium, medium dense, reddish yellow then yellow at 17.6' bgs, wet, no plasticity, no cohesion	SW	
16		-				
17		0.0				
18		0.0				
19		0.3				
20	End of Boring					

Total Borehole Depth: 20' bgs due to water



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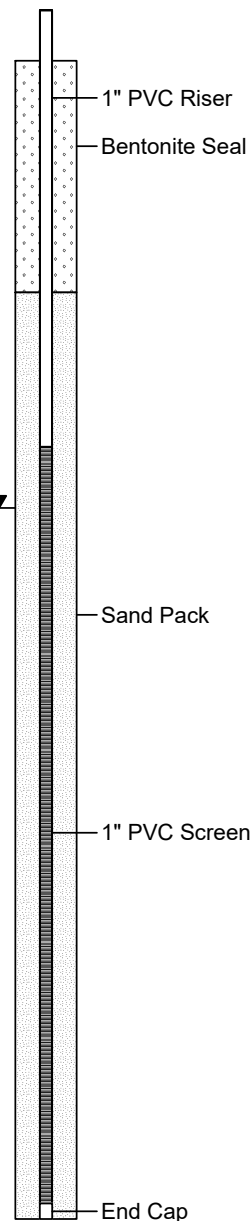
Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 04/28/2020
Piezometer Installation Date : 04/28/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 571939.78
Easting (US ft) : 1463965.85
Static DTW : 11.41' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-013-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A14-013-SB-1	(0-3') Non-native SAND with SLAG/BRICK, SAND and GRAVEL-sized, medium dense, verydark brown, red, and yellow, dry, no plasticity, no cohesion	SW/GW	
	84	2.7				
		16.4				
		69.8		(3-8') SLAG, SAND and GRAVEL-sized, medium dense, light gray, white, and brown, dry, no plasticity, no cohesion		
		6.2	A14-013-SB-5			
5		0.3			SW/GW	
	50	0.5				
		0.6				
		0.3		(8-12) No Recovery		
10		0.2			NR	
		-				
		-				
	60	-		(12-15') CLAY, soft grading to very firm, gray grading to very pale brown with reddish yellow mottling, wet grading to moist, medium plasticity, cohesive	CL	
		0.2				
		0.3				
15				End of Boring		



Boring terminated at 15' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.81' ags
Riser: 0 - 5' bgs
Screen: 5 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 05/04/2020
Piezometer Installation Date : 05/04/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 572387.84
Easting (US ft) : 1465209.12
Static DTW : 12.43' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-014-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	94	0.2	A18-014-SB-1	(0-2.3') Non-native SAND and SLAG GRAVEL, medium dense, dark brown and very dark brown, dry grading to wet, no plasticity, no cohesion	SW/GW	<p>1" PVC Riser</p> <p>Bentonite Seal</p> <p>Sand Pack</p> <p>1" PVC Screen</p> <p>End Cap</p> <p>Wet at 14.5' bgs</p>
		0.0				
		0.1		(2.3-14.5') CLAY, hard then soft at 8' bgs, pale brown and reddish yellow, dry then very moist at 8' bgs, low plasticity, cohesive, CLAY with SAND from 14-14.5' bgs		
		0.0				
		0.0	A18-014-SB-5			
5	40	-			CL	
		-				
		-				
		0.0				
		0.0	A18-014-SB-10			
10	100	0.0				
		1.7				
		0.1				
		0.1				
		0.0		(14.5-20') SAND, very fine to medium, medium dense, reddish yellow 14.5-15' bgs, pale brown 15-18' bgs then reddish yellow grading to yellowish red, wet, no plasticity, no cohesion	SW	
15	100	0.0				
		0.0				
		0.0				
		0.0				
20	0	-		(20-21') NO RECOVERY, heaving sands	SW	
End of Boring						

Boring terminated at 21' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.14' ags
Riser: 0 - 9' bgs
Screen: 9 - 21' bgs [Slot Size: 0.010"]
Sand Pack: 7 - 21' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 7' bgs [Grain Size: bentonite chips]



ARM Group LLC
Engineers and Scientists

Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 05/04/2020
Piezometer Installation Date : 05/04/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 572420.10
Easting (US ft) : 1464893.48
Static DTW : 12.42' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-015-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-015-SB-1	(0-7.1') SLAG, SAND and GRAVEL-sized with non-native SAND, medium dense to loose, brown and gray, dry grading to moist, no plasticity, no cohesion, fine gravel 0-1' bgs then fine to coarse	SW/GW	<p>1" PVC Riser</p> <p>Bentonite Seal</p> <p>Sand Pack</p> <p>1" PVC Screen</p> <p>End Cap</p> <p>Wet at 17.5' bgs</p>
	52	0.0				
		4.9	A18-015-SB-4			
		1.1				
5		-		(7.1-9') SILT, firm, grayish brown, moist, low plasticity, cohesive	ML	
		0.1				
	84	0.0				
		0.1				
10		0.0	A18-015-SB-10	(9-17.5') CLAY, hard to very firm, reddish yellow with pale brown, dry then moist at 16.2' bgs, low plasticity, cohesive	CL	
		0.0				
	100	0.0				
		0.2				
		0.0				
15		0.0		(17.5-20') SAND, fine to coarse, medium dense, reddish yellow to yellowish red, wet, no plasticity, no cohesion	SW	
		-				
	76	0.3				
		0.0				
20		0.0		(20-25') NO RECOVERY, heaving sands	SW	
		0.0				
	0	0.0				
		-				
		-				
25		-				
End of Boring						

Boring terminated at 25' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.29' ags
Riser: 0 - 10' bgs
Screen: 10 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 8 - 25' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 8' bgs [Grain Size: bentonite chips]

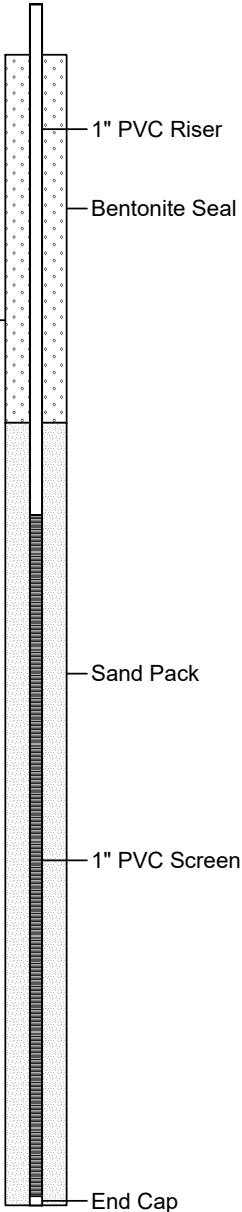


Soil Boring Installation Date	: 05/04/2020
Piezometer Installation Date	: 05/04/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572454.52
Easting (US ft)	: 1465393.18
Static DTW	: 11.35' TOC
No LNAPL or DNAPL detected at 0 or 48 hours	

Boring ID: A18-016-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS		REMARKS
0		-	A18-016-SB-1	(0-0.2') SILT, firm, trace SAND, brownish gray, dry, low plasticity, cohesive	ML		
	90	0.0		(0.2-0.5') Silty SAND, trace SLAG, loose, light brown and brown, dry, no plasticity, no cohesion	SM		
		0.3			SW/GW		
		0.0		(0.5-1.8') Non-native SAND with some SLAG GRAVEL, loose to medium dense, very dark brown, dry, no plasticity, no cohesion	SW		
		0.1	A18-016-SB-5				
5		-		(1.8-2.4') SAND, medium to very coarse, yellow and pale brown, dry, no plasticity, no cohesion	SW/GW		
	50	-					
		0.0		(2.4-9.6') Shimmery SLAG, SAND and GRAVEL sized, medium dense, black, dry, no plasticity, no cohesion, with thin yellow and pale brown SAND lenses at 4.9' bgs and 8.3' bgs			
		0.0	A18-016-SB-10				
10		0.0		(9.6-17.5') CLAY, trace SAND, soft then hard at 10' bgs, brownish gray then pale brown with reddish yellow at 10' bgs, very moist then dry at 10' bgs, low plasticity, cohesive	CL		
	100	0.0					
		0.0					
15		-					
	52	-					
		0.2		(17.5-20') SAND, very fine to medium, medium dense, pale brown and light gray then reddish yellow at 19' bgs, wet, no plasticity, no cohesion	SW		
		0.1					
20		0.1					
	0	-		(20-25') NO RECOVERY, heaving sands	NR		
		-					
		-					
		-					
25		-					
				End of Boring			



1" PVC Riser

Bentonite Seal

Sand Pack

1" PVC Screen

End Cap

Wet at 17.5' bgs

Boring terminated at 25' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.79' ags
Riser: 0 - 10' bgs
Screen: 10 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 8 - 25' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 8' bgs [Grain Size: bentonite chips]

1-10-2020 \\mdfs01\Projects\EnviroAnalytics Group\20010118 EAG Parcel A18\boring logs\2_bor Logs\A18-016-SB PZ.bor



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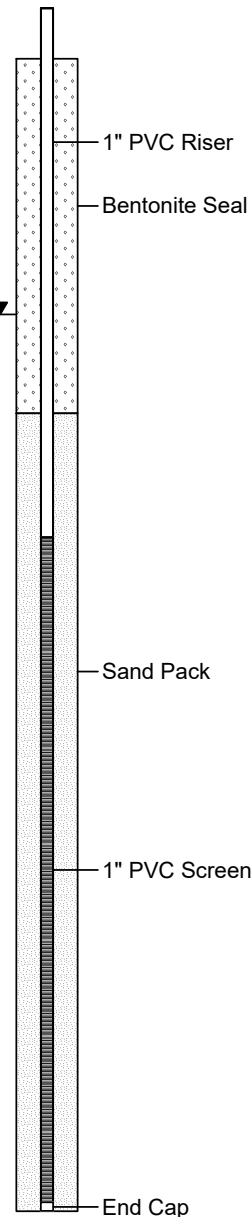
Client : Tradepoint Atlantic
ARM Project No. : 20010118
Project Description : Sparrows Point - Parcel A18
Site Location : Sparrows Point, MD
ARM Representative : L. Perrin
Checked by : M. Hritz, E.I.T.
Drilling Company : GSI
Driller : D. Marchese
Drilling Equipment : Geoprobe 7822DT

Soil Boring Installation Date : 05/04/2020
Piezometer Installation Date : 05/04/2020
Casing/Riser/Screen Type : PVC
Borehole Diameter : 2.25"
Riser/Screen Diameter : 1"
Northing (US ft) : 572366.00
Easting (US ft) : 1465040.42
Static DTW : 11.75' TOC
No LNAPL or DNAPL detected at 0 or 48 hours

Boring ID: A18-017-SB/PZ

(page 1 of 1)

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-017-SB-1	(0-5') SLAG, SAND and GRAVEL-sized with non-native SAND, medium dense, dark brown with gray, dry then very moist at depth, no plasticity, no cohesion	SW/GW	
0.4	78					
0.0						
0.0						
0.0			A18-017-SB-5			
5		0.6		(5-19') CLAY with trace SAND, hard then soft at 17.2' bgs, pale brown and reddish yellow, dry then very moist at 17.2' bgs, low plasticity, cohesive		
0.6	100					
1.8						
0.1						
0.0			A18-017-SB-10			
10		0.5			CL	
0.7	100					
0.0						
0.0						
0.0						
15		-				
-	56					
0.0						
0.0						
0.0						
20		0.0		(19-20') SAND, fine to coarse, medium dense, pale brown and yellowish red, wet, no plasticity, no cohesion	SW	
-	0			(20-26') NO RECOVERY, heaving sands	SW	
-						
-						
25		-				
0						
End of Boring						



Boring terminated at 26' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.99' ags
Riser: 0 - 11' bgs
Screen: 11 - 26' bgs [Slot Size: 0.010"]
Sand Pack: 9 - 26' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 9' bgs [Grain Size: bentonite chips]

APPENDIX C



Mr. Taylor Smith, P.E.
ARM Group, Inc.
9175 Guilford Road, Suite 310
Columbia, MD 21046

Mr. Smith:

Below are the specified surveyed wells and piezometers, date of last field work completed on August 18th, 2020. The coordinate values shown were derived from G.P.S. observations based on National Geodetic Surveys stations "GIS 1", PID AC7684 and "GIS 2", PID AC7685 which purport to be on NAD83(2011) Maryland Grid coordinate system with NAVD88 (AMSL) elevations.

<i>DESCRIPTION</i>	<i>NORTHING</i>	<i>EASTING</i>	<i>TOP ELEVATION (CASING UNLESS NOTED)</i>	<i>GROUND (NAIL SET) AT WELL/ PIEZOMETER</i>	<i>NOTES</i>
A18-002-PZ	572569.453	1465708.832	17.97	14.88	GROUND/CONCRETE /PAVEMENT*
A18-008-PZ	572661.852	1465250.001	15.66	12.56	GROUND/CONCRETE /PAVEMENT*
A18-009-PZ	574193.036	1465577.968	24.10	21.46	GROUND/CONCRETE /PAVEMENT*
A18-011-PZ	572933.288	1466166.360	15.43	11.97	GROUND/CONCRETE /PAVEMENT*
A18-013-PZ	571940.569	1463964.857	13.65	10.87	GROUND/CONCRETE /PAVEMENT*
A18-014-PZ	572384.121	1465210.618	18.29	15.07	GROUND/CONCRETE /PAVEMENT*
A18-015-PZ	572414.990	1464893.383	17.57	14.26	GROUND/CONCRETE /PAVEMENT*
A18-016-PZ	572448.780	1465393.426	17.24	14.41	GROUND/CONCRETE /PAVEMENT*
A18-017-PZ	572359.727	1465042.076	17.43	14.37	GROUND/CONCRETE /PAVEMENT*

* GROUND ELEVATION WAS SHOT AT NAIL SET OR MARKED POINT ON CONCRETE OR PAVEMENT.

APPENDIX D

Parcel A18 - PID Calibration Log

PROJECT NAME: Area A, Parcel A18 Phase II				SAMPLER NAME: L. Perrin			
PROJECT NUMBER: 20010118				DATE: April 2020 - May 2020		PAGE <u>1</u> of <u>1</u>	
DATE/TIME	SAMPLER INITIALS	PID SERIAL #	FRESH AIR CAL	STANDARD	STANDARD CONCENTRATION	METER READING	COMMENTS
4/28/2020 8:45	LLP	592-913262	0.0	Isobutylene	100 ppm	100.0	-
4/29/2020 10:10	LLP	592-913262	0.0	Isobutylene	100 ppm	100.0	-
5/1/2020 8:45	LLP	592-913262	0.0	Isobutylene	100 ppm	100.0	-
5/4/2020 8:45	LLP	592-913262	0.0	Isobutylene	100 ppm	100.0	-

APPENDIX E

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A18 Phase II
Well Number: A18-002-PZ
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 12.95
Product Thickness (ft): NA
Depth to Bottom (ft): 18.70

Project Number: 20010118
Date: 6/9/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 40
Condition of Pad/Cover:

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1141	0.2	12.95	30.24	6.84	—	2.26	138	overrange	
									Horrible was leaking
1146	0.7	12.97	29.74	5.59	0.503	1.16	163	overrange	
1151	1.2	12.97	29.22	5.48	0.504	0.73	183	overrange	
1156	1.7	12.97	27.83	5.22	0.541	0.69	170	overrange	
1201	2.1	12.97	27.99	5.31	0.538	0.66	164	overrange	
1206	2.5	12.97	28.27	5.32	0.542	0.65	164	215.1	
1211	2.8	12.97	28.53	5.31	0.541	0.63	165	121.8	
1216	3.1	12.97	28.79	5.41	0.540	0.80	161	88.6	
1221	3.4	12.97	28.84	5.47	0.540	0.93	158	61.0	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-002-PZ	1230	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2 - 1 L Amber	none	Y
		Oil & Grease	2 - 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A18 Phase II
Well Number: A18-008-P2
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 11.66
Product Thickness (ft): NA
Depth to Bottom (ft): 21.40

Project Number: 20010118
Date: 7/7/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 40
Condition of Pad/Cover: 1

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1321	0.1	11.72	25.72	5.39	0.586	2.01	43	overrange	
1326	0.6	11.72	24.98	5.38	0.589	1.29	48	overrange	
1331	1.1	11.72	23.81	5.34	0.601	0.84	54	89.4	
1336	1.6	11.73	23.64	5.32	0.602	0.73	58	70.7	
1341	2.1	11.73	23.96	5.28	0.598	0.61	64	57.8	
1346	2.6	11.73	19.56	5.17	0.667	0.68	72	44.7	
1351	3.1	11.73	19.23	5.08	0.680	0.65	80	35.1	
1356	3.6	11.73	20.49	5.01	0.669	0.53	90	23.5	
1401	4.1	11.73	21.30	4.98	0.652	0.42	98	19.4	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-008-P2	1410	TCL-VOCs	3 - 40 mL VOA	HCl	y
		TPH-GRO	3 - 40 mL VOA	HCl	y
		TPH-DRO	2 - 1 L Amber	none	y
		TCL-SVOCs	2- 1 L Amber	none	y
		Oil & Grease	2- 1 L Amber	HCl	y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: temp A18 phase II
Well Number: A18-009-P2
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 18.33
Product Thickness (ft): NA
Depth to Bottom (ft): 26.98

Project Number: 20010118
Date: 7/7/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 25
Condition of Pad/Cover:

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1154	0.1	19.45	24.16	7.63	0.586	3.72	-10	210.1	
1159	0.6	19.45	24.14	6.65	0.572	2.19	90	60.9	
1204	1.1	19.45	24.20	6.60	0.570	2.64	109	51.5	
1209	1.6	19.45	23.92	6.56	0.573	2.54	120	49.7	
1214	2.1	19.45	24.46	6.56	0.563	2.38	127	52.0	
1219	2.6	19.45	23.97	6.55	0.572	2.39	128	53.9	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-009-P2	1220	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: AlB Phase II
Well Number: A18-011-PZ
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 13.02
Product Thickness (ft): NA
Depth to Bottom (ft): 17.66

Project Number: 20010118
Date: 7/9/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 25
Condition of Pad/Cover: 1

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1421	0.1	13.02	27.92	11.29	0.689	5.80	-101	24.6	
1426	0.5	13.02	26.77	11.14	0.706	3.92	-120	15.4	
1431	0.9	13.02	26.02	11.15	0.709	3.83	-115	7.96	
1436	1.3	13.02	26.35	11.14	0.703	3.49	-113	4.98	
1441	1.7	13.02	26.46	11.16	0.698	3.70	-113	4.02	
1446	2.1	13.02	26.64	11.17	0.691	3.60	-114	2.11	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-011-PZ	1455	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LUP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.

Earth Resource Engineers and Consultants

Project Name: A18 Phase II
Well Number: A18-013-P2
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 12.33
Product Thickness (ft): NA
Depth to Bottom (ft): 17.51

Project Number: 20010118
Date: 7/9/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 25
Condition of Pad/Cover:

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
935	0.2	12.80	25.90	6.70	0.436	4.51	-86	172.3	
940	0.7	12.83	26.33	6.78	0.410	4.25	-96	89.5	
945	1.2	12.83	26.84	6.84	0.394	4.21	-98	33.7	
950	1.6	12.83	27.13	6.86	0.386	4.08	-98	10.7	
955	2.0	12.83	27.31	6.87	0.382	4.12	-97	9.3	
1000	2.4	12.83	27.49	6.89	0.379	4.10	-97	8.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-013-P2	1005	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A18 Phase 2

Project Number: 20010118

Well Number: A18-014-P2

Date: 7/8/20

Well Diameter (in): 1

One Well Volume (gal):

Depth to Product (ft): NA

QED Controller Settings:

Depth to Water (ft): 13.30

Flow Rate (mL/min)

Product Thickness (ft): NA

Length of time Purged (min) 40

Depth to Bottom (ft): 24.15

Condition of Pad/Cover: 1

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
846	0.1	13.31	21.86	4.55	0.601	4.88	136	average	
851	0.6	13.31	21.42	4.59	0.586	1.89	99	average	
856	1.1	13.32	21.96	4.37	0.577	1.04	100	215.1	
901	1.6	13.32	22.09	4.45	0.575	0.90	92	89.7	
906	2.1	13.32	22.26	4.35	0.570	0.80	97	78.0	
911	2.6	13.32	22.04	4.91	0.582	0.71	83	80.5	
916	3.1	13.32	21.98	4.93	0.585	0.73	79	46.1	
921	3.6	13.32	21.96	4.94	0.588	0.70	74	39.5	
926	4.1	13.32	21.96	4.95	0.588	0.66	70	26.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-014-P2	926	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					Y
Duplicate					N

Sampled By: LP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: 19 Phase II
Well Number: A18-015-PZ
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 13.17
Product Thickness (ft): NA
Depth to Bottom (ft): 21.90

Project Number: 20010118
Date: 7/7/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 30
Condition of Pad/Cover: 1

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1506	0.25	13.18	27.30	5.50	0.509	1.04	74	overrange	
1511	0.75	13.19	27.40	5.35	0.503	0.75	98	107.1	
1516	1.25	13.19	27.81	5.33	0.507	0.57	103	67.5	
1521	1.75	13.19	28.30	5.36	0.505	0.49	106	59.7	
1526	2.25	13.20	28.50	5.43	0.500	0.49	106	52.1	
1531	2.75	13.20	28.54	5.45	0.499	0.48	106	50.3	
1536	3.25	13.20	28.60	5.46	0.497	0.48	107	49.6	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-015-PZ	1550 1350	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling Permanent Wells



ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A18 phase II
Well Number: A18-016-PZ
Well Diameter (in): 1
Depth to Product (ft): NA
Depth to Water (ft): 12.12
Product Thickness (ft): NA
Depth to Bottom (ft): 26.13

Project Number: 20010118
Date: 7/8/20
One Well Volume (gal):
QED Controller Settings:
Flow Rate (mL/min):
Length of time Purged (min): 40
Condition of Pad/Cover:

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1406	0.2	12.27	29.85	6.35	0.345	4.91	37	overrange	
1411	0.7	12.30	30.02	6.35	0.345	1.98	60	overrange	
1416	1.2	12.31	30.40	6.30	0.353	1.33	79	overrange	
1421	1.7	12.31	29.90	6.64	0.306	1.07	-16	144.2	
1426	2.2	12.31	30.58	6.65	0.307	1.03	18	98.4	
1431	2.7	12.31	31.25	6.74	0.295	0.91	-15	74.7	
1436	3.2	12.31	31.63	6.78	0.292	1.02	15	68.1	
1441	3.7	12.31	31.84	6.64	0.278	0.86	-34	60.3	
1446	4.2	12.31	31.93	6.74	0.277	0.84	-28	55.2	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-016-PZ	1500	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: CUP

Comments:

purged for 30 min prior

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

Low Flow Sampling

Permanent Wells



ARM Group Inc.

Earth Resource Engineers and Consultants

Project Name: A18 Phase II

Project Number: 20010118

Well Number: A18-017-P2

Date: 7/8/20

Well Diameter (in): 1

One Well Volume (gal):

Depth to Product (ft): NA

QED Controller Settings:

Depth to Water (ft): 12.64

Flow Rate (mL/min)

Product Thickness (ft): NA

Length of time Purged (min) 40+

Depth to Bottom (ft): 28.00

Condition of Pad/Cover:

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1036	0.1	12.67	27.33	5.25	0.446	2.74	123	overrange	
1041	0.7	12.67	26.94	4.52	0.444	0.89	106	139.3	
1046	1.3	12.67	26.82	4.35	0.441	0.72	100	49.8	
1051	2.0	12.67	26.77	4.23	0.444	0.60	84	32.3	
1056	2.7	12.67	25.98	5.04	0.475	0.52	87	28.7	
1101	3.4	12.67	26.57	4.84	0.471	0.46	89	22.1	
1106	4.1	12.67	25.99	4.99	0.535	0.48	122	overrange	
1111	4.8	12.67	26.84	4.96	0.527	0.39	130	overrange	
1116	5.5	12.67	27.14	4.95	0.522	0.39	129	overrange	
Purged longer to clear turbidity									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-017-P2	1120	TCL-VOCs	3 - 40 mL VOA	HCl	y
		TPH-GRO	3 - 40 mL VOA	HCl	y
		TPH-DRO	2 - 1 L Amber	none	y
		TCL-SVOCs	2 - 1 L Amber	none	y
		Oil & Grease	2 - 1 L Amber	HCl	y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	y
		Field Filtered			
		Hexavalent Chromium (Dissolved)	1 - 250 mL Plastic	none	y
		Field Filtered			
		PCB	2 - 1 L Amber	None	N

Matrix Spike

Duplicate

Sampled By: WLP

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
ft x gal/ft = (gal)

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Area B Parcel A18 Phase II Date 07-07-20
 Weather 90s, Sunny
 Calibrated by L. Perrin Instrument (Serial Number) Horiba U-52 (2BOMSAX4)
Lamotte 2020t (1223-1319)

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard 4.49 uS/cm	4.49	77 F	-	90 F [‡]
Specific Conductance Standard #2	-		-	
pH (7)	-		-	
pH (4)	4.01		-	
pH(10)	-		-	
ORP Zobel Solution (240 mV)	-		-	
Dissolved Oxygen 100% water saturated air mg/L	8.98 [‡]		-	
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	-		-	
Barometric Pressure mm Hg	779.78		-	
Turbidity #1 (0 NTU)	0.0		-	
Turbidity #2 (1 NTU)	1.0		-	
Turbidity #3 (10 NTU)	10		-	

[‡]Dissolved Oxygen were outside of the calibration acceptance criteria. Temperature is an estimate. Values displayed on field purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Area B Parcel A18 Phase II Date 07-08-20
 Weather 90s, Sunny
 Calibrated by L. Perrin Instrument (Serial Number) Horiba U-52 (2BOMSAX4)
Lamotte 2020t (1223-1319)

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard 4.49 uS/cm	4.48	76 F	-	90 F [‡]
Specific Conductance Standard #2	-		-	
pH (7)	-		-	
pH (4)	4.00		-	
pH(10)	-		-	
ORP Zobel Solution (240 mV)	-		-	
Dissolved Oxygen 100% water saturated air mg/L	9.51 [‡]		-	
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	-		-	
Barometric Pressure mm Hg	762.51		-	
Turbidity #1 (0 NTU)	0.0		-	
Turbidity #2 (1 NTU)	1.0		-	
Turbidity #3 (10 NTU)	10		-	

[‡]Dissolved Oxygen were outside of the calibration acceptance criteria. Temperature is an estimate. Values displayed on field purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Area B Parcel A18 Phase II Date 07-09-20
 Weather 90s, Sunny
 Calibrated by L. Perrin Instrument (Serial Number) Horiba U-52 (2BOMSAX4)
Lamotte 2020t (1223-1319)

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard 4.49 uS/cm	4.49	78 F	-	90 F [‡]
Specific Conductance Standard #2	-		-	
pH (7)	-		-	
pH (4)	4.00		-	
pH(10)	-		-	
ORP Zobel Solution (240 mV)	-		-	
Dissolved Oxygen 100% water saturated air mg/L	9.41 [‡]		-	
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	-		-	
Barometric Pressure mm Hg	761.75		-	
Turbidity #1 (0 NTU)	0.0		-	
Turbidity #2 (1 NTU)	1.0		-	
Turbidity #3 (10 NTU)	10		-	

[‡]Dissolved Oxygen were outside of the calibration acceptance criteria. Temperature is an estimate. Values displayed on field purge logs may be inaccurate.

APPENDIX F

Parcel A18 - IDW Drum Log

Drum Identification Number	Designation	Activity/Phase	Contents	Open Date
1391-Decon water-4/14/20-B24/A14/A18/A17/B20/B22/B19	Non-Haz	Parcel A18 Phase II Investigation	Water	4/14/2020
1395-PPE-4/22/20-A14/A18	Non-Haz	Parcel A14 Phase II Investigation	PPE	4/22/2020
1396-Soil-4/28/20-A18	Non-Haz	Parcel A18 Phase II Investigation	Soil	4/28/2020
1397-Nitric Acid-4/20/20-A14/B24/A18/A17/B20	Non-Haz	Parcel A18 Phase II Investigation	Nitric Acid	4/20/2020
1398-Liners-4/28/20-A18	Non-Haz	Parcel A18 Phase II Investigation	Liners	4/28/2020
1416-Purge Water-7/7/20-A18/B20	Non-Haz	Parcel A18 Phase II Investigation	Water	7/7/2020

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QA/QC Tracking Log

<u>Trip</u>	<u>Blank:</u>	<u>Date:</u>	<u>Sample IDs:</u>	
TB1			1) A18-013-SB-1	
TB2	4/28/2020		2) A18-013-SB-5	
			3) A18-007-SB-1	
			4) A18-007-SB-4	
			5) A18-006-SB-1	
			6) A18-006-SB-5	
			7) A18-006-SB-10	<u>Duplicate:</u> A18-007-SB-4
			8) A18-008-SB-1	<u>Date:</u> 4/28/2020
			9) A18-008-SB-5	<u>MS/MSD:</u> A18-012-SB-5
			10) A18-008-SB-10	<u>Date:</u> 4/29/2020
			11) A18-004-SB-1	<u>Field Blank:</u>
TB1	4/29/2020		12) A18-009-SB-1	<u>Date:</u> 4/28/2020
			13) A18-009-SB-5	<u>Eq. Blank:</u>
			14) A18-009-SB-10	<u>Date:</u> 4/28/2020
			15) A18-012-SB-1	
			16) A18-012-SB-5	
			17) A18-012-SB-10	
			18) A18-005-SB-1	
TB1	5/1/2020		19) A18-010-SB-1	
			20) A18-011-SB-1	

<u>Trip</u>	<u>Date:</u>	<u>Sample IDs:</u>
TB1	5/4/2020	1) A18-014-SB-5
		2) A18-014-SB-10
TB1&2	5/7/2020	3) A18-019-SD
TB1&2	5/13/2020	4) A18-021-SD-1
		5) A18-020-SD-1
		6) A18-018-SD-1
		7)
		8)
		9)
		10)
		11)
		12)
		13)
		14)
		15)
		16)
		17)
		18)
		19)
		20)

TB1	5/1/2020	1) A18-011-SB-5		
		2) A18-003-SB-1		
		3) A18-003-SB-5		
		4) A18-003-SB-10		
		5) A18-002-SB-1		
		6) A18-002-SB-5		
		7) A18-002-SB-10		<u>Duplicate:</u> A18-001-SB-1
		8) A18-001-SB-1		Date: 5/1/2020
		9) A18-001-SB-5		<u>MS/MSD:</u> A10-002-SB-5
		10) A18-001-SB-10		Date: 5/1/2020
TB1	5/4/2020	11) A18-015-SB-1	<u>Field Blank:</u>	
		12) A18-015-SB-4	Date: 5/1/2020	
		13) A18-015-SB-10	<u>Eq. Blank:</u>	
		14) A18-017-SB-1	Date: 5/1/2020	
		15) A18-017-SB-5		
		16) A18-017-SB-10		
		17) A18-016-SB-1		
		18) A18-016-SB-5		
		19) A18-016-SB-10		
		20) A18-014-SB-1		

	4/29/2020	1) A18-009-SB-1	QA/QC for PAH Soil Data
		2) A18-009-SB-5	
		3) A18-009-SB-10	
		4) A18-012-SB-1	
		5) A18-012-SB-5	
		6) A18-012-SB-10	
	5/1/2020	7) A18-010-SB-1	<u>Duplicate:</u> A18-012-SB-1
		8) A18-011-SB-1	Date: 4/29/2020
		9) A18-011-SB-5	<u>MS/MSD:</u> A18-015-SB-1
		10) A18-003-SB-1	Date: 4/29/2020
		11) A18-003-SB-5	<u>Field Blank:</u>
		12) A18-003-SB-10	Date: 5/1/2020
		13) A18-002-SB-1	<u>Eq. Blank:</u>
		14) A18-002-SB-5	Date: 5/1/2020
	5/4/2020	15) A18-002-SB-10	
		16) A18-015-SB-1	
		17) A18-015-SB-4	
		18) A18-015-SB-10	
		19) A18-017-SB-1	
		20) A18-017-SB-5	

Soil samples with a sustained PID reading of 10 ppm or greater were collected for VOCs. VOC samples were placed in a cooler with a trip blank.

QA/QC Tracking Log

<u>Trip</u> Blank:	<u>Date:</u>	<u>Sample IDs:</u>	
	5/4/2020	1) A18-017-SB-10	QA/QC for PAH Soil Data
		2) A18-016-SB-1	
		3) A18-016-SB-5	
		4) A18-016-SB-10	
		5) A18-014-SB-1	
		6) A18-014-SB-5	
		7) A18-014-SB-10	
	5/7/2020	8) A18-019-SD	Duplicate: A8-016-SB-1 Date: 5/4/2020
	5/13/2020	9) A18-021-SD-1	MS/MSD: A18-016-SB-5
		10) A18-020-SD-1	Date: 5/4/2020
		11) A18-018-SD-1	Field Blank:
		12)	Date: 5/4/2020
		13)	Eq. Blank:
		14)	Date: 5/4/2020
		15)	
		16)	
		17)	
		18)	
		19)	
		20)	

<u>Trip</u> Blank:	<u>Date:</u>	<u>Sample IDs:</u>	
		1)	
		2)	
		3)	
		4)	
		5)	
		6)	
		7)	Duplicate:
		8)	Date:
		9)	MS/MSD:
		10)	Date:
		11)	Field Blank:
		12)	Date:
		13)	Eq. Blank:
		14)	Date:
		15)	
		16)	
		17)	
		18)	
		19)	
		20)	

TB1	7/7/2020	1) A18-009-PZ	QA/QC for all groundwater samples
		2) A18-008-PZ	
		3) A18-015-PZ	
TB1	7/8/2020	4) A18-014-PZ	
		5) A18-017-PZ	
		6) A18-016-PZ	
TB1	7/9/2020	7) A18-013-PZ	Duplicate: A18-017-PZ
		8) A18-002-PZ	Date: 7/8/2020
		9) A18-011-PZ	MS/MSD: A18-014-PZ
		10)	Date: 7/8/2020
		11)	Field Blank:
		12)	Date: 7/8/2020
		13)	Eq. Blank:
		14)	Date:
		15)	
		16)	
		17)	
		18)	
		19)	
		20)	

		1)	
		2)	
		3)	
		4)	
		5)	
		6)	
		7)	Duplicate:
		8)	Date:
		9)	MS/MSD:
		10)	Date:
		11)	Field Blank:
		12)	Date:
		13)	Eq. Blank:
		14)	Date:
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APPENDIX H

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EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Cyanide	CN	Soil	mg/kg	20	20	0	20	100.00%
Aluminum	Metal	Soil	mg/kg	20	20	0	20	100.00%
Antimony	Metal	Soil	mg/kg	20	0	0	20	100.00%
Arsenic	Metal	Soil	mg/kg	23	14	0	23	100.00%
Barium	Metal	Soil	mg/kg	20	20	0	20	100.00%
Beryllium	Metal	Soil	mg/kg	20	18	0	20	100.00%
Cadmium	Metal	Soil	mg/kg	20	15	0	20	100.00%
Chromium	Metal	Soil	mg/kg	20	20	0	20	100.00%
Chromium VI	Metal	Soil	mg/kg	20	2	0	20	100.00%
Cobalt	Metal	Soil	mg/kg	20	19	0	20	100.00%
Copper	Metal	Soil	mg/kg	20	20	0	20	100.00%
Iron	Metal	Soil	mg/kg	20	20	0	20	100.00%
Lead	Metal	Soil	mg/kg	20	20	0	20	100.00%
Manganese	Metal	Soil	mg/kg	21	21	0	21	100.00%
Mercury	Metal	Soil	mg/kg	20	13	0	20	100.00%
Nickel	Metal	Soil	mg/kg	20	20	0	20	100.00%
Selenium	Metal	Soil	mg/kg	20	3	0	20	100.00%
Silver	Metal	Soil	mg/kg	20	0	0	20	100.00%
Thallium	Metal	Soil	mg/kg	20	4	0	20	100.00%
Vanadium	Metal	Soil	mg/kg	20	20	0	20	100.00%
Zinc	Metal	Soil	mg/kg	20	20	0	20	100.00%
Aroclor 1016	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1221	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1232	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1242	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1248	PCB	Soil	mg/kg	12	1	0	12	100.00%
Aroclor 1254	PCB	Soil	mg/kg	12	1	0	12	100.00%
Aroclor 1260	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1262	PCB	Soil	mg/kg	12	0	0	12	100.00%
Aroclor 1268	PCB	Soil	mg/kg	12	1	0	12	100.00%
PCBs (total)	PCB	Soil	mg/kg	12	0	0	12	100.00%
1,1-Biphenyl	SVOC	Soil	mg/kg	20	4	0	20	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Soil	mg/kg	20	0	0	20	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
2,4,5-Trichlorophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
2,4,6-Trichlorophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
2,4-Dichlorophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
2,4-Dimethylphenol	SVOC	Soil	mg/kg	20	1	2	18	90.00%
2,4-Dinitrophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
2,4-Dinitrotoluene	SVOC	Soil	mg/kg	20	1	0	20	100.00%
2,6-Dinitrotoluene	SVOC	Soil	mg/kg	20	0	0	20	100.00%
2-Chloronaphthalene	SVOC	Soil	mg/kg	20	1	0	20	100.00%
2-Chlorophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
2-Methylnaphthalene	SVOC	Soil	mg/kg	20	15	0	20	100.00%
2-Methylphenol	SVOC	Soil	mg/kg	20	1	2	18	90.00%
2-Nitroaniline	SVOC	Soil	mg/kg	20	0	0	20	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Soil	mg/kg	20	2	2	18	90.00%
3,3'-Dichlorobenzidine	SVOC	Soil	mg/kg	20	0	0	20	100.00%
4-Chloroaniline	SVOC	Soil	mg/kg	20	0	0	20	100.00%
4-Nitroaniline	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Acenaphthene	SVOC	Soil	mg/kg	20	14	0	20	100.00%
Acenaphthylene	SVOC	Soil	mg/kg	20	16	0	20	100.00%
Acetophenone	SVOC	Soil	mg/kg	20	1	0	20	100.00%
Anthracene	SVOC	Soil	mg/kg	20	18	0	20	100.00%
Benz[a]anthracene	SVOC	Soil	mg/kg	20	18	0	20	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Benzaldehyde	SVOC	Soil	mg/kg	20	4	0	20	100.00%
Benzo[a]pyrene	SVOC	Soil	mg/kg	21	20	0	21	100.00%
Benzo[b]fluoranthene	SVOC	Soil	mg/kg	20	18	0	20	100.00%
Benzo[g,h,i]perylene	SVOC	Soil	mg/kg	20	19	0	20	100.00%
Benzo[k]fluoranthene	SVOC	Soil	mg/kg	20	19	0	20	100.00%
bis(2-chloroethoxy)methane	SVOC	Soil	mg/kg	20	0	0	20	100.00%
bis(2-Chloroethyl)ether	SVOC	Soil	mg/kg	20	0	0	20	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Soil	mg/kg	20	0	0	20	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Caprolactam	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Carbazole	SVOC	Soil	mg/kg	20	7	0	20	100.00%
Chrysene	SVOC	Soil	mg/kg	20	18	0	20	100.00%
Dibenz[a,h]anthracene	SVOC	Soil	mg/kg	20	19	0	20	100.00%
Diethylphthalate	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Di-n-butylphthalate	SVOC	Soil	mg/kg	20	8	0	20	100.00%
Di-n-octylphthalate	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Fluoranthene	SVOC	Soil	mg/kg	20	18	0	20	100.00%
Fluorene	SVOC	Soil	mg/kg	20	14	0	20	100.00%
Hexachlorobenzene	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Hexachlorobutadiene	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Hexachlorocyclopentadiene	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Hexachloroethane	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Soil	mg/kg	20	20	0	20	100.00%
Isophorone	SVOC	Soil	mg/kg	20	0	0	20	100.00%
Naphthalene	SVOC	Soil	mg/kg	20	16	0	20	100.00%
Nitrobenzene	SVOC	Soil	mg/kg	20	0	0	20	100.00%
N-Nitroso-di-n-propylamine	SVOC	Soil	mg/kg	20	0	0	20	100.00%
N-Nitrosodiphenylamine	SVOC	Soil	mg/kg	20	1	0	20	100.00%
Pentachlorophenol	SVOC	Soil	mg/kg	20	0	2	18	90.00%
Phenanthrene	SVOC	Soil	mg/kg	20	17	0	20	100.00%
Phenol	SVOC	Soil	mg/kg	20	2	2	18	90.00%
Pyrene	SVOC	Soil	mg/kg	20	18	0	20	100.00%
Diesel Range Organics	TPH	Soil	mg/kg	20	19	0	20	100.00%
Gasoline Range Organics	TPH	Soil	mg/kg	20	0	0	20	100.00%
Oil and Grease	TPH	Soil	mg/kg	20	20	0	20	100.00%
1,1,1-Trichloroethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,1,2,2-Tetrachloroethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,1,2-Trichloro-1,2,2-	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,1,2-Trichloroethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,1-Dichloroethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,1-Dichloroethene	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2,3-Trichlorobenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2,4-Trichlorobenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2-Dibromo-3-chloropropane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2-Dibromoethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2-Dichlorobenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2-Dichloroethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2-Dichloroethene (Total)	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,2-Dichloropropane	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,3-Dichlorobenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,4-Dichlorobenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
2-Butanone (MEK)	VOC	Soil	mg/kg	6	0	0	6	100.00%
2-Hexanone	VOC	Soil	mg/kg	6	0	0	6	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Soil	mg/kg	6	0	0	6	100.00%
Acetone	VOC	Soil	mg/kg	6	0	0	6	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Benzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Bromodichloromethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Bromoform	VOC	Soil	mg/kg	6	0	0	6	100.00%
Bromomethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Carbon disulfide	VOC	Soil	mg/kg	6	1	0	6	100.00%
Carbon tetrachloride	VOC	Soil	mg/kg	6	0	0	6	100.00%
Chlorobenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Chloroethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Chloroform	VOC	Soil	mg/kg	6	0	0	6	100.00%
Chloromethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
cis-1,2-Dichloroethene	VOC	Soil	mg/kg	6	0	0	6	100.00%
cis-1,3-Dichloropropene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Cyclohexane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Dibromochloromethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Dichlorodifluoromethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Ethylbenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Isopropylbenzene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Methyl Acetate	VOC	Soil	mg/kg	6	0	0	6	100.00%
Methyl tert-butyl ether (MTBE)	VOC	Soil	mg/kg	6	0	0	6	100.00%
Methylene Chloride	VOC	Soil	mg/kg	6	0	0	6	100.00%
Styrene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Tetrachloroethene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Toluene	VOC	Soil	mg/kg	6	1	0	6	100.00%
trans-1,2-Dichloroethene	VOC	Soil	mg/kg	6	0	0	6	100.00%
trans-1,3-Dichloropropene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Trichloroethene	VOC	Soil	mg/kg	6	0	0	6	100.00%
Trichlorofluoromethane	VOC	Soil	mg/kg	6	0	0	6	100.00%
Vinyl chloride	VOC	Soil	mg/kg	6	0	0	6	100.00%
Xylenes	VOC	Soil	mg/kg	6	0	0	6	100.00%
1,4-Dioxane	VOC/SVOC	Soil	mg/kg	6	0	6	0	0.00%
Cyanide	CN	Water	ug/L	3	0	0	3	100.00%
Aluminum	Metal	Water	ug/L	3	3	0	3	100.00%
Antimony	Metal	Water	ug/L	3	0	0	3	100.00%
Arsenic	Metal	Water	ug/L	3	0	0	3	100.00%
Barium	Metal	Water	ug/L	3	3	0	3	100.00%
Beryllium	Metal	Water	ug/L	3	2	0	3	100.00%
Cadmium	Metal	Water	ug/L	3	3	0	3	100.00%
Chromium	Metal	Water	ug/L	3	0	0	3	100.00%
Chromium VI	Metal	Water	ug/L	3	0	0	3	100.00%
Cobalt	Metal	Water	ug/L	3	3	0	3	100.00%
Copper	Metal	Water	ug/L	3	0	0	3	100.00%
Iron	Metal	Water	ug/L	3	3	0	3	100.00%
Lead	Metal	Water	ug/L	3	0	0	3	100.00%
Manganese	Metal	Water	ug/L	3	3	0	3	100.00%
Mercury	Metal	Water	ug/L	3	0	0	3	100.00%
Nickel	Metal	Water	ug/L	3	3	0	3	100.00%
Selenium	Metal	Water	ug/L	3	0	0	3	100.00%
Silver	Metal	Water	ug/L	3	0	0	3	100.00%
Thallium	Metal	Water	ug/L	3	0	0	3	100.00%
Vanadium	Metal	Water	ug/L	3	2	0	3	100.00%
Zinc	Metal	Water	ug/L	3	3	0	3	100.00%
1,1-Biphenyl	SVOC	Water	ug/L	3	0	0	3	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Water	ug/L	3	0	0	3	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4,5-Trichlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
2,4,6-Trichlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dichlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dimethylphenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dinitrophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2,4-Dinitrotoluene	SVOC	Water	ug/L	3	0	0	3	100.00%
2,6-Dinitrotoluene	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Chloronaphthalene	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Chlorophenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Methylnaphthalene	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Methylphenol	SVOC	Water	ug/L	3	0	0	3	100.00%
2-Nitroaniline	SVOC	Water	ug/L	3	0	0	3	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Water	ug/L	3	0	0	3	100.00%
3,3'-Dichlorobenzidine	SVOC	Water	ug/L	3	0	1	2	66.67%
4-Chloroaniline	SVOC	Water	ug/L	3	0	0	3	100.00%
4-Nitroaniline	SVOC	Water	ug/L	3	0	0	3	100.00%
Acenaphthene	SVOC	Water	ug/L	3	0	0	3	100.00%
Acenaphthylene	SVOC	Water	ug/L	3	0	0	3	100.00%
Acetophenone	SVOC	Water	ug/L	3	0	0	3	100.00%
Anthracene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benz[a]anthracene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzaldehyde	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[a]pyrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[b]fluoranthene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[g,h,i]perylene	SVOC	Water	ug/L	3	0	0	3	100.00%
Benzo[k]fluoranthene	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-chloroethoxy)methane	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-Chloroethyl)ether	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Water	ug/L	3	0	0	3	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Caprolactam	SVOC	Water	ug/L	3	0	0	3	100.00%
Carbazole	SVOC	Water	ug/L	3	0	0	3	100.00%
Chrysene	SVOC	Water	ug/L	3	0	0	3	100.00%
Dibenz[a,h]anthracene	SVOC	Water	ug/L	3	0	0	3	100.00%
Diethylphthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Di-n-butylphthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Di-n-octylphthalate	SVOC	Water	ug/L	3	0	0	3	100.00%
Fluoranthene	SVOC	Water	ug/L	3	0	0	3	100.00%
Fluorene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachlorobenzene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachlorobutadiene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachlorocyclopentadiene	SVOC	Water	ug/L	3	0	0	3	100.00%
Hexachloroethane	SVOC	Water	ug/L	3	0	0	3	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Isophorone	SVOC	Water	ug/L	3	0	0	3	100.00%
Naphthalene	SVOC	Water	ug/L	3	0	0	3	100.00%
Nitrobenzene	SVOC	Water	ug/L	3	0	0	3	100.00%
N-Nitroso-di-n-propylamine	SVOC	Water	ug/L	3	0	0	3	100.00%
N-Nitrosodiphenylamine	SVOC	Water	ug/L	3	0	0	3	100.00%
Pentachlorophenol	SVOC	Water	ug/L	3	1	0	3	100.00%
Phenanthrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Phenol	SVOC	Water	ug/L	3	0	0	3	100.00%
Pyrene	SVOC	Water	ug/L	3	0	0	3	100.00%
Diesel Range Organics	TPH	Water	ug/L	3	3	0	3	100.00%
Gasoline Range Organics	TPH	Water	ug/L	3	0	0	3	100.00%
Oil and Grease	TPH	Water	ug/L	3	0	0	3	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Validated Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
1,1,1-Trichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1,2,2-Tetrachloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1,2-Trichloro-1,2,2-	VOC	Water	ug/L	3	0	0	3	100.00%
1,1,2-Trichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1-Dichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,1-Dichloroethene	VOC	Water	ug/L	3	1	0	3	100.00%
1,2,3-Trichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2,4-Trichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dibromo-3-chloropropane	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dibromoethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
1,2-Dichloroethene (Total)	VOC	Water	ug/L	3	1	0	3	100.00%
1,2-Dichloropropane	VOC	Water	ug/L	3	0	0	3	100.00%
1,3-Dichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
1,4-Dichlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
2-Butanone (MEK)	VOC	Water	ug/L	3	0	0	3	100.00%
2-Hexanone	VOC	Water	ug/L	3	0	0	3	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Water	ug/L	3	0	0	3	100.00%
Acetone	VOC	Water	ug/L	3	0	0	3	100.00%
Benzene	VOC	Water	ug/L	3	0	0	3	100.00%
Bromodichloromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Bromoform	VOC	Water	ug/L	3	0	0	3	100.00%
Bromomethane	VOC	Water	ug/L	3	0	0	3	100.00%
Carbon disulfide	VOC	Water	ug/L	3	0	0	3	100.00%
Carbon tetrachloride	VOC	Water	ug/L	3	0	0	3	100.00%
Chlorobenzene	VOC	Water	ug/L	3	0	0	3	100.00%
Chloroethane	VOC	Water	ug/L	3	0	0	3	100.00%
Chloroform	VOC	Water	ug/L	3	0	0	3	100.00%
Chloromethane	VOC	Water	ug/L	3	0	0	3	100.00%
cis-1,2-Dichloroethene	VOC	Water	ug/L	3	1	0	3	100.00%
cis-1,3-Dichloropropene	VOC	Water	ug/L	3	0	0	3	100.00%
Cyclohexane	VOC	Water	ug/L	3	0	0	3	100.00%
Dibromochloromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Dichlorodifluoromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Ethylbenzene	VOC	Water	ug/L	3	0	0	3	100.00%
Isopropylbenzene	VOC	Water	ug/L	3	0	0	3	100.00%
Methyl Acetate	VOC	Water	ug/L	3	0	0	3	100.00%
Methyl tert-butyl ether (MTBE)	VOC	Water	ug/L	3	0	0	3	100.00%
Methylene Chloride	VOC	Water	ug/L	3	0	0	3	100.00%
Styrene	VOC	Water	ug/L	3	0	0	3	100.00%
Tetrachloroethene	VOC	Water	ug/L	3	2	0	3	100.00%
Toluene	VOC	Water	ug/L	3	0	0	3	100.00%
trans-1,2-Dichloroethene	VOC	Water	ug/L	3	0	0	3	100.00%
trans-1,3-Dichloropropene	VOC	Water	ug/L	3	0	0	3	100.00%
Trichloroethene	VOC	Water	ug/L	3	2	0	3	100.00%
Trichlorofluoromethane	VOC	Water	ug/L	3	0	0	3	100.00%
Vinyl chloride	VOC	Water	ug/L	3	0	0	3	100.00%
Xylenes	VOC	Water	ug/L	3	0	0	3	100.00%
1,4-Dioxane	VOC/SVOC	Water	ug/L	3	3	0	3	100.00%

Data validation has been completed for a representative 30% of all samples