ARM Group LLC
Engineers and Scientists

January 6, 2020

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

Re: No. 10 Tank Area Investigation Report
Area B: Parcel B18
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown,

The No. 10 Fuel Oil Storage Tank was a former aboveground storage tank (AST) located along the western perimeter of Parcel B18 (the Site) of the Tradepoint Atlantic property located in Sparrows Point, Maryland. According to the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants dated May 19, 2014, the No. 10 Fuel Oil Storage Tank was used for storing No. 6 fuel oil and was therefore identified as a potential source of petroleum impacts to soil and groundwater. The No. 10 Fuel Oil Storage Tank was identified as a Recognized Environmental Condition (REC 8B, Finding 202). The No. 11 Fuel Oil Storage Tank that was located to the southeast of the No. 10 Fuel Oil Storage Tank was not classified by Weaver Boos as a REC, but soil and groundwater conditions in its vicinity have also been observed to be impacted during the field investigations completed to date. The AST locations are shown on **Figure 1**. Each AST is estimated to have had a capacity of 2.3 million gallons.

Following the initiation of Phase II Investigation work in Parcel B18 in the vicinity of the two former ASTs (collectively referred to as the No. 10 Tank Area), two supplemental Work Plans were submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) to complete further characterization of soil and groundwater. These were the No. 10 Tank Investigation Work Plan Addendum (Revision 0 dated November 29, 2016) and the No. 10 Tank Investigation Work Plan Addendum *Expansion: Groundwater Investigation* (Revision 1 dated June 18, 2018).

This report summarizes the findings of the characterization activities in the No. 10 Tank Area. All investigation protocols were conducted in accordance with the Standard Operating Procedures (SOPs) provided in the property-wide Quality Assurance Project Plan (QAPP). The field activities were conducted under the property-wide Health and Safety Plan (HASP).

Objectives

The objective of the original No. 10 Tank Investigation Work Plan Addendum (dated November 29, 2016) was to determine the presence or absence of non-aqueous phase liquid (NAPL) in soils within the No. 10 Tank Area. The Groundwater Investigation Work Plan Addendum (dated June 18, 2018) was intended to supplement the soil investigation completed under the original Work Plan Addendum, with the primary objective to characterize the dissolved-phase petroleum hydrocarbons associated with previously identified NAPL in the No. 10 Tank Area. The groundwater investigation was specifically requested by the MDE due to the confirmed presence of NAPL in groundwater in close proximity to nearby surface water.

Project Background

During the Parcel B18 Phase II Investigation, NAPL was encountered in soil borings B18-044-SB, B18-045-SB, and B18-046-SB; which targeted the former No. 10 and No. 11 Fuel Oil Tanks. Two of the soil borings (B18-044-SB and B18-045-SB) were located within the footprint of the former No. 10 Fuel Oil Tank. The third boring (B18-046-SB) was located to the southeast within the footprint of the former No. 11 Fuel Oil Tank. The locations of these three soil borings are indicated on **Figure 1**, which incorporates the 5500 Set of historical steel plant drawings. Based on a review of historical drawings, including the 5500 Set shown on the figure, the ASTs appear to have been historically surrounded by a single containment berm. Hand-drawn annotations on the 5500 Set indicate that the berm surrounding the No. 10 and No. 11 Fuel Oil Tanks may have been reconstructed in the past to enclose only the No. 11 Fuel Oil Tank. It is likely that the relocation of this containment berm coincided with the demolition of the No. 10 Fuel Oil Tank foundation and associated remedial actions completed from 1987 through 1989, described below.

The No. 10 Fuel Oil Tank was taken out of service in 1977. In 1987, visible oil surfaced in the nearby coal dock slip which led to the involvement of the Marine Safety Office of the U.S. Coast Guard through cleanup actions and investigations. It was found that 161,000 gallons of rainwater laden with fuel oil had accumulated in the AST in the 10 years since it was taken out of service in 1977. In August 1987, following clean-up activities inside the AST and in the surrounding soils, the AST was demolished, and oil-saturated soils were identified below the foundation. An effort was made to inoculate the surrounding soil with bacteria to accelerate biodegradation of residual oil materials. However, this remediation plan was unsuccessful due to high salinity in the soil from tidal influence. An additional remediation plan was proposed to contain the fuel oil contamination by installing a flexible membrane cap and providing hydraulic containment; however, it is unclear if the plan was fully implemented. It is believed that some form of a containment remedy was implemented (c. 1989) to the west of the former No. 10 Fuel Oil Tank foundation, as indicated by the presence of an existing cut-off wall.

Tradepoint Atlantic has provided an historical drawing which indicates that a cut-off wall may have been previously installed in 1989 in the vicinity of the NAPL-impacted area. The drawing of the cut-off wall is included as **Attachment 1**. According to the plan drawing, the cut-off wall was proposed to be completed with steel sheet piling, a polyethylene geomembrane, geotextile fabric, and slag and clay backfill to mitigate the potential for NAPL to discharge into the surface water to the west of the impacted area. Portions of the cut-off wall were successfully located by ARM in the field. Soil was removed using excavation equipment to expose the top of the sheet piling across the length of the cut-off wall (approximately 125 feet). A photograph log of the uncovered sheet piling is included as **Attachment 2**. The sheet piling alignment was recorded by ARM personnel using a hand-held GPS unit, and the extent of the cut-off wall is indicated on relevant figures included with this report.

As reported in the Phase I ESA and described in the No. 10 Tank Investigation Work Plan Addenda, six monitoring wells were installed in the vicinity of the No. 10 Fuel Oil Tank in March 1988 following the discovery of oil-saturated soils in the area. On October 20, 2016 an effort was made to find the six historical wells, but due to the dense vegetation in the No. 10 Tank Area, only four of the six wells were located. After the area was cleared of vegetation, the remaining two existing wells were found in the northern portion of the No. 10 Tank Area. **Figure 2** displays the location of these six wells in proximity to the No. 10 Tank Area. The permit numbers displayed on the well tags were used as the well IDs. During the initial well inspections, NAPL was observed to have accumulated in four of the six historical wells. These six monitoring wells have been gauged periodically along with numerous other groundwater monitoring points to document the distribution and thickness of accumulated NAPL, which is described in trailing sections of this report.

Soil Characterization Activities – Work Plan Addendum dated November 29, 2016

In accordance with the No. 10 Tank Investigation Work Plan Addendum (dated November 29, 2016), NAPL characterization activities were performed in the vicinity of the No. 10 and No. 11 Fuel Oil Tanks. In addition to the 12 soil borings that had been previously installed in close proximity to the No. 10 Tank Area during the Parcel B18 Phase II Investigation, a large number of supplemental soil borings (78) were installed between November 21 and December 19, 2016 to determine the presence or absence and extent of NAPL in soil and groundwater. The targeted depth of each supplemental boring was 20 feet below ground surface (bgs), although some borings were terminated following equipment refusal prior to reaching the target depth. Each soil boring relevant for the No. 10 Tank Investigation is shown on **Figure 3**. At each boring location, the continuous soil cores were screened with a hand-held photoionization detector (PID) and were inspected for evidence of visible NAPL. The soil boring logs from this first phase of the investigation (including the soil boring logs completed in the No. 10 Tank Area during the preceding Phase II Investigation) have been included as **Attachment 3**.

Figure 4 shows an overview of NAPL distribution in the unsaturated soils within the delineation area. In total, NAPL was observed in the unsaturated soils of 25 soil borings; an additional eight borings were deemed inconclusive for potential NAPL impacts in the unsaturated zone (due to shallow refusal). **Figure 5** indicates the distribution of observed NAPL in groundwater. In all, NAPL was observed below the groundwater table in 49 soil borings; an additional 36 borings were deemed inconclusive with respect to NAPL being present in the groundwater (due to refusal prior to the target depth of 20 feet bgs being reached). Boring and piezometer locations displayed as "inconclusive" are described in greater detail in the following section. The total depth of each completed soil boring is provided on **Figure 6**. The original Phase II Investigation borings within the delineation area have also been included on these figures. **Table 1** provides a summary of the soil core observations recorded for each of the delineation borings.

Figure 7a through **Figure 7e** show the presence or absence of NAPL in the soil cores within 4-foot discrete depth intervals (i.e., from 0 to 4 feet, 4 to 8 feet, 8 to 12 feet, 12 to 16 feet, and 16 to 20 feet) based on the field screening and logging. Collectively, these figures show the vertical and horizontal distribution of NAPL in the No. 10 Tank Area. NAPL in the shallow soil appears to be limited to the area immediately below and adjacent to the two former ASTs, but it appears to become more widespread deeper in the subsurface.

Inconclusive NAPL Observations

Based on the soil core observations, it appears that from approximately 15 to 19 feet bgs, there is a dense fine-grained sand unit directly on top of a clay unit (encountered at depths from approximately 19 to 20 feet bgs). As indicated on **Table 1**, groundwater was encountered between approximately 3 and 14.5 feet bgs across the delineation area, with an average groundwater depth of roughly 8 feet bgs. Therefore, the shallow hydrogeologic zone appears to span from approximately 8 to 19 feet bgs. If a boring was terminated or encountered equipment refusal prior to reaching groundwater, it was deemed inconclusive with regard to the potential presence of NAPL in the unsaturated soils. If a boring reached groundwater but was terminated or encountered equipment refusal prior to reaching a depth of 20 feet bgs, it was generally considered to be inconclusive with respect to the presence of NAPL in groundwater.

Historical Well NAPL Sample Activities (Fingerprint Analysis)

On December 22, 2016, NAPL samples were extracted from historical wells BA-81-7941, BA-81-7942, and BA-81-7944, as well as from piezometer B18-045-PZ. A photograph log of the NAPL samples is included as **Attachment 4**. The photographs and field observations indicate that both light (LNAPL) and dense (DNAPL) fractions appear to be present at the Site. The NAPL samples were submitted to Pace Analytical Services, Inc. (PACE) for Whole Oil (ASTM D3328) and Full Scan (ASTM D5739) analytical testing to establish the "fingerprint" of the hydrocarbons and to determine the petroleum constituents that were present. All four samples of

the NAPL were determined to be 100% aromatic hydrocarbons, and were comprised of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene, which are constituents of multiple fuel oils including No. 6 fuel oil. The NAPL fingerprint laboratory report is provided as an electronic attachment.

Groundwater Characterization Activities – Work Plan Addendum dated June 18, 2018

Six temporary groundwater sample collection points and three permanent groundwater monitoring wells were installed and sampled in the vicinity of the No. 10 Tank Area to better characterize the impacts of NAPL on the shallow groundwater aquifer. In addition, three existing piezometers installed during the Phase II Investigation of Parcel B18 (B18-044-PZ, B18-046-PZ, and B18-077-PZ), and two of the existing historical groundwater monitoring wells installed in March 1988 (BA-81-7945 and BA-81-7946) were also sampled. These two historical wells were selected among the six available historical wells based on a lack of NAPL accumulation at these locations. The groundwater sampling points are shown in relation to the historical ASTs in **Figure 8**.

Between October 22 and 25, 2018, three 2-inch diameter permanent groundwater monitoring wells (SW-084-MWS, SW-085-MWS, and SW-086-MWS) were installed to the west of the former location of the No. 10 Fuel Oil Tank and adjacent to the nearby surface water. One of these permanent groundwater monitoring wells, SW-085-MWS, was placed on the downgradient side of the sheet piling cut-off wall. The combination soil boring and well construction logs for the three permanent wells installed during this investigation are provided as **Attachment 5**.

Between July 11 and 16, 2018, six supplemental piezometers (B18-078-PZ, B18-079-PZ, B18-080-PZ, B18-081-PZ, B18-082-PZ, and B18-083-PZ) were installed to facilitate sample collection targeting the No. 10 Tank Area to the east of the cut-off wall. The boring logs and construction logs for the six supplemental piezometers installed during this investigation are provided in **Attachment 6**. The combination soil boring and piezometer construction logs from the older Phase II Investigation piezometers that were also sampled (B18-044-PZ, B18-046-PZ, and B18-077-PZ) are also included in **Attachment 6**.

As outlined in the Work Plan Addendum, several additional piezometers were solely utilized for groundwater and NAPL gauging measurements; therefore, no groundwater samples were collected from B18-017-PZ, B18-045-PZ, B18-047-PZ, B18-059-PZ, or B18-061-PZ. In addition, a supplemental piezometer was installed as a replacement for damaged site-wide monitoring well SW-029-MWS, which was previously installed in January 2016 during the separate Area B Groundwater Investigation to the north of the No. 10 Tank Area. No groundwater samples were designated to be collected from SW-029-MWS. The combination soil boring and piezometer construction logs from the supplemental gauging locations (including the piezometer reinstallation of SW-029-MWS) are also included in **Attachment 6**.

Between November 28 and November 30, 2018, groundwater samples were collected for laboratory analysis from nine temporary groundwater sample collection points (B18-044-PZ, B18-046-PZ, B18-077-PZ, B18-078-PZ, B18-079-PZ, B18-080-PZ, B18-081-PZ, B18-082-PZ, and B18-083-PZ), three permanent groundwater monitoring wells (SW-084-MWS, SW-085-MWS, and SW-086-MWS), and two historical permanent wells (BA-81-7945 and BA-81-7946) using combination of hand bailing techniques and a peristaltic pump. Before purging, each groundwater sample collection point was checked for the presence of NAPL using an oil-water interface probe in accordance with standard methods. If NAPL had accumulated in any sample collection point, additional material was purged to remove the bulk of the NAPL mass prior to collecting the sample.

Groundwater samples were collected using disposable sampling equipment; however, as specified in the Work Plan Addendum, low-flow sampling techniques (specifically the use of a flow-through cell and multiparameter meter) were not employed during this investigation based on the likely presence of NAPL. Groundwater purge logs were not completed during this investigation as the methodology specified in the Work Plan did not include low-flow techniques and relied on field observations to ensure the sample points were free of NAPL prior to collection. All groundwater samples were collected as grab samples and submitted to PACE for analysis of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Analytical methods, sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times. The analytical laboratory reports for the groundwater samples are included as electronic attachments.

The analytical results for the VOCs and SVOCs detected in groundwater in the No. 10 Tank Area are summarized in **Table 2** and compared against the Project Action Limits (PALs) established in the property-wide QAPP. The table includes the analytical results for each VOC and SVOC with at least one detection among the groundwater dataset, with exceedances of the PALs highlighted. The PALs for relevant polynuclear aromatic hydrocarbons (PAHs) have been adjusted upward based on revised toxicity data published in the USEPA Regional Screening Level (RSL) Resident Tapwater Table.

A total of four VOCs were detected in groundwater above their respective PALs: benzene, chloroform, styrene, and toluene. The VOC PAL exceedance locations and results are provided on **Figure 9**. Benzene was the most common VOC exceedance with a total of 10 PAL exceedances which were widespread in the investigation area. The maximum detected concentration of benzene was 2,440 ug/L in B18-082-PZ, which is located at the southeastern corner of the sampling network away from the surface water. The remaining VOCs with PAL exceedances were only detected above their respective PALs at single isolated locations, two of which (styrene and toluene) also exceeded their PALs in B18-082-PZ.

A total of 20 SVOCs were detected in groundwater above their respective PALs: 1,1-biphenyl, 1,4-dioxane, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-methylnaphthalene, 3,3'-dichlorobenzidine, 4-chloroaniline, chrysene, hexachloroethane, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-c,d]pyrene, naphthalene, nitrobenzene, N-nitrosodiphenylamine, pyrene, and pentachlorophenol. The SVOC PAL exceedance locations and results are provided on **Figure 10**. SVOC PAL exceedances were widespread in the investigation area. The most common SVOC PAL exceedances (each with at least 10 PAL exceedances) included naphthalene, 2-methylnaphthalene, 1,1-biphenyl, and benz[a]anthracene. The prevalence of elevated naphthalene and 2-methylnaphthalene in groundwater is consistent with the NAPL fingerprinting analysis completed during the initial soil investigation. Naphthalene was the most common aqueous PAL exceedance, with a total of 12 PAL exceedances and a maximum detected concentration of 15,300 ug/L in B18-082-PZ. SVOC PAL exceedances were most numerous in the groundwater sample collected from B18-044-PZ, which was positioned in the center of the footprint of the former No. 10 Fuel Oil Tank. The detected concentrations of naphthalene (and benzene) were notably lower in B18-044-PZ than at the far southeastern location of B18-082-PZ.

As noted above, sample location B18-082-PZ exhibited the maximum detected concentrations of both benzene and naphthalene. The detections of these constituents were significantly higher than at other locations within the investigation area, including those at the shoreline and within the former AST footprints. Further, LNAPL accumulation of approximately 1.7 feet was observed at this sample point prior to purging and sample collection; whereas, DNAPL was principally observed further to the west in the vicinity of the former ASTs. The source of the LNAPL impacts at B18-082-PZ appears to be independent from the DNAPL (and associated dissolved phase constituents) in the No. 10 Tank Area.

Potentiometric Surface Map and NAPL Gauging

The groundwater sample collection points (both temporary and permanent) were surveyed by a Maryland-licensed surveyor to obtain top of casing (TOC) elevation data. A synoptic round of groundwater level measurements and NAPL gauging measurements was collected from each location on November 6, 2019. Surveyed TOC and ground surface elevations for all applicable locations can be found in **Table 3**, along with the depth to water (DTW) measurements from this date. In addition to the sample collection points, the synoptic round of gauging also included other distal groundwater locations (e.g., SW13-PZM003, SW-029-MWS, and B18-061-PZ) which were utilized to provide additional groundwater elevation data to further define the potentiometric surface. Any piezometers which were observed to have been destroyed or damaged are noted on **Table 3**.

Figure 11 shows each of the gauging locations and the localized groundwater elevation contour map. If measurable LNAPL was present in a given monitoring point, the corresponding

groundwater elevation was not incorporated into the groundwater contour map because the presence of accumulated LNAPL would bias the groundwater elevation measurements and resulting contours. However, groundwater locations with observations of only trace LNAPL were included in the contour map. As specified in the Work Plan Addendum, the existing historical monitoring wells with known long-term NAPL impacts (BA-81-7941, BA-81-7942, BA-81-7943, and BA-81-7944) were also gauged, but the results are not included in the groundwater contour map. As seen on the contour map, shallow groundwater appears to flow radially from a mounded location in the vicinity of B18-017-PZ and B18-077-PZ. Across the majority of the No. 10 Tank Area, groundwater flows from east to west toward the presumed discharge point at the adjoining surface water.

Each piezometer and monitoring well in the vicinity of the No. 10 Tank Area has been periodically monitored to document the presence and quantity of accumulated NAPL. The dates of monitoring activities, as well as NAPL thickness measurements and water level measurements, have been included in **Table 4**. This table also includes the installation date of each monitoring point, as well as relevant construction details (depths, screen intervals, etc.). The presence of NAPL (primarily DNAPL) is apparent in the vicinity of the former ASTs.

Supplemental NAPL Sample Activities (PCBs Analysis)

On November 30, 2018, a sample of NAPL was collected from the existing historical monitoring well BA-81-7941 for analysis of polychlorinated biphenyls (PCBs). Samples of NAPL were previously collected from several locations for the fingerprinting analysis described in a preceding section of this document; however, the MDE requested that an additional sample of NAPL be collected to determine whether PCBs are present in the free product. PCBs were not detected in the sample (either as individual aroclors or total PCBs), although it should be acknowledged that the reporting limits were elevated for this analysis due to laboratory dilution (which the laboratory determined to be necessary due to the physical characteristics of the extract). The laboratory report is provided as an electronic attachment.

Investigation Derived Waste (IDW) Management

After the soil boring was completed at each location, all down-hole equipment was decontaminated using a mobile decontamination platform and a high-pressure steam cleaner. All IDW generated during this investigation was containerized in 55-gallon (DOT-UN1A2) drums. The types of IDW that were generated included the following:

- soil cuttings generated from soil borings and well/piezometer installation;
- purged groundwater;
- decontamination fluids; and
- used personal protective equipment

Following the completion of each phase of field activities, composite samples were gathered with aliquots from each of the Parcel B18 IDW soil drums for waste characterization. Following the analysis of each sample, the waste soil was characterized as non-hazardous. A list of all results from the soil waste characterization can be found in **Table 5**. IDW drums containing aqueous materials were characterized by preparing composite samples from randomly selected drums. Each composite sample 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. Following the analysis of each sample, the aqueous waste was characterized as non-hazardous. A list of all results from the aqueous waste characterization can be found in **Table 6**.

Summary and Recommendations

The investigations of soil and groundwater in the No. 10 Tank Area were designed to characterize the horizontal and vertical extent of NAPL surrounding the former ASTs, as well as the dissolved-phase petroleum hydrocarbons associated with the NAPL impacts. Sufficient investigation data has been collected in order to prepare and present this evaluation of the nature and extent of contamination in the No. 10 Tank Area. The impacts to soil and groundwater in the No. 10 Tank Area have been adequately characterized to meet the objectives of the Work Plan Addenda.

The identified NAPL impacts in soil and groundwater (and the associated dissolved-phase contamination) were caused by historical releases from the former No. 10 and No. 11 Fuel Oil Tanks. NAPL appears to be most prevalent in the shallow soil in the immediate vicinity of the former AST footprints, and appears to become more widespread deeper in the subsurface, which is consistent with releases from the former ASTs. Physical observations of NAPL have been extensive, and the alignments and proximity of any proposed utilities must be considered in any future development plans for this area. If utilities are proposed in this area, appropriate protocols for the mitigation of potential NAPL mobility should be specified in the Response and Development Work Plan (RADWP).

The aqueous PALs specified in the QAPP are based upon drinking water use, which is not a potential exposure pathway for groundwater at the Site. The use of groundwater is prohibited at the Tradepoint Atlantic property. The primary exposure pathway of potential concern at the Site, outside of construction activities, is the vapor intrusion to indoor air risk pathway. Although a vapor intrusion evaluation was not performed during this investigation, numerous groundwater samples exhibited concentrations of VOCs/SVOCs, in particular benzene and naphthalene, which would present a potential vapor intrusion risk if a structure were to be proposed in the No. 10 Tank Area. Potential vapor intrusion risks associated with the impacts in this area will be evaluated in a RADWP for any such development work proposed in this area.

There appears to be a limited risk of off-site migration of VOC/SVOC contamination given the apparent direction of groundwater flow. Based on the accumulation of NAPL in the shoreline wells (SW-084-MWS, SW-085-MWS, and SW-086-MWS) and associated dissolved-phase contamination near the property line and the adjoining surface water, mitigative measures may be required. Additional evaluation may be required in the vicinity of B18-082-PZ based on the possibility of an alternative contaminant source. Any future actions will be coordinated with the MDE and USEPA under separate cover.

The historical monitoring wells and newly constructed monitoring wells are proposed to remain in place at this time to facilitate additional monitoring that may be performed. The existing temporary piezometers in the No. 10 Tank Area are proposed to be abandoned (in accordance with Maryland abandonment standards as stated in COMAR 26.04.04.34 through 36).

If you have any questions, or if we can provide any additional information at this time, please do not hesitate to contact ARM Group LLC at 410-290-7775.

Respectfully Submitted,
ARM Group LLC

Taylor R. Smith, P.E.
Project Engineer

Eric S. Magdar, P.G.
Vice President

List of Attachments:

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Table 3 – Groundwater Survey and Elevation Data
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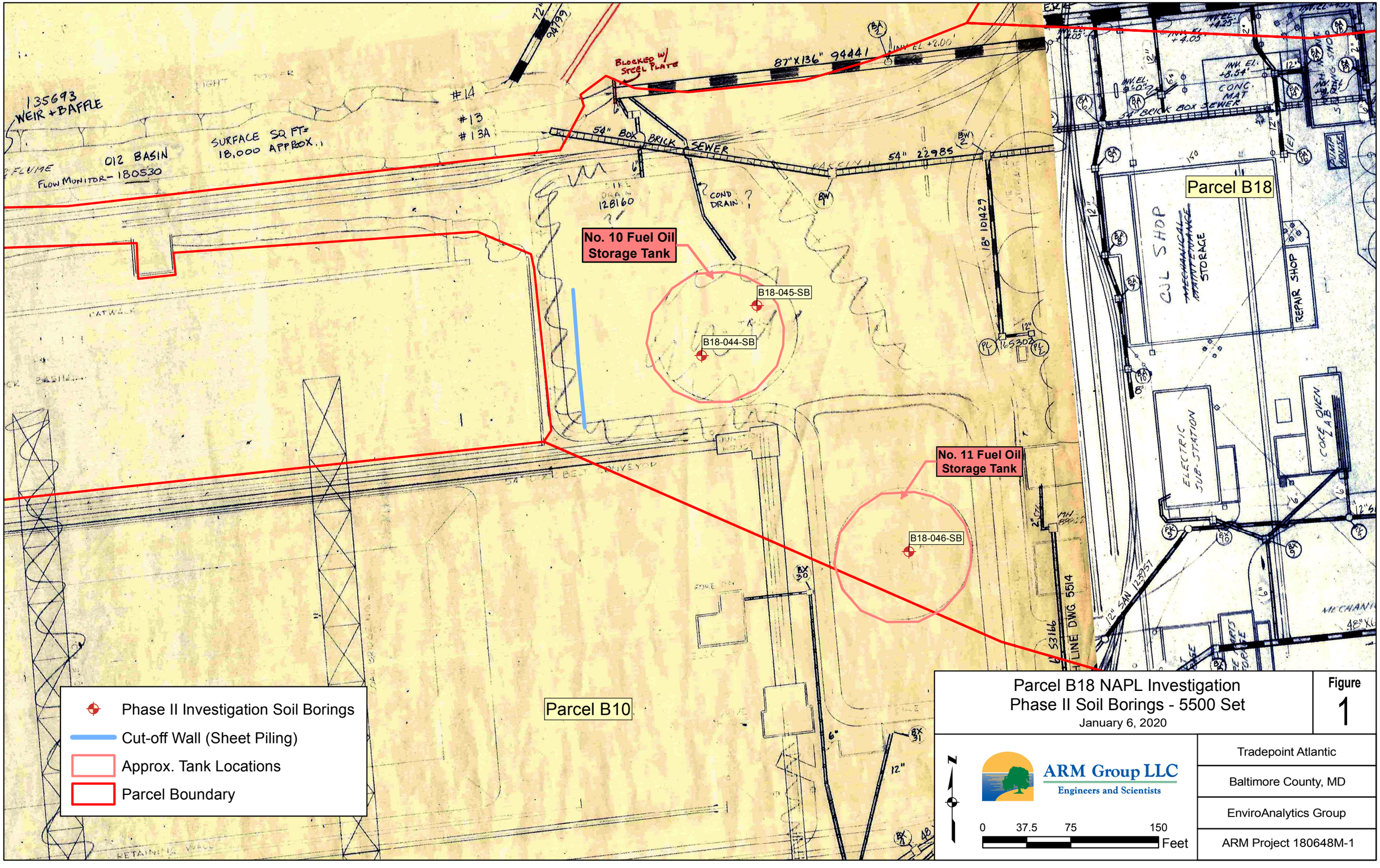
Attachment 1 – Cut-Off Wall Historical Plan Drawing
Attachment 2 – Cut-Off Wall Field Verification Photograph Log
Attachment 3 – Soil Boring Logs (soil investigation)
Attachment 4 – NAPL Sampling Photograph Log
Attachment 5 – Monitoring Well Logs (groundwater investigation)
Attachment 6 – Piezometer Logs (groundwater investigation)

Electronic Attachments – Groundwater (and NAPL) Laboratory Reports

FIGURES



Parcel B18 NAPL Investigation
Phase II Soil Borings - 5500 Set
January 6, 2020

Figure 1

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0 37.5 75 150 Feet

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 180648M-1

Parcel B18 NAPL Investigation
Historical Monitoring Wells
January 6, 2020

Figure
2

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Baltimore County, MD
EnviroAnalytics Group
ARM Project 180648M-1

Parcel B18 NAPL Soil Investigation
Soil Boring Investigation Locations
January 6, 2020

Figure 3

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Tradepoint Atlantic

Baltimore County, MD

EnviroAnalytics Group

ARM Project 180648M-1

Parcel B18

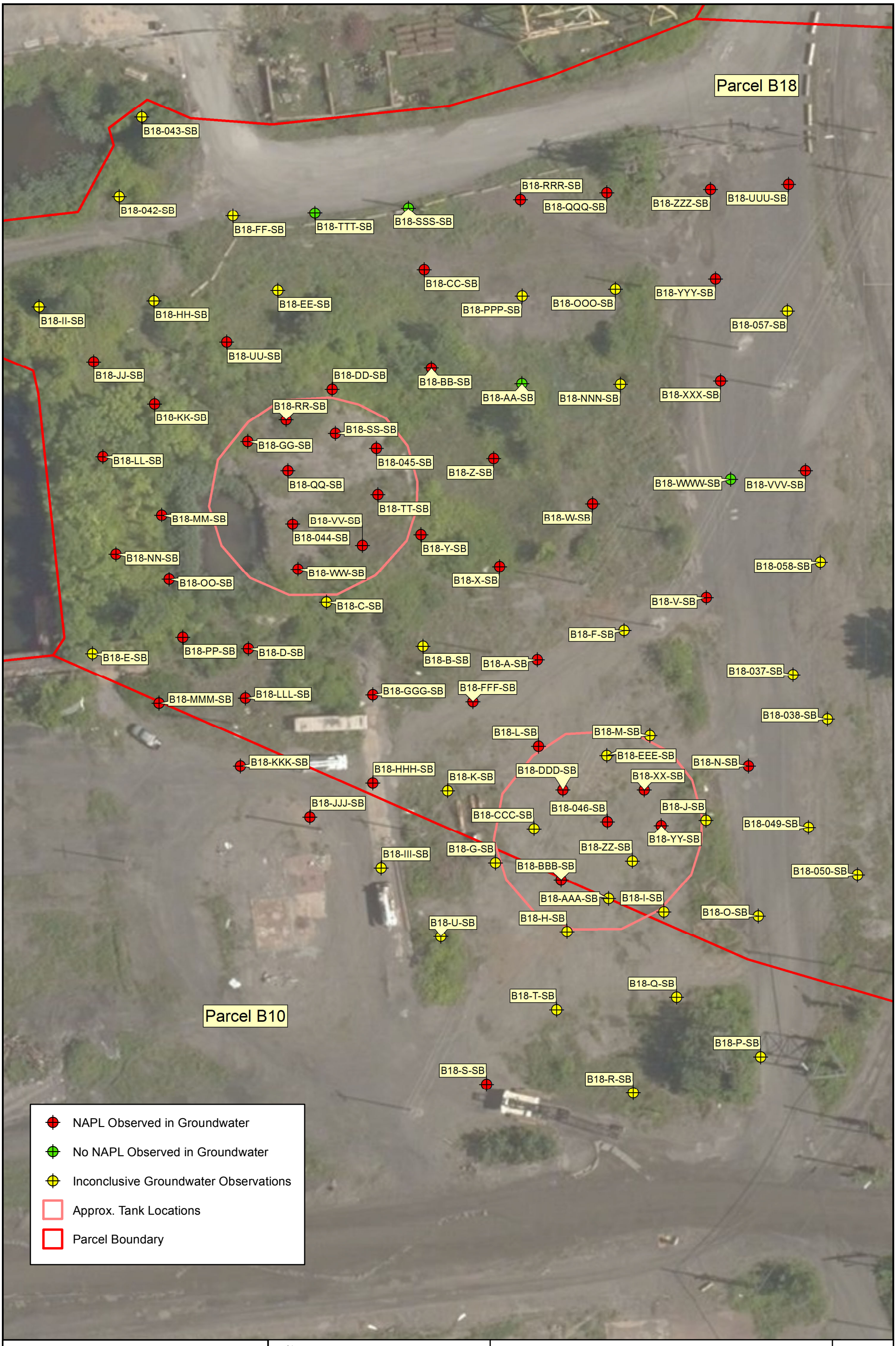
B18-043-SB
B18-042-SB
B18-FF-SB
B18-TTT-SB
B18-SSS-SB
B18-RRR-SB
B18-QQQ-SB
B18-ZZZ-SB
B18-UUU-SB
B18-CC-SB
B18-II-SB
B18-HH-SB
B18-EE-SB
B18-PPP-SB
B18-OOO-SB
B18-YYY-SB
B18-057-SB
B18-UU-SB
B18-JJ-SB
B18-DD-SB
B18-BB-SB
B18-AA-SB
B18-NNN-SB
B18-XXX-SB
B18-KK-SB
B18-RR-SB
B18-SS-SB
B18-GG-SB
B18-LL-SB
B18-045-SB
B18-Z-SB
B18-QQ-SB
B18-WWW-SB
B18-VVV-SB
B18-TT-SB
B18-MM-SB
B18-VV-SB
B18-044-SB
B18-W-SB
B18-Y-SB
B18-NN-SB
B18-058-SB
B18-WW-SB
B18-X-SB
B18-OO-SB
B18-C-SB
B18-V-SB
B18-F-SB
B18-PP-SB
B18-D-SB
B18-E-SB
B18-B-SB
B18-A-SB
B18-037-SB
B18-MMM-SB
B18-LLL-SB
B18-GGG-SB
B18-FFF-SB
B18-038-SB
B18-L-SB
B18-M-SB
B18-EEE-SB
B18-KKK-SB
B18-HHH-SB
B18-K-SB
B18-DDD-SB
B18-N-SB
B18-XX-SB
B18-JJJ-SB
B18-CCC-SB
B18-046-SB
B18-J-SB
B18-049-SB
B18-YY-SB
B18-III-SB
B18-G-SB
B18-ZZ-SB
B18-BBB-SB
B18-050-SB
B18-AAA-SB
B18-I-SB
B18-O-SB
B18-H-SB
B18-U-SB
B18-Q-SB
B18-T-SB
B18-P-SB
B18-S-SB
B18-R-SB

Parcel B10

NAPL Observed in Soil
No NAPL Observed in Soil
Inconclusive Soil Observations
Approx. Tank Locations
Parcel Boundary

\\COLUMBIADC01\CorpData\Projects\EnviroAnalytics Group\150300M EAG_Sparrows Point Area B\GIS\Parcel B18 - NAPL Investigation 11x17.mxd

EnviroAnalytics Group	ARM Group LLC Engineers and Scientists	Parcel B18 NAPL Soil Investigation NAPL Observations in Soil	Figure 4
ARM Project 180648M-1	0 25 50 100 Feet	January 6, 2020	
Tradepoint Atlantic			
Baltimore County, MD			



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EnviroAnalytics Group	ARM Group LLC Engineers and Scientists	Parcel B18 NAPL Soil Investigation NAPL Observations in Groundwater	Figure 5
ARM Project 180648M-1	0 25 50 100 Feet	January 6, 2020	
Tradepoint Atlantic			
Baltimore County, MD			

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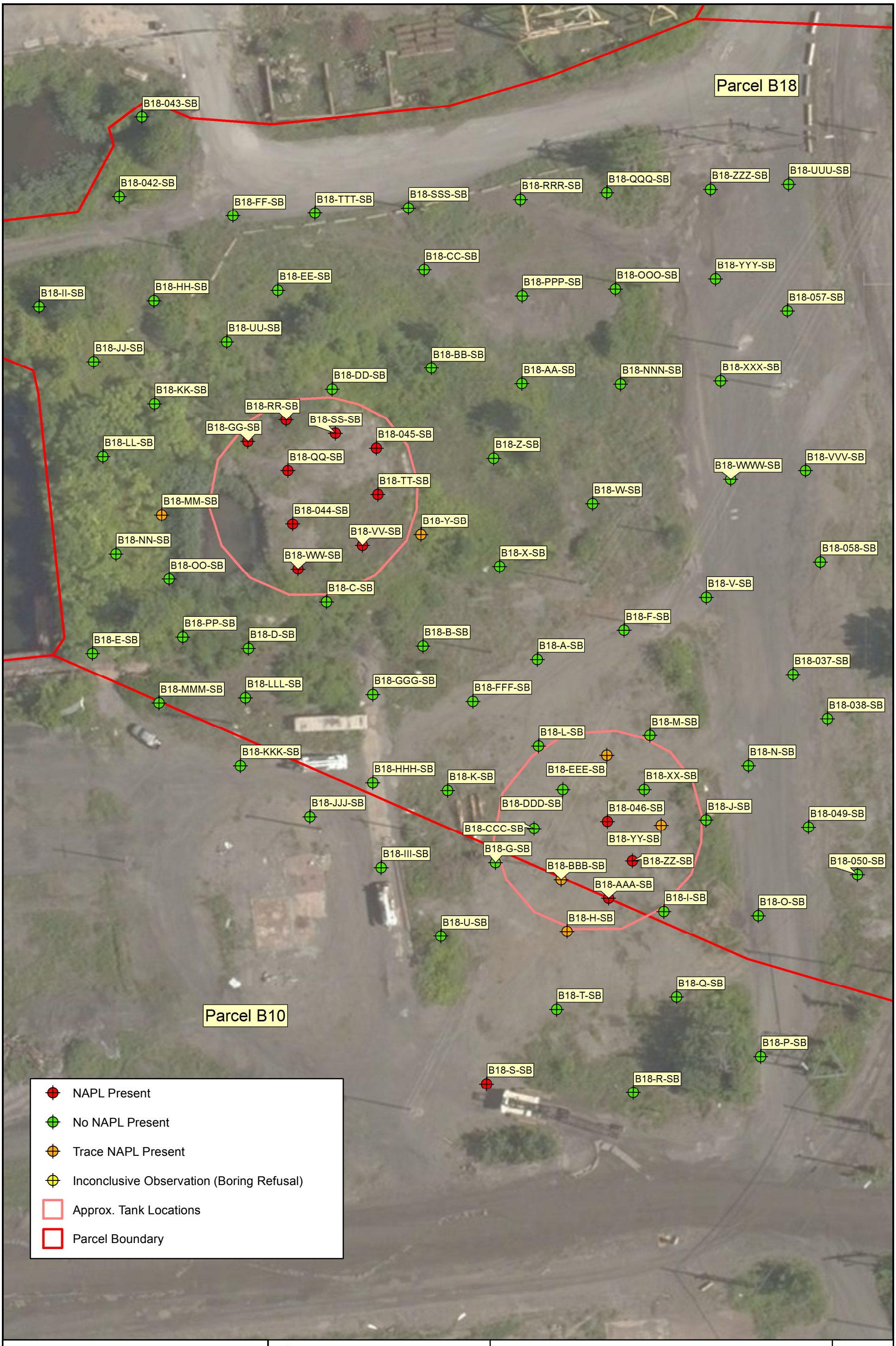
EnviroAnalytics Group	ARM Group LLC Engineers and Scientists	Parcel B18 NAPL Soil Investigation Total Depths of Soil Borings	**Figure** 6
ARM Project 180648M-1	0 25 50 100 Feet	January 6, 2020	
Tradepoint Atlantic			
Baltimore County, MD			



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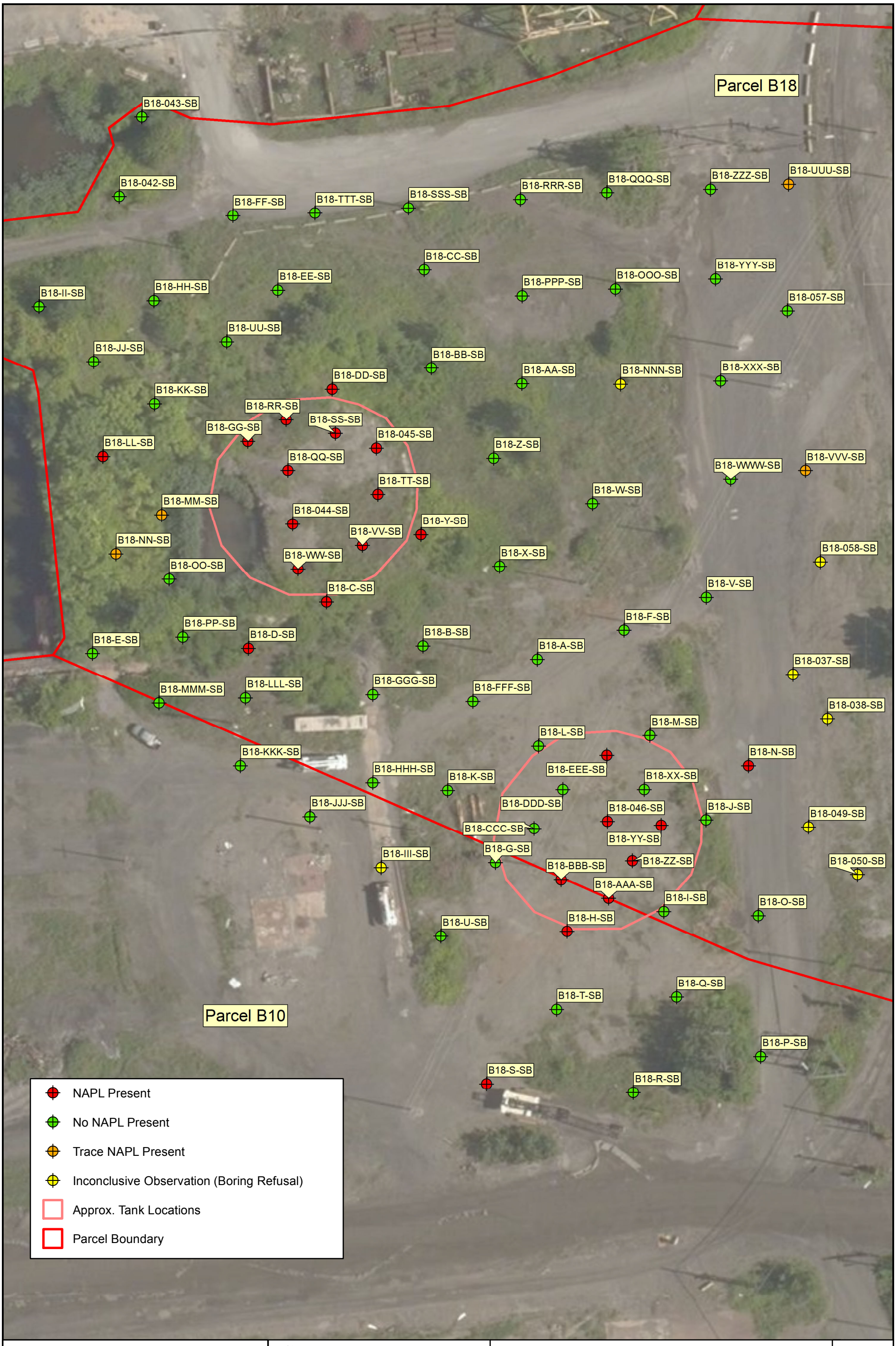
EnviroAnalytics Group ARM Project 180648M-1 Tradepoint Atlantic Baltimore County, MD	ARM Group LLC Engineers and Scientists 0 25 50 100 Feet	Parcel B18 NAPL Soil Investigation Presence of NAPL at Discrete Soil Depths (0-4' bgs) January 6, 2020	**Figure** 7a



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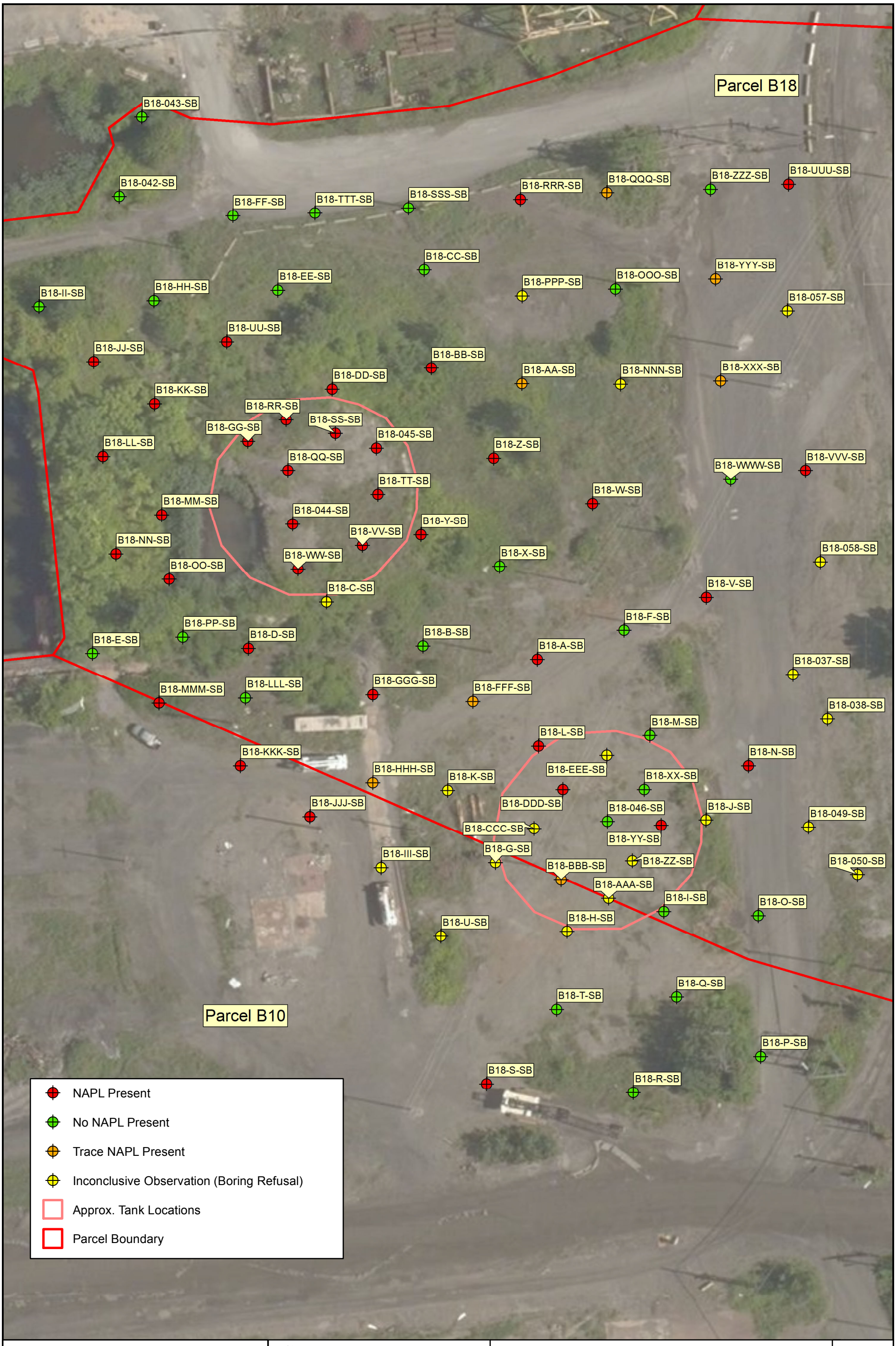
EnviroAnalytics Group ARM Project 180648M-1 Tradepoint Atlantic Baltimore County, MD	ARM Group LLC Engineers and Scientists 0 25 50 100 Feet	Parcel B18 NAPL Soil Investigation Presence of NAPL at Discrete Soil Depths (4-8' bgs) January 6, 2020	**Figure** 7b



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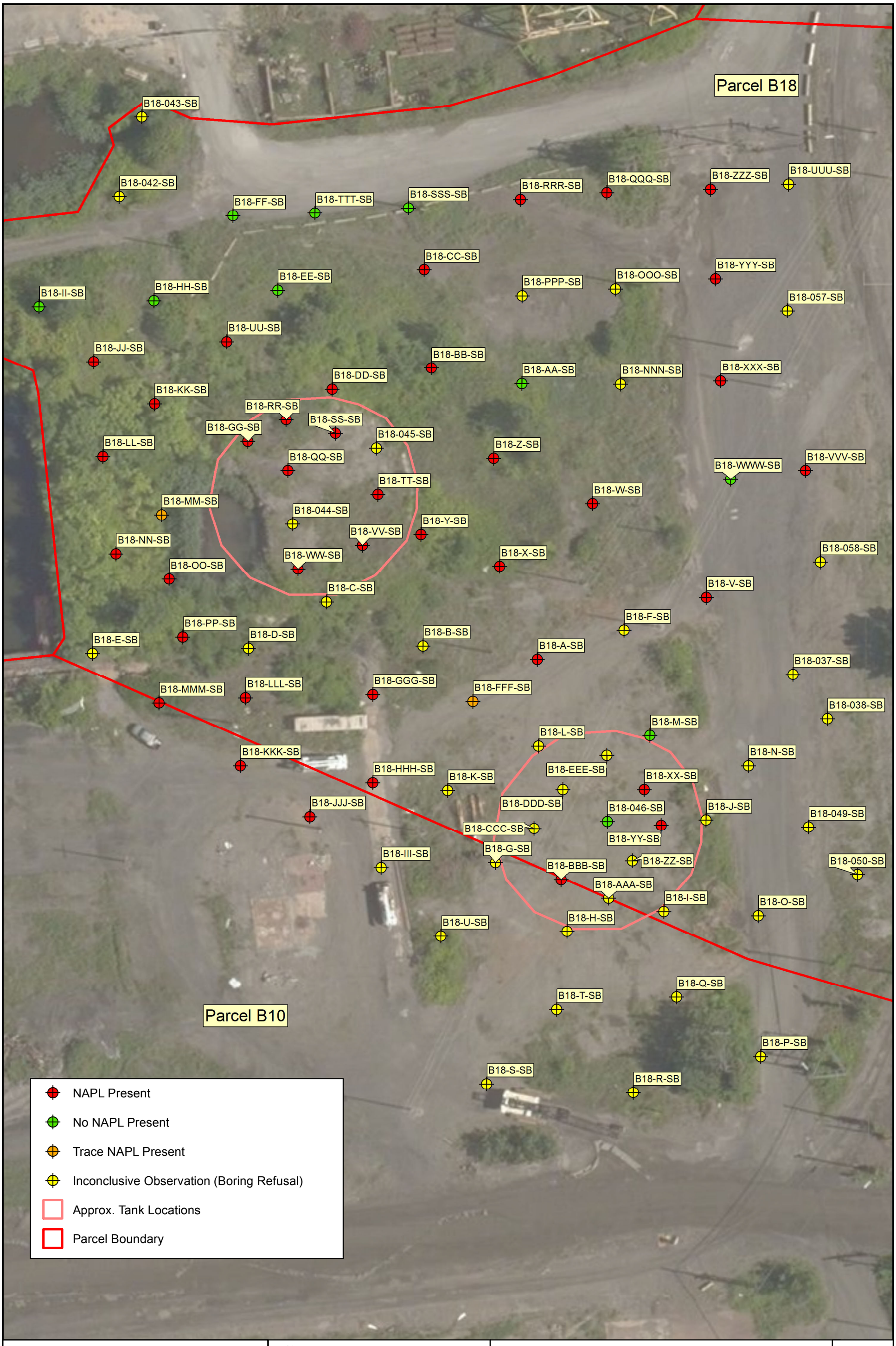
EnviroAnalytics Group ARM Project 180648M-1 Tradepoint Atlantic Baltimore County, MD	ARM Group LLC Engineers and Scientists 0 25 50 100 Feet	Parcel B18 NAPL Soil Investigation Presence of NAPL at Discrete Soil Depths (8-12' bgs) January 6, 2020	**Figure** 7c



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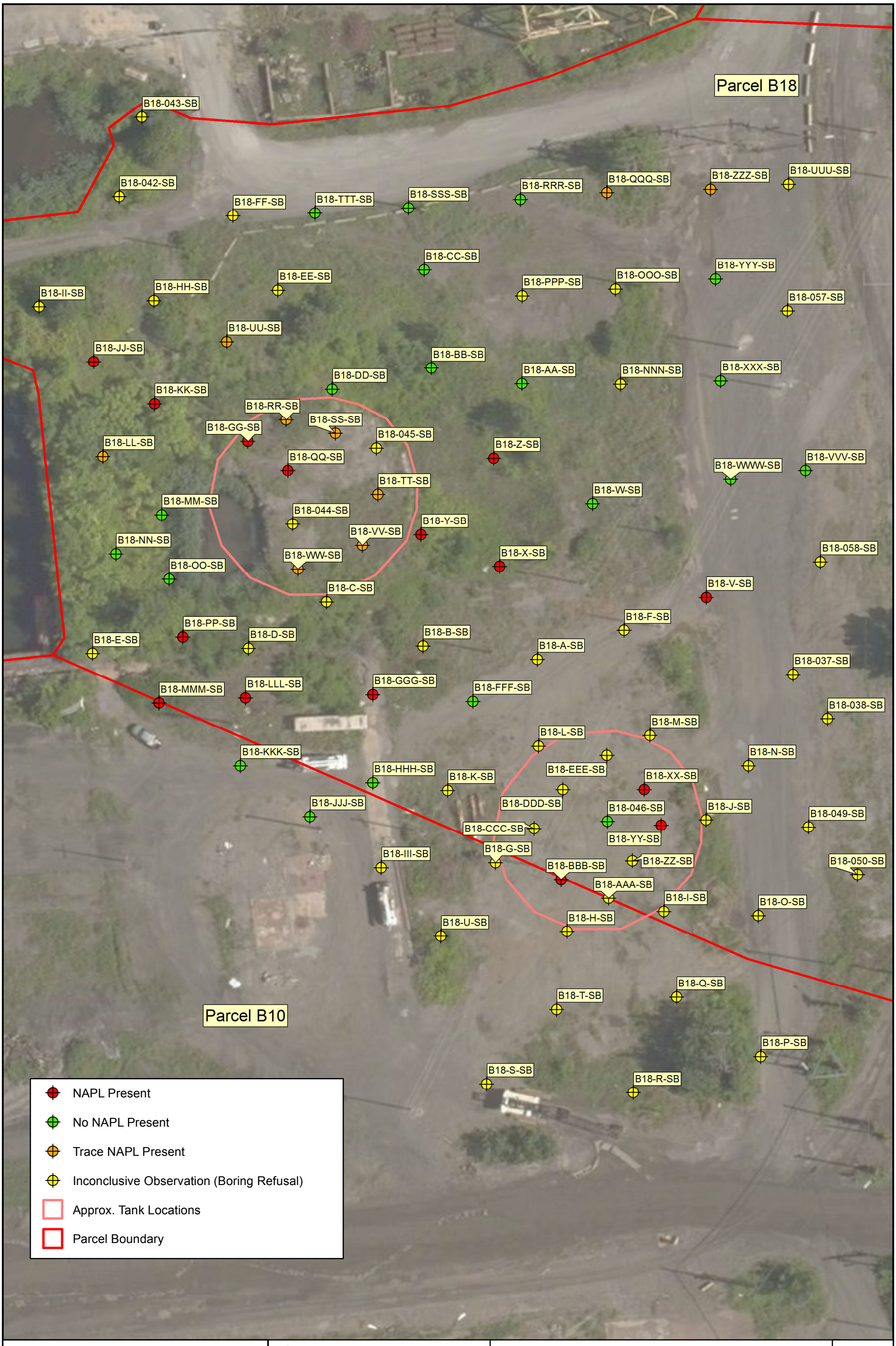
EnviroAnalytics Group ARM Project 180648M-1 Tradepoint Atlantic Baltimore County, MD	ARM Group LLC Engineers and Scientists 0 25 50 100 Feet	Parcel B18 NAPL Soil Investigation Presence of NAPL at Discrete Soil Depths (12-16' bgs) January 6, 2020	**Figure** 7d



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EnviroAnalytics Group ARM Project 180648M-1 Tradepoint Atlantic Baltimore County, MD	ARM Group LLC Engineers and Scientists 0 25 50 100 Feet	Parcel B18 NAPL Soil Investigation Presence of NAPL at Discrete Soil Depths (16-20' bgs) January 6, 2020	**Figure** 7e

Parcel B18 NAPL Groundwater Investigation
Sample Collection Points
January 6, 2020

Figure
8

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic

Baltimore County, MD

EnviroAnalytics Group

ARM Project 180648M-1

Parcel B18 NAPL Groundwater Investigation
Groundwater VOC PAL Exceedances (ug/L)

January 6, 2020

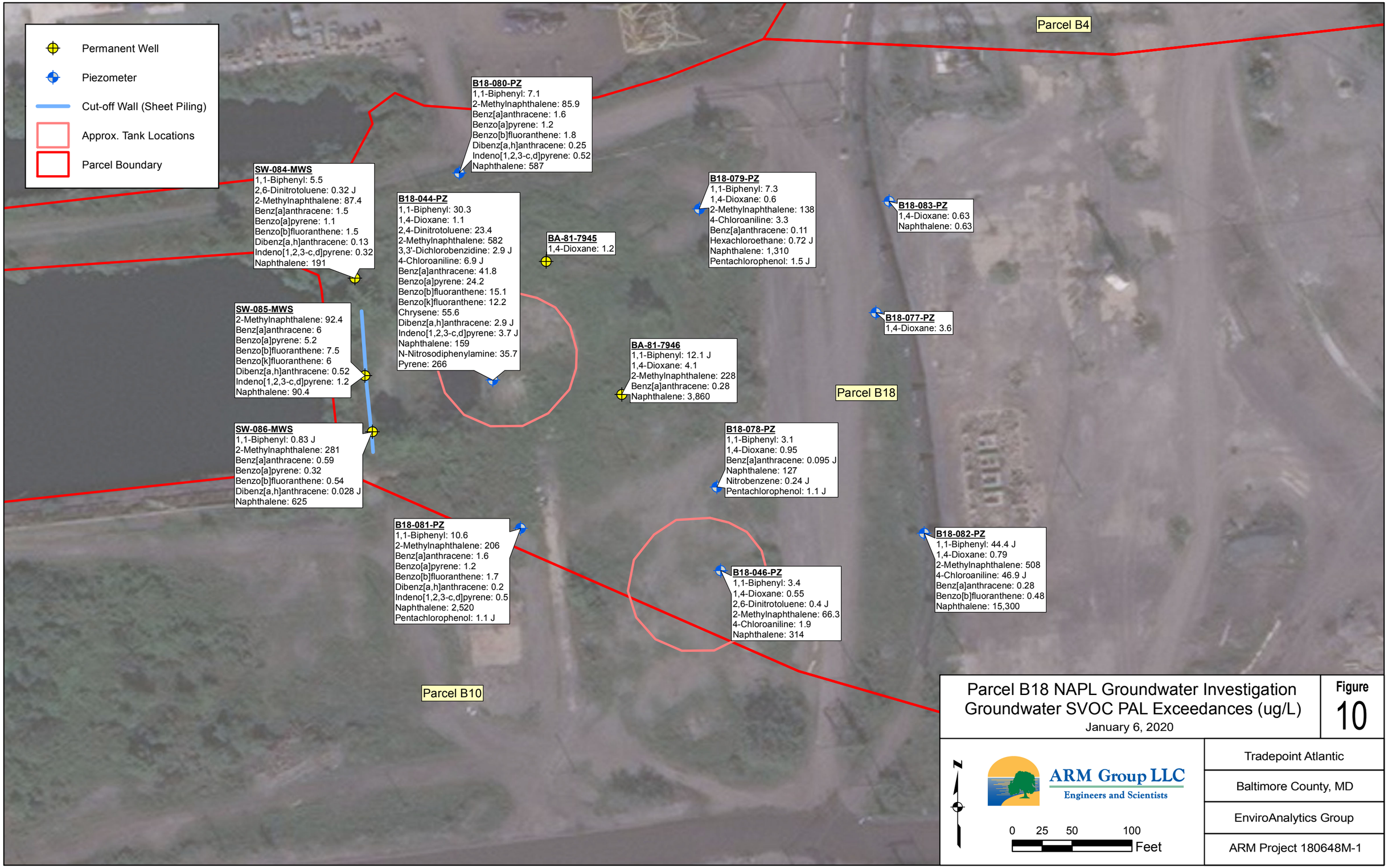
Figure 9

Tradepoint Atlantic

Baltimore County, MD

EnviroAnalytics Group

ARM Project 180648M-1



Parcel B18 NAPL Groundwater Investigation
Groundwater SVOC PAL Exceedances (ug/L)

January 6, 2020

Figure 10

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 180648M-1

Parcel B18 NAPL Groundwater Investigation
Groundwater Contour Map

January 6, 2020

Figure 11

ARM Group LLC
Engineers and Scientists

Tradepoint Atlantic
Baltimore County, MD
EnviroAnalytics Group
ARM Project 180648M-1

TABLES

Table 1 - Parcel B18 No. 10 Tank Area Investigation
Summary of Soil Core Observations

Boring ID	DTW (ft bgs)	DTB (ft bgs)	Interval of Product (ft bgs)	Product Thickness (ft)	Trace/sheen (ft bgs)	Light Product Interval (ft bgs)	Mod Product Interval (ft bgs)	Heavy Product Interval (ft bgs)
NAPL Delineation Borings								
B18-A-SB	10.5	15.0	10.5-15	4.5	NS	NS	10.5-15	NS
B18-B-SB	9.8	10.0	NA	NA	NA	NA	NA	NA
B18-C-SB	9.5	10.0	7-8	1	NS	7-8	NS	NS
B18-D-SB	9.2	10.0	4.7-5;9.2-10	1.1	NS	9.2-10	4.7-5	NS
B18-E-SB	9.0	10.0	NA	NA	NA	NA	NA	NA
B18-F-SB	9.5	10.0	NA	NA	NA	NA	NA	NA
B18-G-SB	7.5	9.0	NA	NA	NA	NA	NA	NA
B18-H-SB	NA	7.0	2.8-3.7;4.6-7	3.3	2.8-3.7;5-6	4.6-5	6-7	NS
B18-I-SB	10.0	10.0	NA	NA	NA	NA	NA	NA
B18-J-SB	9.0	9.5	NA	NA	NA	NA	NA	NA
B18-K-SB	8.8	9.0	NA	NA	NA	NA	NA	NA
B18-L-SB	9.0	10.0	9-10	1	NS	NS	9-10	NS
B18-M-SB	13.5	14.0	NA	NA	NA	NA	NA	NA
B18-N-SB	7.0	9.0	5-9	4	NS	5-9	7.5-8;8.5-9	NS
B18-O-SB	4.2	10.0	NA	NA	NA	NA	NA	NA
B18-P-SB	7.0	10.0	NA	NA	NA	NA	NA	NA
B18-Q-SB	8.5	10.0	NA	NA	NA	NA	NA	NA
B18-R-SB	9.2	10.0	NA	NA	NA	NA	NA	NA
B18-S-SB	4.5	10.0	2.6-10	7.4	NS	2.6-10	7-8;8.5-8.8;9-9.7	NS
B18-T-SB	9.9	10.0	NA	NA	NA	NA	NA	NA
B18-U-SB	5.5	6.0	NA	NA	NA	NA	NA	NA
B18-V-SB	4.8	20.0	8-19.8	11.8	15-17.8;18.8-19.8	8-10.5;18.8-19.8	NS	10.5-15;17.8-18.8
B18-W-SB	9.5	20.0	9.5-15	5.5	NS	9.5-11;12.5-15	11-12.5	NS
B18-X-SB	9.8	20.0	12.5-19.1	6.6	18.8-19.1	16.5-18	12.5-16.5	18-18.8
B18-Y-SB	3.5	20.0	3.5-19.5	16	18-19.5	3.5-18	3.5-18	NS
B18-Z-SB	9.0	20.0	9-17.5	8.5	NS	NS	9-17.5	NS
B18-AA-SB	14.5	20.0	9-9.2	0.2	9-9.2	NS	NS	NS
B18-BB-SB	8.0	20.0	8-15	7	NS	8-15	NS	NS
B18-CC-SB	13.0	20.0	13.6-14	0.4	NS	NS	13.6-14	NS
B18-DD-SB	4.0	20.0	4-18	14	15.5-18	NS	4-15.5	NS

Table 1 - Parcel B18 No. 10 Tank Area Investigation
Summary of Soil Core Observations

Boring ID	DTW (ft bgs)	DTB (ft bgs)	Interval of Product (ft bgs)	Product Thickness (ft)	Trace/sheen (ft bgs)	Light Product Interval (ft bgs)	Mod Product Interval (ft bgs)	Heavy Product Interval (ft bgs)
B18-EE-SB	9.0	15.0	NA	NA	NA	NA	NA	NA
B18-FF-SB	8.1	15.0	NA	NA	NA	NA	NA	NA
B18-GG-SB	7.0	20.0	0-5;7-19.2	17.2	16-19.2	16-19.2	7-10	10-15
B18-HH-SB	10.0	15.0	NA	NA	NA	NA	NA	NA
B18-II-SB	9.5	15.0	NA	NA	NA	NA	NA	NA
B18-JJ-SB	11.2	20.0	9.1-9.5;11.2-19.7	8.9	9.5;18.1-19.7	18.1-19.7	11.2-18.1	11.2-18.1
B18-KK-SB	9.0	20.0	8.5-10;11.5-20	10	17.5-20	8.5-10	NS	11.5-17.5
B18-LL-SB	5.0	20.0	5-15	10	5-7;17-20	7-10	7-10	10-15
B18-MM-SB	3.0	15.0	3-14	11	3-7.5;12.5-14	7.5-12.5	NS	7.5-12.5
B18-NN-SB	4.0	20.0	7-15	8	7-8	8-10	8-10;13.8-15	13.8-15
B18-OO-SB	3.9	15.0	8-14	6	NS	8-14	8-14	NS
B18-PP-SB	9.0	20.0	12.1-20	7.9	19.7-20	19.7-20	12.1-19.7	NS
B18-QQ-SB	4.0	20.0	0-18	18	14.4-18	0-2.5	NS	2.5-14.4
B18-RR-SB	4.5	20.0	2.1-19.6	17.5	15-19.6	2.1-4.5	NS	4.5-15
B18-SS-SB	NS	20.0	0-18.9	18.9	14.8-18.9	NS	0-9	9-14.8
B18-TT-SB	6.2	20.0	2.6-18.6	16	14.8-18.6	NS	2.6-8.9	8.9-14.8
B18-UU-SB	9.0	20.0	9.4-16.5	7.1	16.9-20	15.5-16.5	9.4-9.7	11.5-15.5
B18-VV-SB	9.0	20.0	2.4-15;16.5-18.8	16.4	2.4-5;16.5-18.8	2.4-5;5-10	5-10	10-15
B18-WW-SB	4.7	20.0	1.2-18	16.8	1.2-4.7;15-18	1.2-4.7	4.7-8.7	8.7-15
B18-XX-SB	8.5	20.0	13.7-18	4.3	NS	13.7-15	NS	15-18
B18-YY-SB	9.0	20.0	2-18	16	2-3.9;5-9	3.9-9;10-15	NS	15-18
B18-ZZ-SB	NA	7.5	2.1-6	3.9	2.1-5	2.1-5;5-6	NS	NS
B18-AAA-SB	7.5	8.0	1.5-2.6;4-8	4.9	NS	1.5-2.6	4-8	NS
B18-BBB-SB	7.5	20.0	3.5-4.5;7.5-8.5;13.5-18	6.5	7.5-8.5	3.5-4.5;13.5-18	13.5-18	NS
B18-CCC-SB	5.0	9.0	NA	NA	NA	NA	NA	NA
B18-DDD-SB	8.2	8.5	8.2-8.5	0.3	NS	NS	8.2-8.5	NS
B18-EEE-SB	5.0	7.0	2.5-2.8;4.8-5	0.5	2.5-2.8	NS	4.8-5	NS
B18-FFF-SB	7.8	20.0	11-15	4	11-15	NS	NS	NS
B18-GGG-SB	8.0	20.0	9.7-18	8.3	9.7-18	12.5-14.5;15-17	10-12.5	10-12.5
B18-HHH-SB	7.0	20.0	11.5-13.5	2	NS	11.5-13.5	NS	NS

Table 1 - Parcel B18 No. 10 Tank Area Investigation
Summary of Soil Core Observations

Boring ID	DTW (ft bgs)	DTB (ft bgs)	Interval of Product (ft bgs)	Product Thickness (ft)	Trace/sheen (ft bgs)	Light Product Interval (ft bgs)	Mod Product Interval (ft bgs)	Heavy Product Interval (ft bgs)
B18-III-SB	NA	4.0	NA	NA	NA	NA	NA	NA
B18-JJJ-SB	7.5	20.0	9.3-14.3	5	NS	9.3-14.3	NS	NS
B18-KKK-SB	7.5	20.0	9.3-13.8	4.5	NS	NS	9.3-10	11.13.8
B18-LLL-SB	8.2	20.0	13-18.1	5.1	13-18.1	13-15	15-18	15-18
B18-MMM-SB	6.2	20.0	9.6-18.5	8.9	14.2-16.5	NS	9.6-10;16.5-18.5	10-14.2;16.5-18.5
B18-NNN-SB	NA	5.0	NA	NA	NA	NA	NA	NA
B18-OOO-SB	7.5	10.0	NA	NA	NA	NA	NA	NA
B18-PPP-SB	NA	6.0	NA	NA	NA	NA	NA	NA
B18-QQQ-SB	8.0	20.0	11.5-15;17.5-19.6	5.6	17.5-19.6	11.5-15	NS	NS
B18-RRR-SB	8.0	20.0	10.8-15	4.2	NS	NS	10.8-15	10.8-15
B18-SSS-SB	8.6	20.0	NA	NA	NA	NA	NA	NA
B18-TTT-SB	8.2	20.0	NA	NA	NA	NA	NA	NA
B18-UUU-SB	8.5	9.5	5-9.5	4.5	5-8.9	8.9-9.5	NS	NS
B18-VVV-SB	9.0	20.0	7.5-15	7.5	NS	7.5-10;10.5-15	10.5-15	NS
B18-WWW-SB	9.0	20.0	NA	NA	NA	NA	NA	NA
B18-XXX-SB	7.8	20.0	9.7-10;11.5-15	3.8	9.7-10	11.5-15	NS	NS
B18-YYY-SB	8.0	20.0	11.5-13.5	2	NS	11.5-13.5	NS	NS
B18-ZZZ-SB	8.0	20.0	13.9-15;19.5-20	1.6	19.5	13.9-15	NS	NS
Original Phase II Investigation Borings (targetting former No. 10 and No. 11 Tanks)								
B18-044-SB	5.5	12.5	0-10	10	NS	NS	NS	NS
B18-045-SB	5.0	12.0	0-10	10	NS	NS	NS	NS
B18-046-SB*	9.8	17.0	1.8-5;7-7.5	3.7	NS	1.8-3.5;7-7.5	3.5-5	NS

Blue highlight indicates NAPL in groundwater
Yellow highlight indicates NAPL in soil
Red highlight indicates NAPL in both soil and groundwater
NA: Not Applicable
NS: Not Specified
DTW: Depth to Water
DTB: Depth to Bottom
*Trace NAPL was detected in B18-046-PZ during 0-hour and 48-hour gauging. Therefore, impacts were classified as both soil and groundwater.

Table 2 - Parcel B18 No. 10 Tank Area Investigation
Summary of VOCs and SVOCs Detected in Groundwater

Parameter	Units	PAL	B18-044-PZ	B18-046-PZ	B18-077-PZ	B18-078-PZ	B18-079-PZ	B18-080-PZ	B18-081-PZ	B18-082-PZ	B18-083-PZ	BA-81-7945	BA-81-7946	SW-084-MWS	SW-085-MWS	SW-086-MWS
Volatile Organic Compounds																
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	**5.3**	1 U	5 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	µg/L	7	2 U	2 U	2 U	2 U	2 U	**0.59 J**	2 U	10 U	2 U	2 U	10 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	µg/L	70	1 U	1 U	1 U	1 U	1 U	**0.51 J**	1 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U
2-Butanone	µg/L	5,600	**24.5**	10 U	10 U	10 U	10 U	10 U	10 U	50 U	10 U	10 U	50 U	10 U	10 U	10 U
2-Hexanone	µg/L	38	**7.9 J**	10 U	10 U	10 U	10 U	10 U	10 U	50 U	10 U	10 U	50 U	10 U	10 U	10 U
4-Methyl-2-pentanone	µg/L	1,200	**6.3 J**	10 U	10 U	10 U	10 U	10 U	10 U	50 U	10 U	10 U	50 U	10 U	10 U	10 U
Acetone	µg/L	14,000	**116**	6.9 B	3.5 B	3.7 B	4.3 B	4.4 B	4.1 B	48.7 B	3.5 B	3.7 B	44.9 B	5.4 B	4 B	23.3 B
Benzene	µg/L	5	**6.6**	**6.4**	1 U	**2.9**	**22**	**41.4**	**55.9**	**2,440**	1 U	1 U	**91.5**	**56.7**	**8.2**	**25.3**
Carbon disulfide	µg/L	810	**1.4**	1 U	1 U	**0.45 J**	1 U	1 U	1 U	5 U	1 U	1 U	5 U	1 U	**0.64 J**	**1.3**
Chloroform	µg/L	0.22	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	**1.1**	1 U	5 U	1 U	1 U	1 U
Cyclohexane	µg/L	13,000	**1.1 J**	10 U	10 U	10 U	10 U	10 U	10 U	50 U	10 U	10 U	50 U	**3.4 J**	**3.8 J**	**3.5 J**
Ethylbenzene	µg/L	700	**4.6**	**1.2**	1 U	**0.64 J**	**1.6**	**2**	**5.8**	**149**	1 U	1 U	**7.9**	**9.4**	**2.2**	**3.5**
Isopropylbenzene	µg/L	450	**0.7 J**	1 U	1 U	1 U	**0.28 J**	**0.34 J**	**0.67 J**	**4.7 J**	1 U	1 U	5 U	**1.2**	**1.1**	**1.7**
Methyl Acetate	µg/L	20,000	**5.6**	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U	5 U	25 U	5 U	5 U	5 U
Styrene	µg/L	100	1 U	**2.1**	1 U	**2**	**5.2**	**6.2**	**24.6**	**805**	1 U	1 U	**18.5**	**2**	1 U	1 U
Toluene	µg/L	1,000	**3.6**	**9.2**	1 U	**3.9**	**21.1**	**28.3**	**52.1**	**1,520**	1 U	1 U	**69.8**	**37.7**	**1.5**	**2.1**
Xylenes	µg/L	10,000	**16.8**	**23.6**	3 U	**10.1**	**33.8**	**41**	**102**	**2,010**	3 U	3 U	**97.2**	**48.5**	**6.6**	**10.1**
Semi-Volatile Organic Compounds^																
1,1-Biphenyl	µg/L	0.83	**30.3**	**3.4**	0.98 U	**3.1**	**7.3**	**7.1**	**10.6**	**44.4 J**	1 U	0.98 U	**12.1 J**	**5.5**	0.99 U	**0.83 J**
1,4-Dioxane	µg/L	0.46	**1.1**	**0.55**	**3.6**	**0.95**	**0.6**	**0.18**	0.098 U	**0.79**	**0.63**	**1.2**	**4.1**	**0.18**	0.099 U	0.098 U
2,4-Dimethylphenol	µg/L	360	**11.9**	**0.44 J**	0.98 U	0.98 U	**4.9**	**3.4**	**5.6**	**277**	1 U	0.98 U	**13.4 J**	**7.8**	**0.62 J**	**2.8**
2,4-Dinitrotoluene	µg/L	0.24	**23.4**	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	0.98 U	0.99 U	0.98 U
2,6-Dinitrotoluene	µg/L	0.048	9.8 U	**0.4 J**	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	**0.32 J**	0.99 U	0.98 U
2-Chloronaphthalene	µg/L	750	**3.5 J**	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	0.98 U	0.99 U	**3.9**
2-Chlorophenol	µg/L	91	9.8 U	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	**1.3**	0.99 U	**2**
2-Methylnaphthalene	µg/L	36	**582**	**66.3**	0.098 U	**16.5**	**138**	**85.9**	**206**	**508**	**0.15**	0.098 U	**228**	**87.4**	**92.4**	**281**
2-Methylphenol	µg/L	930	**7.4 J**	**0.47 J**	0.98 U	**0.15 J**	**5.6**	**7.5**	**10.3**	**584**	1 U	0.98 U	**26.7 J**	**4.6**	**0.25 J**	**2.2**
3&4-Methylphenol(m&p Cresol)	µg/L	930	**7.2 J**	**0.67 J**	0.98 U	**0.25 J**	**12.5**	**12**	**24.8**	**620**	1 U	0.98 U	**24.4 J**	**6.6**	**0.35 J**	**4**
3,3'-Dichlorobenzidine	µg/L	0.12	**2.9 J**	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	0.98 U	0.99 U	0.98 U
4-Chloroaniline	µg/L	0.36	**6.9 J**	**1.9**	0.98 U	0.98 U	**3.3**	0.98 U	0.98 U	**46.9 J**	1 U	0.98 U	48.8 U	0.98 U	0.99 U	0.98 U
Acenaphthene	µg/L	530	**37.4**	**1.3**	0.098 U	**0.82**	**3.1**	**3.7**	**4.5**	**3.5**	0.1 U	0.098 U	**5.2**	**4.3**	**7.3**	**15.2**
Acenaphthylene	µg/L	530	**10.3**	**4.2**	0.098 U	**3.8**	**9.9**	**15.2**	**70.7 J**	**133**	**0.092 J**	**0.063 J**	**14**	**2.1**	**3.1**	**1.9**
Acetophenone	µg/L	1,900	**6 J**	0.98 U	0.98 U	0.98 U	0.99 U	**0.8 J**	0.98 U	**68.1**	1 U	0.98 U	48.8 U	**0.73 J**	**0.8 J**	0.98 U
Anthracene	µg/L	1,800	**60.9**	**0.72**	**0.081 J**	**1.1**	**1.4**	**4.1**	**4.3**	**1.1**	**0.057 J**	0.098 U	**3.8**	**3.9**	**8.6**	**4.5**
Benz[a]anthracene	µg/L	0.03	**41.8**	0.098 U	0.098 U	**0.095 J**	**0.11**	**1.6**	**1.6**	**0.28**	0.1 U	0.098 U	**0.28**	**1.5**	**6**	**0.59**
Benzaldehyde	µg/L	1,900	9.8 U	**1.2**	0.98 U	**0.53 J**	**0.7 J**	**0.52 J**	**1.6**	**22.9 J**	1 U	0.98 U	48.8 U	**1.3**	**0.43 J**	0.98 U
Benzo[a]pyrene	µg/L	0.2	**24.2**	0.098 U	0.098 U	**0.029 J**	**0.014 J**	**1.2**	**1.2**	**0.16**	0.1 U	**0.015 J**	**0.098**	**1.1**	**5.2**	**0.32**
Benzo[b]fluoranthene	µg/L	0.25	**15.1**	0.098 U	0.098 U	**0.058 J**	0.099 U	**1.8**	**1.7**	**0.48**	0.1 U	0.098 U	**0.17**	**1.5**	**7.5**	**0.54**
Benzo[g,h,i]perylene	µg/L		**13**	0.098 U	0.098 U	0.098 U	0.099 U	**0.56**	**0.52**	**0.074 J**	0.1 U	0.098 U	0.098 U	**0.41**	**1.9**	**0.12**
Benzo[k]fluoranthene	µg/L	2.5	**12.2**	0.098 U	0.098 U	**0.047 J**	0.099 U	**0.61**	**0.53**	**0.39**	0.1 U	0.098 U	**0.14**	**1.2**	**6**	**0.44**
bis(2-chloroethoxy)methane	µg/L	59	9.8 U	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	**0.3 J**	0.99 U	0.98 U
bis(2-Ethylhexyl)phthalate	µg/L	6	9.8 U	0.98 U	**0.3 J**	0.98 U	0.16 B	**0.25 J**	**0.32 J**	49 U	**0.2 J**	0.98 U	48.8 U	**0.35 J**	**0.39 J**	0.98 U
Caprolactam	µg/L	9,900	**21 J**	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	123 U	2.6 U	2.5 U	122 U	2.5 U	2.5 U	2.5 U
Carbazole	µg/L		9.8 U	**0.49 J**	0.98 U	**0.53 J**	**25**	**27.8**	**56.6**	49 U	1 U	0.98 U	**103**	**38**	**32.2**	**130**
Chrysene	µg/L	25	**55.6**	**0.051 J**	0.098 U	**0.076 J**	0.099 U	**1.4**	**1.3**	**0.3**	0.1 U	0.098 U	**0.19**	**1.3**	**4.6**	**0.46**
Dibenz[a,h]anthracene	µg/L	0.025	**2.9 J**	0.098 U	0.098 U	0.098 U	0.099 U	**0.25**	**0.2**	0.098 U	0.1 U	0.098 U	0.098 U	**0.13**	**0.52**	**0.028 J**
Fluoranthene	µg/L	800	**39**	**0.17**	0.098 U	**0.71**	**1.1**	**5.6**	**8.5**	**1.3**	0.1 U	**0.033 J**	**2.8**	**3.6**	**13.1**	**4.3**
Fluorene	µg/L	290	**71.1**	**1.6**	0.098 U	**2.9**	**12**	**17.5**	**17**	**7.6**	**0.067 J**	0.098 U	**101**	**8.3**	**14.7**	**18.7**
Hexachloroethane	µg/L	0.33	9.8 U	0.98 U	0.98 U	0.98 U	**0.72 J**	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	0.98 U	0.99 U	0.98 U
Indeno[1,2,3-c,d]pyrene	µg/L	0.25	**3.7 J**	0.098 U	0.098 U	0.098 U	0.099 U	**0.52**	**0.5**	**0.075 J**	0.1 U	0.098 U	0.098 U	**0.32**	**1.2**	**0.13**
Isophorone	µg/L	78	**3.2 J**	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	0.98 U	0.99 U	0.98 U
Naphthalene	µg/L	0.17	**159**	**314**	**0.043 J**	**127**	**1,310**	**587**	**2,520**	**15,300**	**0.63**	0.067 B	**3,860**	**191**	**90.4**	**625**
Nitrobenzene	µg/L	0.14	9.8 U	0.98 U	0.98 U	**0.24 J**	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	0.98 U	0.99 U	0.98 U
N-Nitrosodiphenylamine	µg/L	12	**35.7**	**0.22 J**	0.98 U	**0.22 J**	0.99 U	0.98 U	0.98 U	49 U	1 U	0.98 U	48.8 U	**0.72 J**	**0.86 J**	0.98 U
Pentachlorophenol	µg/L	1	24.5 U	2.5 U	2.5 U	**1.1 J**	**1.5 J**	**0.98 J**	**1.1 J**	123 U	2.6 U	2.5 U	122 U	2.5 U	2.5 U	2.5 U
Phenanthrene	µg/L		**390**	**3.8**	0.098 U	**5.5**	**18.1**	**39.2**	98 U	**8.2**	0.1 U	0.098 U	97.6 U	**21.1**	**16.4**	**44.7**
Phenol	µg/L	5,800	**17.8**	**2.2**	0.98 U	**2.1**	**8.6**	**0.6 J**	**12.8**	**398**	1 U	0.98 U	48.8 U	**1.1**	**0.21 J**	**3.9**
Pyrene	µg/L	120	**266**	**0.6**	0.098 U	**0.44**	**0.6**	**3.5**	**5.9**	**1.1**	0.1 U	0.098 U	**2.2**	**6**	**18.2**	**3.6**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
^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: The analyte was not detected substantially above the level of the associated method blank or field blank.

Table 3 - Parcel B18 No. 10 Tank Area Investigation
Groundwater Survey and Elevation Data

Location ID	TOC Elevation (ft. AMSL)	Ground Elevation (ft. AMSL)	Measured DTW (ft.)	Groundwater Elevation (ft. AMSL)	Depth to LNAPL (ft.)	Depth to DNAPL (ft.)	Depth to Bottom (ft.)
B18-017-PZ*	14.50	13.52	7.36	7.14	none	none	14.92
B18-044-PZ^	11.88	8.82	5.28	6.60	none	trace	6.03
B18-045-PZ	11.41	8.65	7.65	3.76	trace	7.90	14.25
B18-046-PZ	17.00	13.81	12.04	4.96	none	none	19.79
B18-047-PZ	17.27	14.03	12.40	4.87	none	none	14.97
B18-059-PZ^	Destroyed						
B18-061-PZ	16.63	13.57	11.24	5.39	none	none	14.89
B18-077-PZ	16.16	13.03	9.36	6.80	none	none	15.55
B18-078-PZ	15.49	12.90	10.56	4.93	none	none	21.43
B18-079-PZ[¥]	14.08	10.63	11.95	2.13	10.40	none	17.70
B18-080-PZ	12.80	8.84	10.41	2.39	none	none	23.78
B18-081-PZ	12.42	9.99	10.50	1.92	none	none	18.42
B18-082-PZ	15.34	12.83	10.69	4.65	trace	none	14.21
B18-083-PZ^	14.23	12.44	Destroyed				
BA-81-7941[+]	10.38	8.61	7.58	2.80	none	19.20	19.97
BA-81-7942[+]	11.88	9.88	9.15	2.73	trace	17.60	22.62
BA-81-7943[+]	11.46	9.23	9.95	1.51	trace	20.65	21.20
BA-81-7944[+]	10.59	8.93	7.60	2.99	trace	18.22	19.50
BA-81-7945	11.53	10.95	7.86	3.67	none	none	19.79
BA-81-7946	12.19	10.56	9.14	3.05	none	none	10.18
SW-029-MWS	15.70	13.16	11.12	4.58	none	none	13.00
SW-084-MWS	11.51	9.06	10.15	1.36	trace	20.68	20.94
SW-085-MWS	7.04	4.57	5.40	1.64	trace	9.39	16.88
SW-086-MWS	6.96	4.39	4.56	2.40	trace	10.92	19.14
SW13-PZM003	17.82	14.01	12.89	4.93	none	none	18.94

DTW = Depth to water
TOC = Top of casing
AMSL = Above mean sea level

^B18-044-PZ, B18-059-PZ, and B18-083-PZ were excluded from the groundwater contour map due to damage.
Values highlighted in orange are suspect based on the shallow depth to bottom measurement.
[+]BA-81-7941 through BA-81-7944 were excluded from the groundwater contour map in accordance with the Work Plan.
[¥]SW-079-PZ was excluded from the groundwater contour map due to the presence of measureable LNAPL.
*B18-017-PZ stickup was observed to be damaged. TOC elevation reported by surveyor has been adjusted.

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	10/18/2016			10/20/2016			10/21/2016			10/24/2016			10/26/2016		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NA	NA	NA	-	4.72	-	NM	NM	NM	-	9.14	-	-	9.46	-
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	NA	NA	NA	-	7.81	-	NM	NM	NM	**7.62**	**8.90**	**1.28**	**8.92**	**10.58**	**1.66**
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**trace**	**12.60**	**trace**
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	-	12.63	-	-	12.74	-	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	-	-	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	NM	NM	NM	**10.29**	**7.31**	**9.71**	NM	NM	NM	NM	NM	NM	**15.09**	**9.10**	**4.91**
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	NM	NM	NM	NM	NM	NM	**13.10**	**9.39**	**9.52**	NM	NM	NM	**15.74**	**9.04**	**6.88**
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	NM	NM	NM	NM	NM	NM	**10.73**	**7.70**	**8.77**	NM	NM	NM	**18.40**	**8.19**	**1.10**
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	NM	NM	NM	NM	NM	NM	-	9.31	-	NM	NM	NM	-	9.62	-
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not Applicable
NM = Not Measured
TOC = Top of Casing
bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	10/28/2016			11/2/2016			11/11/2016			11/18/2016			11/21/2016		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	-	9.43	-	-	9.45	-	NM	NM	NM	-	3.03	-
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	NM	NM	NM	**9.00**	**13.87**	**4.87**	**9.20**	**8.25**	**5.75**	NM	NM	NM	**9.10**	**-**	**5.85**
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	**trace**	**13.67**	**trace**	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	13.23	-	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	dry	-	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	NM	NM	NM	**18.20**	**8.12**	**1.80**	**19.15**	**8.20**	**0.85**	NM	NM	NM	NM	NM	NM
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	NM	NM	NM	**18.46**	**9.66**	**4.16**	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	NM	NM	NM	**18.26**	**8.15**	**1.24**	**18.41**	**9.20**	**1.09**	NM	NM	NM	NM	NM	NM
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	NM	NM	NM	-	9.65	-	-	9.72	-	NM	NM	NM	NM	NM	NM
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not Applicable
NM = Not Measured
TOC = Top of Casing
bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	11/28/2016			12/16/2016			12/22/2016			12/29/2016			1/20/2017		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	5.62	-	-	4.99	-
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	NM	NM	NM	**11.90**	**7.85**	**3.05**	**12.90**	**6.75**	**2.05**	**9.65**	**6.43**	**5.30**	**10.80**	**6.15**	**4.15**
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	-	8.12	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	NM	NM	NM	**6.08**	**7.30**	**1.22**	**trace**	**7.30**	**trace**	**18.95**	**5.62**	**1.05**	**19.30**	**5.25**	**0.70**
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	NM	NM	NM	**20.00**	**11.75**	**2.62**	**19.54**	**11.75**	**3.08**	**20.45**	**7.47**	**2.17**	**19.85**	**7.22**	**2.77**
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	NM	NM	NM	**13.80**	**10.00**	**5.70**	**15.40**	**10.00**	**4.10**	**13.75**	**5.34**	**5.75**	**19.36**	**7.00**	**0.14**
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	6.00	-
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	NM	NM	NM	-	6.66	-	-	6.75	-	-	6.36	-	-	6.14	-
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not Applicable
NM = Not Measured
TOC = Top of Casing
bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	1/27/2017			2/9/2017			2/23/2017			3/29/2017			4/6/2017		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	-	5.73	-	NM	NM	NM	NM	NM	NM
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	**5.71**	**7.40**	**1.69**	**12.39**	**6.78**	**2.56**	**trace**	**6.39**	**trace**	**11.55**	**8.00**	**3.40**	**11.41**	**7.89**	**3.54**
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	**19.30**	**5.18**	**0.70**	**19.20**	**5.48**	**0.80**	**19.20**	**5.50**	**0.80**	**19.80**	**5.48**	**0.20**	**19.38**	**5.51**	**0.62**
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	**20.05**	**7.19**	**2.57**	**18.90**	**7.52**	**3.72**	**20.30**	**7.50**	**2.32**	**19.82**	**7.52**	**2.80**	**19.66**	**7.48**	**2.96**
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	**17.90**	**4.81**	**1.60**	**18.45**	**5.23**	**1.05**	**18.70**	**5.28**	**0.80**	**18.75**	**5.23**	**0.75**	**18.47**	**5.30**	**1.03**
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	-	5.97	-	-	5.99	-	-	6.18	-	-	7.71	-	-	7.63	-
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	-	6.16	-	-	6.27	-	-	6.27	-	-	9.14	-	-	9.01	-
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
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Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	4/13/2017			4/20/2017			4/24/2017			5/4/2017			5/24/2017		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	7.10	-
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	**11.73**	**8.31**	**3.22**	**14.10**	**8.33**	**0.85**	**14.08**	**8.34**	**0.87**	**13.80**	**8.29**	**1.15**	-	9.40	-
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace**	**13.10**	**trace**
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	12.20	-
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	**19.25**	**7.72**	**0.75**	**19.47**	**7.92**	**0.53**	**19.50**	**7.90**	**0.50**	**19.45**	**7.88**	**0.55**	-	8.20	-
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	**20.34**	**9.20**	**2.28**	**20.01**	**9.42**	**2.61**	**20.10**	**9.41**	**2.52**	**20.09**	**9.39**	**2.53**	-	9.35	-
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	**18.59**	**7.70**	**0.91**	**18.53**	**7.78**	**0.97**	**18.17**	**7.83**	**1.33**	**18.23**	**7.80**	**1.27**	-	8.10	-
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	-	7.60	-	-	7.76	-	-	7.78	-	-	7.78	-	-	9.40	-
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	-	9.31	-	-	9.53	-	-	9.52	-	-	9.49	-	-	8.20	-
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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* Piezometer observed to have been destroyed
Pink = LNAPL Detection
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Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	5/30/2017			6/8/2017			6/15/2017			6/20/2017			6/21/2017		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	-	4.64	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	**8.05**	**8.30**	**0.25**	**14.40**	**8.10**	**0.55**	**14.60**	**8.65**	**0.35**	**9.12**	**8.27**	**5.83**	NM	NM	NM
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	-	12.59	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	-	12.74	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	**trace**	**7.96**	**trace**	**19.50**	**7.75**	**0.50**	**19.22**	**7.88**	**0.78**	**19.11**	**8.82**	**0.89**	NM	NM	NM
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	**trace**	**9.50**	**trace**	**18.74**	**9.34**	**3.88**	**19.40**	**9.42**	**3.22**	**19.70**	**9.56**	**2.92**	NM	NM	NM
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	**20.35**	**9.93**	**1.51**
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	**trace**	**7.95**	**trace**	**18.29**	**7.84**	**1.21**	**18.16**	**8.04**	**1.34**	**18.06**	**8.91**	**1.44**	NM	NM	NM
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	-	9.15	-	-	7.73	-	-	7.87	-	-	7.93	-	-	7.93	-
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	-	7.65	-	-	9.26	-	-	9.50	-	-	9.55	-	NM	NM	NM
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not Applicable
NM = Not Measured
TOC = Top of Casing
bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	6/26/2017			6/28/2017			8/10/2017			7/11/2018			7/12/2018		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	**9.18**	**8.30**	**5.77**	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NA	NA	NA	**trace**	**9.16**	**trace**	-	9.32	-	NM	NM	NM	NM	NM	NM
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	12.61	-
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	10.27	-
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	12.00	-	NM	NM	NM
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	11.61	-
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	**19.12**	**8.85**	**0.88**	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	**19.12**	**9.58**	**3.50**	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	**18.04**	**8.88**	**1.46**	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	-	7.82	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	-	9.53	-	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA = Not Applicable
NM = Not Measured
TOC = Top of Casing
bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	7/13/2018			7/16/2018			7/18/2018			10/23/2018			10/24/2018		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NM	NM	NM	-	12.95	-	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	-	11.43	-	-	11.50	-	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NA	NA	NA	-	11.4	-	-	10.92	-	NM	NM	NM	NM	NM	NM
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NM	NM	NM	-	10.37	-	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NM	NM	NM	**12.05**	**13.35**	**1.30**	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NM	NM	NM	-	11.06	-	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**trace**	**5.51**	**trace**
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	**trace**	**5.36**	**trace**	NM	NM	NM

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* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	10/25/2018			10/26/2018			10/29/2018			1/10/2019			1/17/2019		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	9.27	-
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace**	**10.04**	**trace**	NM	NM	NM
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	10.55	-	NM	NM	NM
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	10.65	-	NM	NM	NM
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	9.21	-	NM	NM	NM
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NM	NM	NM	NM	NM	NM	NM	NM	NM	**10.65**	**11.94**	**1.29**	NM	NM	NM
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	9.83	-	NM	NM	NM
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	**trace**	**11.74**	**trace**	NM	NM	NM	**trace**	**10.74**	**trace**	NM	NM	NM	NM	NM	NM
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NM	NM	NM	**trace**	**5.21**	**trace**	NM	NM	NM	NM	NM	NM	NM	NM	NM
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NM	NM	NM	**trace**	**4.95**	**trace**	NM	NM	NM	NM	NM	NM	NM	NM	NM

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* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 4 - Parcel B18 No. 10 Tank Area Investigation
NAPL Gauging Activties

Sample ID	Installation Date	Abandonment Date	Well Total Depth (ft. bgs)	Screen Interval (ft. bgs)	Riser Stick-Up (ft.)	1/21/2019			2/12/2019			2/14/2019			11/6/2019		
						Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)	Depth to NAPL (ft. TOC)	Depth to Water (ft. TOC)	NAPL Thickness (ft.)
B18-017-PZ (reinstallation)	1/17/2019	NA	14	4-14	2.96	-	8.96	-	NM	NM	NM	NM	NM	NM	-	7.36	-
B18-044-PZ	10/20/2016	NA	12.5	2.5-12.5	3.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace**	**5.28**	**trace**
B18-045-PZ	10/20/2016	NA	12	2-12	2.95	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 7.90 DNAPL**	**7.65**	**7.05**
B18-046-PZ	10/26/2016	NA	17	7-17	3.18	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	12.04	-
B18-047-PZ	10/18/2016	NA	12.5	2.5-12.5	3.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	12.40	-
B18-059-PZ	10/18/2016	11/6/2019*	9	4-9	3.30	NM	NM	NM	NM	NM	NM	NM	NM	NM	* Destroyed		
B18-061-PZ (reinstallation)	2/12/2019	NA	12	2-12	3.10	NA	NA	NA	-	11.82	-	-	11.59	-	-	11.24	-
B18-077-PZ	6/28/2017	NA	13	3-13	3.10	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	9.36	-
B18-078-PZ	7/12/2018	NA	20	3-20	2.58	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	10.56	-
B18-079-PZ	7/13/2018	NA	20	3-20	3.26	NM	NM	NM	NM	NM	NM	NM	NM	NM	**10.40**	**11.95**	**1.55**
B18-080-PZ	7/16/2018	NA	20	3-20	4.00	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	10.41	-
B18-081-PZ	7/12/2018	NA	20	3-20	2.36	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	10.50	-
B18-082-PZ	7/11/2018	NA	20	3-20	2.38	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace**	**10.69**	**trace**
B18-083-PZ	7/12/2018	11/6/2019*	20	3-20	2.31	NM	NM	NM	NM	NM	NM	NM	NM	NM	* Destroyed		
BA-81-7941	Mar-88	NA	18.26	unknown	1.74	NM	NM	NM	NM	NM	NM	NM	NM	NM	**19.20**	**7.58**	**0.80**
BA-81-7942	Mar-88	NA	20.59	unknown	2.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 17.60 DNAPL**	**9.15**	**5.02**
BA-81-7943	Mar-88	NA	19.71	unknown	2.15	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 20.65 DNAPL**	**9.95**	**1.21**
BA-81-7944	Mar-88	NA	17.91	unknown	1.59	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 18.22 DNAPL**	**7.60**	**1.28**
BA-81-7945	Mar-88	NA	19.08	unknown	0.71	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	7.86	-
BA-81-7946	Mar-88	NA	8.73	unknown	1.52	NM	NM	NM	NM	NM	NM	NM	NM	NM	-	9.14	-
SW-084-MWS	10/25/2018	NA	19.4	2.4-19.4	2.47	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 20.68 DNAPL**	**10.15**	**1.19**
SW-085-MWS	10/24/2018	NA	16.3	3.3-16.3	2.50	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 9.39 DNAPL**	**5.40**	**9.41**
SW-086-MWS	10/23/2018	NA	17.6	4.6-17.6	2.94	NM	NM	NM	NM	NM	NM	NM	NM	NM	**trace LNAPL and 10.92 DNAPL**	**4.56**	**9.62**

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bgs = below ground surface
* Piezometer observed to have been destroyed
Pink = LNAPL Detection
Blue = DNAPL Detection
Purple = LNAPL & DNAPL Detection

Table 5 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Solid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
B18 Waste Disposal (2/2/17)	1,1-Dichloroethene	0.05	U	0.7	no	0.05
	1,2-Dichloroethane	0.05	U	0.5	no	0.05
	1,4-Dichlorobenzene	0.5	U	7.5	no	0.5
	2,4,5-Trichlorophenol	5	U	400	no	5
	2,4,6-Trichlorophenol	0.1	U	2	no	0.1
	2,4-Dinitrotoluene	0.1	U	0.13	no	0.1
	2-Butanone (MEK)	5	U	200	no	5
	2-Methylphenol	2	U	200	no	2
	3&4-Methylphenol(m&p Cresol)	2	U	200	no	2
	Arsenic	0.05	U	5	no	0.05
	Barium	0.21	J	100	no	1
	Benzene	0.05	U	0.5	no	0.05
	Cadmium	0.00055	J	1	no	0.05
	Carbon tetrachloride	0.05	U	0.5	no	0.05
	Chlorobenzene	1	U	100	no	1
	Chloroform	0.5	U	6	no	0.5
	Chromium	0.0073	B	5	no	0.05
	Hexachlorobenzene	0.1	U	0.13	no	0.1
	Hexachloroethane	0.5	U	3	no	0.5
	Lead	0.1	U	5	no	0.1
	Mercury	0.001	U	0.2	no	0.001
	Nitrobenzene	0.1	U	2	no	0.1
	Pentachlorophenol	5	U	100	no	5
	Selenium	0.011	J	1	no	0.1
	Silver	0.05	U	5	no	0.05
	Tetrachloroethene	0.05	U	0.7	no	0.05
	Trichloroethene	0.05	U	0.5	no	0.05
	Vinyl chloride	0.05	U	0.2	no	0.05

Table 5 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Solid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
B18 Waste (8/17/18)	1,1-Dichloroethene	0.05	U	0.7	no	0.05
	1,2-Dichloroethane	0.05	U	0.5	no	0.05
	1,4-Dichlorobenzene	0.1	U	7.5	no	0.1
	2,4,5-Trichlorophenol	0.25	U	400	no	0.25
	2,4,6-Trichlorophenol	0.1	U	2	no	0.1
	2,4-Dinitrotoluene	0.1	U	0.13	no	0.1
	2-Butanone (MEK)	0.1	U	200	no	0.1
	2-Methylphenol	0.1	U	200	no	0.1
	3&4-Methylphenol(m&p Cresol)	0.2	U	200	no	0.2
	Arsenic	0.025	U	5	no	0.025
	Barium	0.24		100	no	0.05
	Benzene	0.05	U	0.5	no	0.05
	Cadmium	0.015	U	1	no	0.015
	Carbon tetrachloride	0.05	U	0.5	no	0.05
	Chlorobenzene	0.05	U	100	no	0.05
	Chloroform	0.05	U	6	no	0.05
	Chromium	0.025	U	5	no	0.025
	Hexachlorobenzene	0.1	U	0.13	no	0.1
	Hexachloroethane	0.1	U	3	no	0.1
	Lead	0.05	U	5	no	0.05
	Mercury	0.001	U	0.2	no	0.001
	Nitrobenzene	0.1	U	2	no	0.1
	Pentachlorophenol	0.25	U	100	no	0.25
	Selenium	0.04	U	1	no	0.04
	Silver	0.03	U	5	no	0.03
	Tetrachloroethene	0.05	U	0.7	no	0.05
	Trichloroethene	0.05	U	0.5	no	0.05
	Vinyl chloride	0.05	U	0.2	no	0.05

Table 5 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Solid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
B18 Waste (10/31/18)	1,1-Dichloroethene	0.05	U	0.7	no	0.05
	1,2-Dichloroethane	0.05	U	0.5	no	0.05
	1,4-Dichlorobenzene	0.5	U	7.5	no	0.5
	2,4,5-Trichlorophenol	5	U	400	no	5
	2,4,6-Trichlorophenol	0.1	U	2	no	0.1
	2,4-Dinitrotoluene	0.1	U	0.13	no	0.1
	2-Butanone (MEK)	0.1	U	200	no	0.1
	2-Methylphenol	2	U	200	no	2
	3&4-Methylphenol(m&p Cresol)	2	U	200	no	2
	Arsenic	0.025	U	5	no	0.025
	Barium	0.34		100	no	0.05
	Benzene	0.05	U	0.5	no	0.05
	Cadmium	0.015	U	1	no	0.015
	Carbon tetrachloride	0.05	U	0.5	no	0.05
	Chlorobenzene	0.05	U	100	no	0.05
	Chloroform	0.05	U	6	no	0.05
	Chromium	0.0045	J	5	no	0.025
	Hexachlorobenzene	0.1	U	0.13	no	0.1
	Hexachloroethane	0.2	U	3	no	0.2
	Lead	0.025	U	5	no	0.025
	Mercury	0.001	U	0.2	no	0.001
	Nitrobenzene	0.1	U	2	no	0.1
	Pentachlorophenol	5	U	100	no	5
	Selenium	0.04	U	1	no	0.04
	Silver	0.03	U	5	no	0.03
	Tetrachloroethene	0.05	U	0.7	no	0.05
	Trichloroethene	0.05	U	0.5	no	0.05
	Vinyl chloride	0.05	U	0.2	no	0.05

U: The analyte was not detected in the sample. The numeric value represents the sample LOQ.
J: The positive result reported for this analyte is a quantitative estimate below the laboratory LOQ.
B: The analyte was not detected substantially above the level of the associated method blank or field blank.
TCLP: Toxicity Characteristic Leaching Procedure
LOQ: Limit of Quantitation

Table 6 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Liquid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
Water Disposal (2/2/17)	1,1-Dichloroethene	0.001	U	0.7	no	0.001
	1,2-Dichloroethane	0.001	U	0.5	no	0.001
	1,4-Dichlorobenzene	0.001	U	7.5	no	0.001
	2-Butanone (MEK)	0.01	U	200	no	0.01
	Arsenic	0.005	U	5	no	0.005
	Barium	0.0564		100	no	0.01
	Benzene	0.0019		0.5	no	0.001
	Cadmium	0.003	U	1	no	0.003
	Carbon tetrachloride	0.001	U	0.5	no	0.001
	Chlorobenzene	0.001	U	100	no	0.001
	Chloroform	0.00092	J	6	no	0.001
	Chromium	0.0021	J	5	no	0.005
	Lead	0.005	U	5	no	0.005
	Mercury	0.0002	U	0.2	no	0.0002
	Selenium	0.008	U	1	no	0.008
	Silver	0.006	U	5	no	0.006
	Tetrachloroethene	0.001	U	0.7	no	0.001
	Trichloroethene	0.001	U	0.5	no	0.001
	Vinyl chloride	0.001	U	0.2	no	0.001

Table 6 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Liquid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
Water Disposal (8/17/18)	1,1-Dichloroethene	0.005	U	0.7	no	0.005
	1,2-Dichloroethane	0.005	U	0.5	no	0.005
	1,4-Dichlorobenzene	0.005	U	7.5	no	0.005
	2,4,5-Trichlorophenol	0.0025	U	400	no	0.0025
	2,4,6-Trichlorophenol	0.001	U	2	no	0.001
	2,4-Dinitrotoluene	0.001	U	0.13	no	0.001
	2-Butanone (MEK)	0.151		200	no	0.05
	2-Methylphenol	0.00073	J	200	no	0.001
	3&4-Methylphenol(m&p Cresol)	0.00067	J	200	no	0.002
	Arsenic	0.0038	J	5	no	0.005
	Barium	0.101		100	no	0.01
	Benzene	0.0993		0.5	no	0.005
	Cadmium	0.0304		1	no	0.003
	Carbon tetrachloride	0.005	U	0.5	no	0.005
	Chlorobenzene	0.005	U	100	no	0.005
	Chloroform	0.005	U	6	no	0.005
	Chromium	0.0066		5	no	0.005
	Hexachlorobenzene	0.001	U	0.13	no	0.001
	Hexachloroethane	0.001	U	3	no	0.001
	Lead	0.0396		5	no	0.005
	Mercury	0.0002	U	0.2	no	0.0002
	Nitrobenzene	0.001	U	2	no	0.001
	Pentachlorophenol	0.0025	U	100	no	0.0025
	Selenium	0.008	U	1	no	0.008
	Silver	0.0013	J	5	no	0.006
	Tetrachloroethene	0.005	U	0.7	no	0.005
	Trichloroethene	0.0028	J	0.5	no	0.005
	Vinyl chloride	0.005	U	0.2	no	0.005

Table 6 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Liquid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
Water Waste (10/31/18)	1,1-Dichloroethene	0.001	U	0.7	no	0.001
	1,2-Dichloroethane	0.0014		0.5	no	0.001
	1,4-Dichlorobenzene	0.001	U	7.5	no	0.001
	2,4,5-Trichlorophenol	0.0025	U	400	no	0.0025
	2,4,6-Trichlorophenol	0.00099	U	2	no	0.00099
	2,4-Dinitrotoluene	0.00099	U	0.13	no	0.00099
	2-Butanone (MEK)	0.01	U	200	no	0.01
	2-Methylphenol	0.00099	U	200	no	0.00099
	3&4-Methylphenol(m&p Cresol)	0.00023	J	200	no	0.002
	Arsenic	0.005	U	5	no	0.005
	Barium	0.0677		100	no	0.01
	Benzene	0.0663		0.5	no	0.001
	Cadmium	0.003	U	1	no	0.003
	Carbon tetrachloride	0.001	U	0.5	no	0.001
	Chlorobenzene	0.001	U	100	no	0.001
	Chloroform	0.001	U	6	no	0.001
	Chromium	0.0249		5	no	0.005
	Hexachlorobenzene	0.00099	U	0.13	no	0.00099
	Hexachloroethane	0.00099	U	3	no	0.00099
	Lead	0.0103		5	no	0.005
	Mercury	0.0002	U	0.2	no	0.0002
	Nitrobenzene	0.00099	U	2	no	0.00099
	Pentachlorophenol	0.0025	U	100	no	0.0025
	Selenium	0.008	U	1	no	0.008
	Silver	0.006	U	5	no	0.006
	Tetrachloroethene	0.001	U	0.7	no	0.001
	Trichloroethene	0.001	U	0.5	no	0.001
	Vinyl chloride	0.001	U	0.2	no	0.001

Table 6 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Liquid IDW

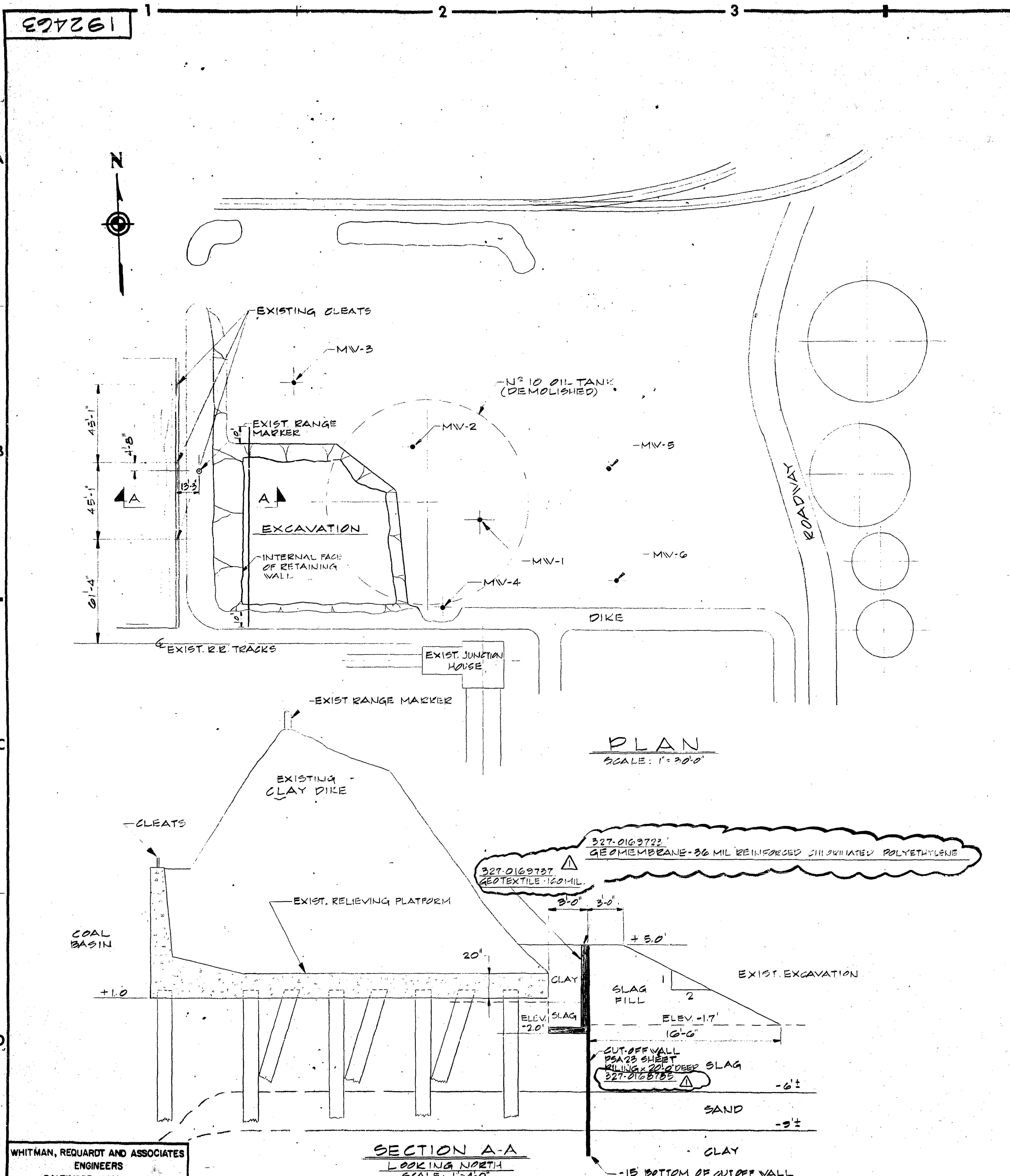
Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
Water Waste 1 (6/19/19)	1,1-Dichloroethene	0.001	U	0.7	no	0.001
	1,2-Dichloroethane	0.001	U	0.5	no	0.001
	1,4-Dichlorobenzene	0.001	U	7.5	no	0.001
	2,4,5-Trichlorophenol	0.0026	U	400	no	0.0026
	2,4,6-Trichlorophenol	0.001	U	2	no	0.001
	2,4-Dinitrotoluene	0.001	U	0.13	no	0.001
	2-Butanone (MEK)	0.0046	J	200	no	0.01
	2-Methylphenol	0.001	U	200	no	0.001
	3&4-Methylphenol(m&p Cresol)	0.0021	U	200	no	0.0021
	Arsenic	0.0137		5	no	0.005
	Barium	0.108		100	no	0.01
	Benzene	0.0024		0.5	no	0.001
	Cadmium	0.0313		1	no	0.003
	Carbon tetrachloride	0.001	U	0.5	no	0.001
	Chlorobenzene	0.001	U	100	no	0.001
	Chloroform	0.001	U	6	no	0.001
	Chromium	0.0034	J	5	no	0.005
	Hexachlorobenzene	0.001	U	0.13	no	0.001
	Hexachloroethane	0.001	U	3	no	0.001
	Lead	0.005	U	5	no	0.005
	Mercury	0.0002	U	0.2	no	0.0002
	Nitrobenzene	0.001	U	2	no	0.001
	Pentachlorophenol	0.0026	U	100	no	0.0026
	Selenium	0.0244		1	no	0.008
	Silver	0.006	U	5	no	0.006
	Tetrachloroethene	0.001	U	0.7	no	0.001
	Trichloroethene	0.001	U	0.5	no	0.001
	Vinyl chloride	0.001	U	0.2	no	0.001

Table 6 - Parcel B18 No. 10 Tank Area Investigation
Characterization Results for Liquid IDW

Sample ID	Parameter	Result (mg/L)	Laboratory Flag	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory LOQ (mg/L)
Water Waste 2 (6/19/19)	1,1-Dichloroethene	0.001	U	0.7	no	0.001
	1,2-Dichloroethane	0.001	U	0.5	no	0.001
	1,4-Dichlorobenzene	0.001	U	7.5	no	0.001
	2,4,5-Trichlorophenol	0.0026	U	400	no	0.0026
	2,4,6-Trichlorophenol	0.001	U	2	no	0.001
	2,4-Dinitrotoluene	0.001	U	0.13	no	0.001
	2-Butanone (MEK)	0.01	U	200	no	0.01
	2-Methylphenol	0.001	U	200	no	0.001
	3&4-Methylphenol(m&p Cresol)	0.002	U	200	no	0.002
	Arsenic	0.005	U	5	no	0.005
	Barium	0.0414		100	no	0.01
	Benzene	0.0026		0.5	no	0.001
	Cadmium	0.0014	J	1	no	0.003
	Carbon tetrachloride	0.001	U	0.5	no	0.001
	Chlorobenzene	0.001	U	100	no	0.001
	Chloroform	0.001	U	6	no	0.001
	Chromium	0.0029	J	5	no	0.005
	Hexachlorobenzene	0.001	U	0.13	no	0.001
	Hexachloroethane	0.001	U	3	no	0.001
	Lead	0.005	U	5	no	0.005
	Mercury	0.0002	U	0.2	no	0.0002
	Nitrobenzene	0.001	U	2	no	0.001
	Pentachlorophenol	0.0026	U	100	no	0.0026
	Selenium	0.008	U	1	no	0.008
	Silver	0.006	U	5	no	0.006
	Tetrachloroethene	0.001	U	0.7	no	0.001
	Trichloroethene	0.001	U	0.5	no	0.001
	Vinyl chloride	0.001	U	0.2	no	0.001

U: The analyte was not detected in the sample. The numeric value represents the sample LOQ.
J: The positive result reported for this analyte is a quantitative estimate below the laboratory LOQ.
TCLP: Toxicity Characteristic Leaching Procedure
LOQ: Limit of Quantitation

Attachment 1



GENERAL NOTES

1) SITE PREPARATION WILL BE REQUIRED ALONG THE SHEET PILE LINE AT THE NORTH AND SOUTH ENDS OF THE EXISTING EXCAVATION AND TO LOWER THE GRADE BETWEEN THE SHEET PILING AND THE RELIEVING PLATFORM FOR INSTALLATION OF THE GEOMEMBRANE.

2) THE CUTOFF WALL WILL CONSIST OF APPROXIMATELY 115 FEET OF PSA 23, ASTM A328 SHEET PILING, 20 FEET IN LENGTH.

3) A FLEXIBLE GEOMEMBRANE, SUCH AS 36 MIL. POLYETHYLENE SHALL BE PLACED IN CONTACT WITH THE FACE OF THE SHEET PILES. A PROTECTIVE LAYER OF 160 MIL NON-WOVEN GEOTEXTILE SHALL BE PLACED OVER THE GEOMEMBRANE. GEOMEMBRANE AND GEOTEXTILE ARE TO COVER APPROXIMATELY 95 FEET OF THE CUT OFF WALL LENGTH (TOP OF BANK TO TOP OF BANK OF EXISTING EXCAVATION) 20 FOOT WIDTHS ARE PREFERRED AND WIDTHS ARE TO BE OVERLAPPED TO REDUCE SEEPAGE.

4) SLAG FILL WILL BE REQUIRED TO CONSTRUCT A WORKING PLATFORM FOR CONSTRUCTION EQUIPMENT. THIS WORKING PLATFORM SLAG FILL IS TO BECOME PART OF THE FILL EAST OF THE SHEET PILING AS SHOWN ON SECTION A-A.

5) PORTIONS OF THE EXISTING CLAY DIKE ON THE RELIEVING PLATFORM ARE TO BE USED (IN LIEU OF SLAG) IN THE UPPER AREA BETWEEN THE RELIEVING PLATFORM AND THE SHEET PILES. CARE MUST BE TAKEN SO AS NOT TO DISTURB THE EXISTING RANGE MARKER.

9P11-001-3100
Acctg. Charge/E. W. O.

Drawing No.	Reference
42762	COAL DOCK BULKHEAD

Number	Date	Description	Coordinate	Initial
	5/31/89	FIRST ISSUE		JJP
1	6/15/89	ADDED REQUISITION NOS. & REV. NOTE 3		JJP
2				
3				
4				
5				
6				
7				
8				
9				
0				

FINISHES ON THIS DRAWING CONFORM TO A. I. S. E. STANDARDS

DEPT: COKE OVENS
SECTION OR AREA: COAL DOCK BASIN
JOB: Nº 10 TANK REMEDIATION
PART: PLAN & SECTION
CHECKED BY: H.J.B. | 5113 5-31-89 | PLANT: SPARROWS POINT
DRAWN BY: P.L.L. | SCALE: AS SHOWN=1 ft. | BETHLEHEM STEEL | DRAWING NO.: 192463
APPROVED: [signature]

01
91
MA
TS
SM
MS
PA
BR
LU

WHITMAN, REQUARDT AND ASSOCIATES
ENGINEERS
BALTIMORE, MARYLAND

W.O. 11781

39778 (Rev E 2-68)

Attachment 2

Photo 1: View of a section of the sheet piling (uncovered) located at the southern extent.

Photo 2: Northern extent of the sheet piling.

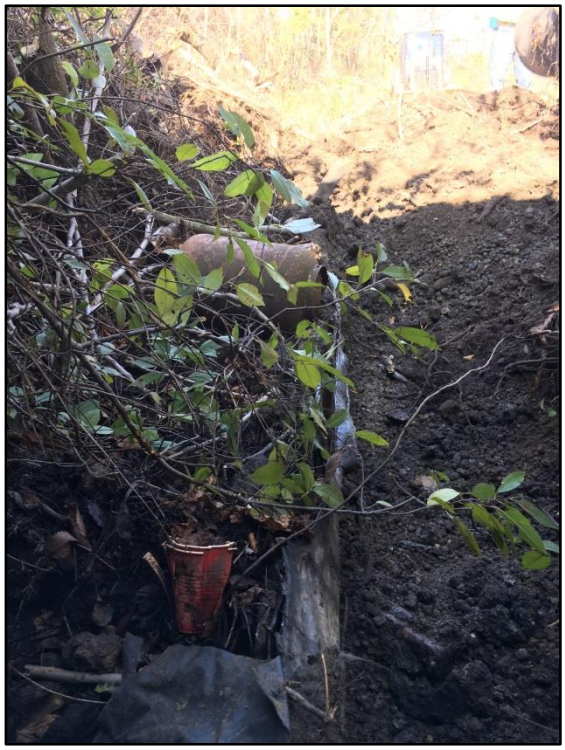


Photo 3: View of the sheet piling's southern extent and its alignment in the north direction.

Photo 4: View of the sheet piling's northern extent and its alignment in the south direction.

Photo 5: Field confirmed alignment of sheet piling, following well installation (facing south).

Photo 6: Field confirmed alignment of sheet piling, following well installation (facing north).

Attachment 3

ARM Group LLC
Engineers and Scientists

Boring ID: B18-037-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/20/2016
Weather	: 70s, sunny
Northing (US ft)	: 563377.12
Easting (US ft)	: 1456144.19

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	60	-	B18-037-SB-1	(0-3.3') SANDY SILT with SLAG GRAVEL, soft, grayish brown with trace light gray, dry, no plasticity, no cohesion	ML	No water encountered
		-				
		59.4				
		44.6		(3.3-4.5') BRICK, SAND and GRAVEL-sized, medium dense, red, dry, no plasticity, no cohesion	NA	
		32.7	B18-037-SB-5	(4.5-5') SLAG GRAVEL, loose, light gray and brown with olive yellow, moist, no plasticity, no cohesion	GW	
5				End of boring		

Total Borehole Depth: 5' bgs.
Boring terminated at 5' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-038-SB

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 10/20/2016
Weather	: 70s, sunny
Northing (US ft)	: 563352.22
Easting (US ft)	: 1456163.58

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	60	-	B18-038-SB-1	(0-3.3') SILTY SAND with trace GRAVEL SLAG, fine to medium, loose, brown to dark brown, dry, no plasticity, no cohesion	SM	No water encountered
		14.4				
		3.4				
		0.8		(3.3-4') BRICK and CONCRETE, large GRAVEL with some SAND-sized grains, medium dense, red, pale brown, and brown, dry, no plasticity, no cohesion	NA	Trace wood fragments at 4' bgs
				End of boring		
5						

Total Borehole Depth: 4' bgs.
Boring terminated at 4' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-042-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/21/2016
Weather	: 70s, cloudy
Northing (US ft)	: 563645.54
Easting (US ft)	: 1455766.08

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	78	-	B18-042-SB-1	(0.5-1.5') Non-native SANDY SILT with SLAG GRAVEL grading to SILT, firm to very firm, brown, dry, no plasticity, no cohesion	ML	
		35.8		(1.5-3.2') Non-native SLAG GRAVEL, small to medium, medium dense, brown and black, dry, no plasticity, no cohesion	GW	
		20.3				
		10.4		(3.2-4.6') Non-native SAND with SILT, very fine to fine grained, medium dense, brown, dry, no plasticity, no cohesion	SW-SM	
		17.1	B18-042-SB-5			
5		-		(4.6-6.5') SANDY SILT, soft, dark brown, dry, no plasticity, no cohesion	SM	
		7.6				
	74	6.3		(6.5-10') SLAG GRAVEL, small to medium, medium dense, brown and black, wet, no plasticity, no cohesion	GW	Wet at 7' bgs
		1.7				
		0.7				
10				End of boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to water.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-043-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/21/2016
Weather	: 70s, sunny
Northing (US ft)	: 563690.09
Easting (US ft)	: 1455778.81

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		0.0	B18-043-SB-1	(0-2') GRAVELLY SILT, soft, brown and gray, dry, no plasticity, no cohesion	ML	Organic matter present
		0.1				
	90	0.0		(2-2.2') SAND, fine, loose, yellow, dry, no plasticity, no cohesion	SP	
				(2.2-3.2') SANDY SILT, soft, brown with trace yellow, dry, no plasticity grading to low plasticity, no cohesion grading to cohesive	ML	
		0.0		(3.2-3.6') SAND, fine, loose, yellow, dry, no plasticity, no cohesion	SP	
		0.0	B18-043-SB-5	(3.6-5.5') SILT with SAND grading to SANDY SILT, firm, brown, dry then moist from 4.5-5', low plasticity, cohesive	ML	
5		-		(5.5-9') SLAG GRAVEL with trace SILT, dense, dark gray and brown, saturated, no plasticity, no cohesion	GW	
		15.1				
	70	21.7				
		-				
		-		(9-9.2') SANDY SILT, soft, brown, saturated, no plasticity, no cohesion	ML	Wet at 6.5' bgs
				(9.2-10') SLAG GRAVEL, very small to medium, dense, gray and brown, saturated, no plasticity, no cohesion	GW	
10				End of boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-044-SB/PZ

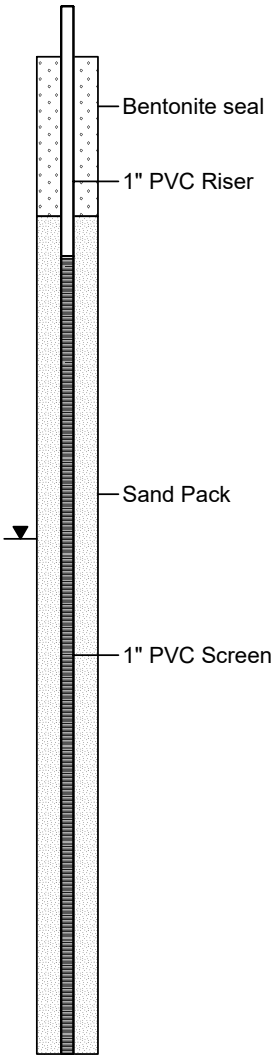
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/20/2016
Piezometer Installation Date	: 10/20/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563460.13
Easting (US ft)	: 1455863.71
0-Hr DTW	: 4.72' TOC
48-Hr DTW	: 9.14' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	92	30.0 38.1 90.2 344.9 259.9		(0-10') SLAG, GRAVEL and SAND-sized, dense, dark gray, dark brown, black, and olive-gray, moist then wet at 7', no plasticity, no cohesion	SW/GW	Product present from 0-10' bgs High viscosity, black, moderate odor, DNAPL
5	90	140.2 71.8 47.8 5.9 36.1				Wet at 5.5' bgs
10	0	- - -		(10-12.5') NO RECOVERY	-	
15				End of Boring		



Boring terminated at 12.5' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.1'
Riser: 0 - 2.5' bgs
Screen: 2.5 - 12.5' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 12.5' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

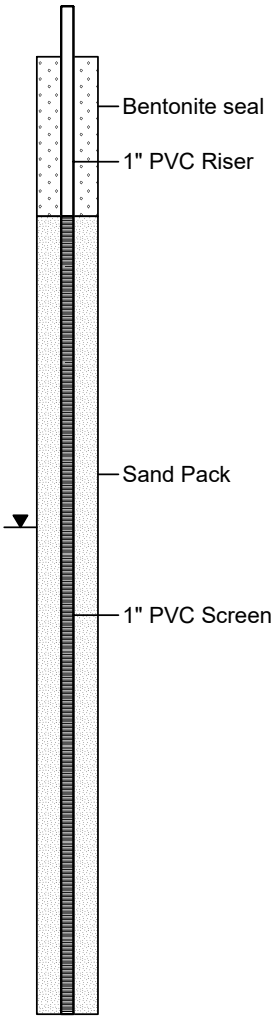
Boring ID: B18-045-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/20/2016
Piezometer Installation Date	: 10/20/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563501.71
Easting (US ft)	: 1455910.74
0-Hr DTW	: 7.81' TOC
48-Hr DTW	: 8.90' TOC

1.28 ft of LNAPL detected at 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		98.9		(0-9.2') SLAG, SAND and GRAVEL-sized, with some large olive green SLAG GRAVEL, dense, grayish brown and black, moist then wet at 5' bgs, no plasticity, no cohesion		Product present from 0-10' bgs High viscosity, black, strong odor, DNAPL, immiscible
	72	174.9				
		133.0				
		257.4				
		236.4			SW/GW	
5		-				Wet at 5' bgs
		34.4				
	84	95.2				
		71.2				
		64.5		(9.2-10') SLAG, SAND and GRAVEL-sized with SILT, dense, black and dark brown, wet, no plasticity, no cohesion	SW/GW	
10		-		(10-12') NO RECOVERY- Drillers stated material was too "sloppy" to recover		
	0				-	
		-				
				End of Boring		
15						



Boring terminated at 12' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3'
Riser: 0 - 2' bgs
Screen: 2 - 12' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 12' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

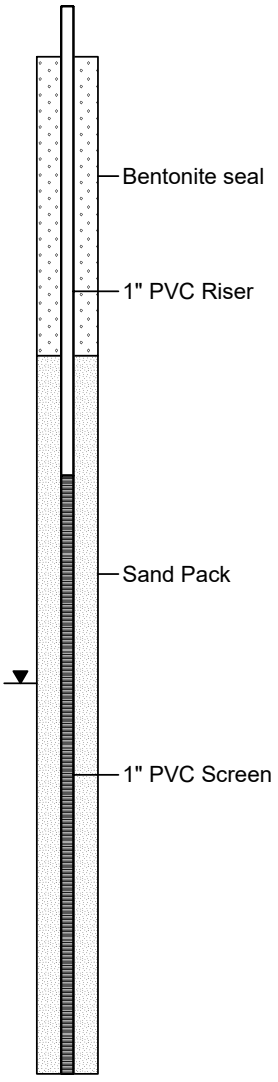
Boring ID: B18-046-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/26/2016
Piezometer Installation Date	: 10/26/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563301.25
Easting (US ft)	: 1456053.72
0-Hr DTW	: 12.60' TOC
48-Hr DTW	: 13.67' TOC

Trace NAPL detected at 0 and 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		3.4	B18-046-SB-1	(0-1') SANDY SILT with GRAVEL, medium dense, grayish brown, dry, no plasticity, no cohesion	ML	
		8.8		(1-1.8') SILT, hard, light greenish gray, pale brown, and brown mottling, dry, low plasticity, cohesive	ML	
	100	370.4		(1.8-3.5') SILTY SAND with very small GRAVEL, fine to coarse, light olive brown, dry, no plasticity, no cohesion	SM	Light product present from 1.8-3.5' bgs
		232.8				
		184.0		(3.5-6') SLAG, SAND AND GRAVEL-sized, with SILT, medium dense, white and light gray, dry, no plasticity, no cohesion	SW/GW	Moderate product with moderate to strong odor from 3.5-5' bgs
5		-				
		-		(6-10') SLAG GRAVEL, dense, light gray, dry then moist 9.5-9.7', saturated at 9.8', no plasticity, no cohesion	GW	Light product from 7-7.5' bgs
	60	295.7	B18-046-SB-8			
		149.2				
		134.6				Wet at 9.8' bgs
10		-		(10-17') NO RECOVERY from 10-15' bgs, continued without liner from 15-17' bgs	-	
		-				
	0	-				
		-				
		-				
15		-				
	0	-				
				End of Boring		
20						



Boring terminated at 17' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.20'
Riser: 0 - 7' bgs
Screen: 7 - 17' bgs [Slot Size: 0.010"]
Sand Pack: 5 - 17' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 5' bgs [Grain Size: 3/8" chips/Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-049-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/20/2016
Weather	: 70s, sunny
Northing (US ft)	: 563291.37
Easting (US ft)	: 1456152.96

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	70	-	B18-049-SB-1	(0-2') Non-native SILTY SAND with some GRAVEL, medium dense, brown to dark brown, dry, no plasticity, no cohesion	SM	No water encountered
		4.1				
				(2-2.5') BRICK GRAVEL, flat and elliptical, pale brown, dry, no plasticity, no cohesion	NA	
		15.4		(2.5-3.5') SLIT with SAND, medium dense, dark brown to black, dry, no plasticity, no cohesion	ML	
		15.6	B18-049-SB-4	(3.5-5') SLAG SAND and GRAVEL, brown and gray with trace pale green, dry then moist at depth, no plasticity, no cohesion	SW/GW	
		13.8				
5				End of boring		

Total Borehole Depth: 5' bgs.
Boring terminated at 5' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-050-SB

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/20/2016
Weather	: 70s, sunny
Northing (US ft)	: 563264.71
Easting (US ft)	: 1456180.37

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	70	-	B18-050-SB-1	(0-1') SANDY SILT with some GRAVEL SLAG, medium dense, brown, dry, no plasticity, no cohesion	ML	
		0.2		(1-5') BRICK, SAND-sized to COBBLES, medium dense, red, brown, and pale brown, wet, no plasticity, no cohesion	SW/GW	Pobable stormwater 2.5-5' bgs
		1.6				
		1.2		(3-4.1') SILT with SAND, medium dense, dark brown to black, dry, no plasticity, no cohesion	ML	
		4.9	B18-050-SB-5	(4.1-5') SLAG, SAND and GRAVEL, medium dense, brown and gray with trace green, dry then moist at depth, no plasticity, no cohesion	SW/GW	No water encountered
5				End of boring		
10						

Total Borehole Depth: 5' bgs.
Boring terminated at 5' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-057-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/19/2016
Weather	: 80s, sunny
Northing (US ft)	: 563581.19
Easting (US ft)	: 1456141.13

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	B18-057-SB-1	(0-0.8') SILTY SAND with SLAG GRAVEL, medium dense, brown and gray, dry, no plasticity, no cohesion	SM	
		4.6		(0.8-2.9') SANDY SLAG GRAVEL, medium dense, brown and gray, dry, no plasticity, no cohesion	SW/GW	
	80	20.1				
		26.6	B18-057-SB-4	(2.9-7.5') SLAG and BRICK, SILT to GRAVEL-sized, dense, light gray, white, and very pale brown, dry 0-4', very moist 4-5', saturated 5-7.5', no plasticity, no cohesion		
		19.0				
5					ML/GW	Wet at 5' bgs
		276.2				
	100					
		378.4				
		376.6				
				End of boring		
10						

Total Borehole Depth: 7.5' bgs.
Boring terminated at 7.5' bgs due to groundwater and refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-058-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 10/20/2016
Weather	: 70s, sunny
Northing (US ft)	: 563440.33
Easting (US ft)	: 1456159.60

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0						
	75	7.9	B18-058-SB-1	(0-0.5') SILTY SAND with SLAG GRAVEL, loose, brown, dry, no plasticity, no cohesion	SM	No water encountered
		16.3		(0.5-2') SANDY SILT grading to SILTY SAND, soft grading to loose, brown, dry then moist 1.5-2', no plasticity, no cohesion	ML to SM	
				End of boring		
5						

Total Borehole Depth: 2' bgs.
Boring terminated at 2' bgs due to refusal.

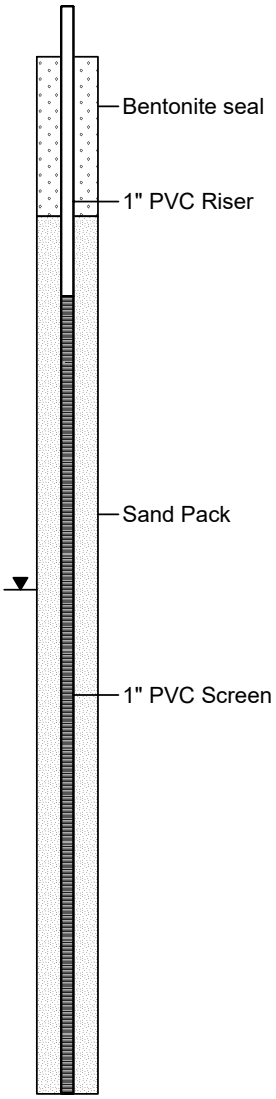
ARM Group LLC
Engineers and Scientists

Boring ID: B18-077-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Rick Miller
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 6/28/2017
Piezometer Installation Date	: 6/28/2017
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563516.70
Easting (US ft)	: 1456183.33
0-Hr DTW	: 9.16' TOC
48-Hr DTW	: 9.78' TOC
Trace NAPL detected at 0 hours	

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B18-077-SB-1	(0-1.5') SANDY SILT with GRAVEL, medium dense, light brown, dry, no plasticity, no cohesion	ML	
		0.0		(1.5-2.2') SILTY SAND, very fine to coarse, with some GRAVEL, medium dense, dark brown, dry, no plasticity, no cohesion	SM	
	68	0.0		(2.2-4') SAND with GRAVEL grading to SILTY SAND, medium dense, yellow with alternating brown layers, dry, no plasticity, no cohesion	SW/SM	
		0.0	B18-077-SB-4.5			Wet at 4.5' bgs
		0.0		(4-7') SLAG and BRICK, GRAVEL-sized with some SAND-sized,with trace SILT, medium dense to dense, gray, brown, and very pale brown, dry then wet at 4.5' bgs, no plasticity, no cohesion	GW/SW	Petroleum-like product from 7-10' bgs (light from 7-7.5' bgs, moderate from 7.5-8.8' bgs, trace from 8.8-10')
5		-				
		0.0				
	90	0.0		(7-10') SLAG, GRAVEL and SAND-sized, with SILT from 8.8-10' bgs, dense, gray, dark gray, and light gray, wet, no plasticity, no cohesion	GW/SW	
		0.0				
		1.8				
10		-		(10-13') SLAG, SAND and GRAVEL-sized, with trace SILT, medium dense to dense, light gray and light brown, wet, no plasticity, no cohesion	GW/SW	Very light to trace product from 10-13' bgs
	100	-				
		-				
				End of Boring		
15						



Boring terminated at 13' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.10'
Riser: 0 - 3' bgs
Screen: 3 - 13' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips/Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-A-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563385.65
Easting (US ft)	: 1456000.79

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-1') SILT, with very fine SAND and some GRAVEL SLAG, firm, brown, dry, non cohesive, non plastic	ML	
		1.6		(1-3.5') SILT, hard, brown, dry, low plasticity, cohesive	ML	
	74	3.8				
		5.2				
		4.4		(3.5-10.5') SLAG, fine to coarse SAND with some GRAVEL, dark gray, black and very dark brown, dry, non cohesive, non plastic	SW	Metallic luster
5		-				
		-				
	54	2.4	No Samples Collected			
		5.0				
		2.3				
10		-		(10.5-12') BRICK and small GRAVEL, dense, pale brown, wet, non cohesive, non plastic	NA	Wet at 10.5' Product present; amber strong odor (sweet); light viscosity 10.5-15'
		-				
	100	-		(12-13.1') SANDY SILT, firm to hard, very dark gray, wet, low plasticity, cohesive	ML	
		-		(13.1-15') GRAVELLY SAND with SILT grading to SANDY GRAVEL with SILT, medium dense, strong brown then gray 14-15', wet, non cohesive, non plastic	SW/GW	
		-				
15				End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-B-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563393.17
Easting (US ft)	: 1455936.55

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	90	-	No Samples Collected	(0-1.5') SANDY SILT, soft, brown, dry, non cohesive, non plastic	ML	Trace organics
		0.6		(1.5-2.7') SILT, hard, pale brown, dry, low plasticity, cohesive	ML	
		16.3				
		2.2		(2.7-10') SLAG, SILT to coarse with some GRAVEL and trace BRICK, medium dense, brown to dark brown with trace yellow, dry then wet at 9.8', non plastic, non cohesive		
		2.5				
5		-				Metallic luster
		-			ML/SW	
	60	5.8				
		2.3				
		2.7				Wet at 9.8' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-C-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563417.81
Easting (US ft)	: 1455882.50

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	44	-	No Samples Collected	(0-4') SILT, firm to hard, pale brown, dry, low plasticity, cohesive	ML	
		-				
		11.6				
		10.7				
		5.1		(4-5') SLAG, medium dense, SILT to small GRAVEL, brown, dry, non plastic, non cohesive	ML/GP	Metallic luster on some grains; trace oxidation
5		-				
		36.5		(6.5-8.5') SANDY SILT, firm to very firm, black to dark gray, moist, low plasticity, cohesive	ML	Light product; light odor (sweet); light viscosity; black 7-8' bgs
	70	105.3				
		21.2		(8.5-10') SAND with some GRAVEL, medium to very coarse, brown, moist then wet at 9.5', non plastic, non cohesive	SW	
		3.3				Wet at 9.5' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-D-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563391.78
Easting (US ft)	: 1455838.63

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-2') SILT with COAL GRAVEL, soft, very dark brown to black, dry, non plastic, non cohesive	ML	Metallic luster on silt grains
		6.6				
				(2-2.5') CONCRETE, dense, gray, dry, non plastic, non cohesive	NA	
	84	13.2		(2.5-3') SLAG, SILT to SAND-sized, medium dense, brown, dry, non plastic, non cohesive	ML/SW	
				(3-3.3') CONCRETE, dense, pale brown, dry, non plastic, non cohesive	NA	
		25.1		(3.3-4.7') SLAG, SILT to SAND-sized, medium dense, brown, trace oxidation, dry, non plastic, non cohesive	ML/SW	
		165.1				
5			No Samples Collected	(4.7-6') SILT, hard, very dark gray, dry, low plasticity, cohesive	ML	Product 4.7-5'; trace metallic luster; grains held together by viscous material; dark brown; no odor
		-				
		16.9		(6-7.5') SLAG, SILT to SAND-sized, medium dense, brown, trace oxidation, dry, non plastic, non cohesive	ML/SW	
	70	4.2		(7.5-8.3') BRICK and SLAG, medium dense, red and yellow, dry, non plastic, non cohesive	NA	
		9.1		(8.3-9.2') COAL, SAND-sized to GRAVEL-sized, medium dense, dry to moist, non plastic, non cohesive	SW/GW	Strong solvent-like odor; no visible product 8.3-9.2' Wet at 9.2'
		7.2		(9.2-10') SANDY GRAVEL, fine, medium dense, dark brown to black, wet, non plastic, non cohesive	SW/GW	Light product; strong odor; moderate viscosity; amber brown 9.2-10'
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-E-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563388.88
Easting (US ft)	: 1455751.08

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-2.5') CONCRETE, dense, white, dry, non plastic, non cohesive	NA	
		-				
	44	-		(2.5-5') SILTY SAND, very fine to fine, very dark gray, dry, nonplastic, non cohesive	SM	
		5.4				
		0.4				
5			No Samples Collected			
		-				
		2.9		(6.5-10') BRICK and SLAG, SAND and GRAVEL-sized, dense, yellow and light gray, dry then wet at 9', non plastic, non cohesive	SW/GW	Wet at 9' bgs
	70	11.6				
		4.3				
		0.6				
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-F-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563401.85
Easting (US ft)	: 1456049.48

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		7.3		(0-1.5') SILTY SAND with some GRAVEL, medium dense, brown, dry, non plastic, non cohesive	SM	
		3.7		(1.5-3.1') CLAY with SILT and SAND, hard, light gray and reddish yellow mottling grading to yellowish red and brown mottling, dry, low plasticity, cohesive	CL	
	94	3.8				
		3.2		(3.1-4.2') SILTY SAND, fine to medium, some large GRAVEL, dark brown, gray, yellow and brown, dry, non plastic, non cohesive	SM	
		2.1		(4.2-6.8') SAND, fine to medium, soft, loose, brown, dry, non plastic, non cohesive	SW	
5		-	No Samples Collected			
		3.9				
				(6.8-9') SLAG and FILL, SAND to GRAVEL-sized, dense, gray, pale brown and light gray, dry, non plastic, non cohesive	SW/GW	
	92	4.6				
		3.8				
				(9-9.5') SLAG, SILT to SAND-sized, dense, pale brown, moist, non plastic, non cohesive	ML/SW	
		178.1		(9.5-10) SLAG GRAVEL with SAND, brown, white and light gray, wet, non plastic, non cohesive	GW	Wet at 9.5' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-G-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563271.42
Easting (US ft)	: 1455977.26

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.5') SILT, very firm, reddish yellow, dry, low plasticity, cohesive	ML	
		-		(1.5-3.5') SAND, medium to very coarse with small GRAVEL, medium dense, yellow, dry, non plastic, non cohesive	SW	
	64	1.6				
		14.1		(3.5-4.7') SAND with SILT, very fine to medium, brown, dry, non plastic, non cohesive	SW-SM	
		5.0	No Samples Collected	(4.7-6.5') SAND with GRAVEL SLAG, medium dense, black, moist, non plastic, non cohesive	SW	
5		-				
		-		(6.5-9') SANDY SILT, soft, black, wet, low plasticity, cohesive	ML	Light petroleum odor Moderate petroleum odor but no free product Wet at 7.5' bgs
	38	5.3				
		-				
				End of Boring		
10						

Total Borehole Depth: 9' bgs.
Boring terminated at 9' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-H-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563232.88
Easting (US ft)	: 1456017.36

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	60	-	No Samples Collected	(0-1.5') SILTY SAND with some GRAVEL, medium dense, brown, dry, non plastic, non cohesive	SM	
		17.9		(1.5-3.7') SAND, fine to coarse, medium dense, dark brown, dry, non plastic, non cohesive	SW	Light petroleum odor; trace product 2.8-3.7' bgs
		38.2				
		47.6		(3.7-4.6') SILTY SAND, medium dense, fine to medium GRAVEL, brown, dry, non plastic, non cohesive	SM	Light product present; black; light odor 4.6-5' bgs
		279.3		(4.6-5') SILTY SAND, medium dense, and GRAVEL, fine to medium, black and dark brown, dry, non plastic, non cohesive	SM	No water encountered
5	100	361.5		(5-6') SANDY SILT, soft, grayish, brown, moist, low plasticity, cohesive	ML	Trace brown product; light odor
		427.5		(6-7') SLAG SAND and GRAVEL, medium dense, gray with brown product, dry to moist, non plastic, non cohesive	SW/GW	Moderate product intermittent throughout; brown product; moderate viscosity; moderate odor
				End of Boring		
10						

Total Borehole Depth: 7' bgs.
Boring terminated at 7' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-I-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563244.08
Easting (US ft)	: 1456071.79

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	86	-	No Samples Collected	(0-1.5') SILTY SAND, medium dense, brown, dry, non plastic, non cohesive	SM	
		3.7		(1.5-3.1') SAND, medium to very coarse, yellow, medium dense, dry, non plastic, non cohesive	SW	
		1.0				
		0.8		(3.1-4') SAND with GRAVEL, fine to coarse, medium dense, grayish brown, dry, non plastic, non cohesive	SW	
		4.8		(4-5.5') SLAG, SAND and GRAVEL-sized, then SILT-sized 4.7-5', dense, gray, white and light gray, dry, non plastic, non cohesive	SW/ GW-ML	
5		-		(5.5-8.8') SLAG, SAND and GRAVEL-sized, with SILT, dense, white and light gray, dry to moist, non plastic, non cohesive	SW/GW	
	80	14.1				
		95.9				
		23.7				
		28.9		(8.8-9.3') SLAG or possible ASH, SILT to fine SAND-sized, hard, white, moist, non plastic, non cohesive	ML/SP	
				(9.3-10') SLAG, SAND and GRAVEL-sized with SILT, dense, white and light gray, dry to moist then wet at 10', non plastic, non cohesive	SW/GW	Wet at 10' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-J-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563295.38
Easting (US ft)	: 1456095.49

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	80	-	No Samples Collected	(0-3.4') SILT, hard, brown, dry, low plasticity, cohesive	ML	
		12.4				
		13.1				
		96.9		(3.4-9.5') SLAG GRAVEL with SAND, dense, gray and pale brown, white, dry then wet at 9', non plastic, non cohesive	GW	
		299.3				
5		-				
	74	51.1				
		71.2				
		7.7				Wet at 9' bgs
		-		End of Boring		
10						

Total Borehole Depth: 9.5' bgs.
Boring terminated at 9.5' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-K-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563311.92
Easting (US ft)	: 1455950.44

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-2') SILTY fine SAND with GRAVEL, loose, grayish brown, dry, non plastic, non cohesive	SM	
		8.3				
	66	1.7		(2-4') CLAY, hard, pale brown with reddish yellow mottling, dry, low plasticity, cohesive	CL	
		0.2				
		0.2	No Samples Collected	(4-8.2') Non-native SAND, very fine to fine, dense, black, dry, non plastic, non cohesive	SW	
5		-				
		-				
	52	1.3				
		38.9		(8.2-9') SLAG GRAVEL, medium dense, light gray and grayish green, dry then wet at 8.8', non plastic, non cohesive	GW	Wet at 8.8' bgs
				End of Boring		
10						

Total Borehole Depth: 9' bgs.
Boring terminated at 9' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-L-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563336.79
Easting (US ft)	: 1456001.48

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2') SAND with SILT and GRAVEL, medium dense, light gray and brown, dry, non plastic, non cohesive	SW-SM	
		1.1				
	76	4.9		(2-3') CLAYEY SILT, hard, grayish brown, dry, low plasticity, cohesive	ML	
				(3-3.4') SAND, fine to coarse, dense, black, dry, non plastic, non cohesive	SW	
		5.1		(3.4-4.3') CLAYEY SILT, hard, grayish brown, dry, low plasticity, cohesive	ML	
		1.2		(4.3-10') BRICK and SLAG, fine grained to GRAVEL, medium dense to dense, red, brown, greenish gray and gray, dry then wet at 9', non plastic, non cohesive		
5		-	No Samples Collected			
		-				
	40	0.2			SW/GW	
		1.3				
		-				Moderate product 9-10' bgs; brown; viscous; moderate odor Wet at 9' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
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Boring ID: B18-M-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563342.78
Easting (US ft)	: 1456063.98

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	82	1.9 0.8 0.4	No Samples Collected	(0-2') SAND, very fine to fine, medium dense, brown, dry, non plastic, non cohesive	SW	
				(2-3.8') SILTY CLAY, very firm, brown, pale brown and reddish yellow mottling, dry, low plasticity, cohesive	CL	
5	100	2.0 2.1 71.1 162.6 0.9 1.1		(3.8-14') SLAG, SAND and GRAVEL, medium dense to dense, gray and white, dry then wet at 13.5', non plastic, non cohesive (intermittent very small very moist areas 9-10')	SW/GW	
10	38	- - 8.4 48.1				Wet at 13.5' bgs, possibly higher due to very dense slag
				End of Boring		
15						

Total Borehole Depth: 14' bgs.
Boring terminated at 14' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-N-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563325.81
Easting (US ft)	: 1456119.19

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-0.5') ASPHALT, dense, dark brown, dry, non plastic, non cohesive	NA	
				(0.5-5') SAND with FILL GRAVEL, medium dense, very dark brown with trace red and gray, dry, non plastic, non cohesive		
		138.0				
	80	17.4			SW	
		2.8				
		0.8	No Samples Collected			
5				(5-9') SLAG, SAND and GRAVEL, medium dense to dense, gray, light gray and white, dry then wet at 7', non plastic, non cohesive		Light product throughout with moderate product at 7.5-8' bgs and 8.5-9' bgs; brown; viscous; moderate odor
		-				
		5.1				
	74				SW/GW	Wet at 7' bgs
		22.9				NAPL present
		32.4				
				End of Boring		
10						

Total Borehole Depth: 9' bgs.
Boring terminated at 9' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-O-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Overcast, 40s
Northing (US ft)	: 563241.78
Easting (US ft)	: 1456124.74

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	60	0.3	No Samples Collected	(0-3') SILT with medium grained SAND, loose/soft, dark brown, dry, non plastic, non cohesive	ML/SW	Wet at 4.2' bgs
		2.5		(3-6') SAND and GRAVEL, coarse, loose to medium dense, tan, wet, non plastic, non cohesive	SW/GW	
5	60	2.2		(6-10') SLAG SAND and GRAVEL, coarse, medium dense, gray and green, wet	SW/GW	
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-P-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Overcast, 40s
Northing (US ft)	: 563162.61
Easting (US ft)	: 1456126.13

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	60	0.0 5.0 2.7	No Samples Collected	(0-5.5') Fine grained SILT and SAND, loose, dark brown, dry, non plastic, non cohesive	ML/SW	
5	56			(5.5-10') GRAVEL, dense, light gray/white, wet, non plastic, non cohesive	GW	Wet at 7' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-Q-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563195.95
Easting (US ft)	: 1456078.91

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		2.3		(0-2.1') SILTY fine SAND with trace GRAVEL, loose grading to dense, brown, dry, non plastic, non cohesive	SM	
		39.3				
	100	213.4		(2.1-3.2') SILT, hard, brown, dry, low plasticity, cohesive	ML	
		64.1		(3.2-10') SLAG and FILL SILT to GRAVEL, dense, gray, pale brown and white, dry with very moist areas throughout then wet at 8.5', non plastic, non cohesive		Trace sand; moderate very sweet odor
		0.3				
5			No Samples Collected			
		198.4				
		7.1			ML/GW	
	100	5.3				
		0.9				Wet at 8.5' bgs
		1.1				
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-R-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563142.48
Easting (US ft)	: 1456054.60

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-1.5') SILT with some SAND, dense, brown, dry, low plasticity, cohesive	ML	Trace organics
		9.4		(1.5-3.1') CONCRETE, medium dense, gray, dry, non plastic, non cohesive	NA	
	72	8.8				
		6.9		(3.1-10') SLAG SAND and GRAVEL, medium dense, pale brown, gray and white, dry with some moist areas, then wet at 9.2', non plastic, non cohesive	SW/GW	
		3.6				
5			No Samples Collected			
		-				
		10.3				
	76	20.0				Wet at 9.2' bgs
		0.2				
		-				
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-S-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563147.34
Easting (US ft)	: 1455972.31

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		8.6		(0-1') SAND with SILT, fine to medium, medium dense, brown, dry, non plastic, non cohesive	SW-SM	
		1.4		(1-1.7') SILTY CLAY, hard, pale brown and yellowish red mottling, dry, low plasticity, cohesive	CL	
	100	1.3		(1.7-2.6') SAND, fine to medium, dense, black, dry, non plastic, non cohesive	SW	
		54.2		(2.6-10') SLAG SAND and GRAVEL, dense, gray and white, dry then wet at 4.5', non plastic, non cohesive		
		8.8				Wet at 4.5' bgs
5			No Samples Collected			Vitrious luster
		-				
		-			SW/GW	
	60	76.0				Trace glass; some product present throughout with moderate areas 7-8' bgs, 8.5-8.8' bgs and 9-9.7' bgs; brown; viscous; moderate odor
		89.7				
		141.8				
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-T-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/21/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563189.00
Easting (US ft)	: 1456011.55

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1') SAND, fine to mediuim, with some small GRAVEL		
		2.4		(1-2.2') CLAY with some large SLAG GRAVEL, hard, brown, dry, low plasticity, cohesive	CL	
	74	2.9		(2.2-3.2') SAND, fine to medium grained, medium dense, black, wet, non plastic, non cohesive	SW	
		7.3		(3.2-3.6') CLAY, hard, brown, dry, low plasticity, cohesive	CL	
		2.0		(3.6-10') SLAG GRAVEL with SAND, medium dense to dense, gray, dry then wet at 9.9', non plastic, non cohesive		
5		-	No Samples Collected			
		8.9			GW	
	72	1.4				
		2.1				
		0.4				Wet at 9.9' bgs
10				End of Boring		

Total Borehole Depth: 10' bgs.
Boring terminated at 10' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-U-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/22/16
Weather	: Sunny, windy, 30s
Northing (US ft)	: 563230.32
Easting (US ft)	: 1455946.65

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	60	-	No Samples Collected	(0-3.1') SAND, fine to very fine grained, medium dense, black, dry, non plastic, non cohesive	SW	Vitreous luster
		36.1				
		1.9				
		5.8		(3.1-3.7') CLAYEY SILT, dense, yellowish red, dry, low plasticity, cohesive	ML	
				(3.7-4') SAND, medium dense, black, dry, non plastic, non cohesive	SW	
		-		(4-6') SLAG SAND and GRAVEL, medium dense, gray and pale brown, dry then wet at 5.5', non plastic, non cohesive	CL	
5	100	0.1				Wet at 5.5' bgs
10						

Total Borehole Depth: 6' bgs.
Boring terminated at 6' bgs due to multiple refusals.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-V-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Overcast, 40s
Northing (US ft)	: 563420.25
Easting (US ft)	: 1456095.58

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2.5') SILT with medium sized SAND grains, loose, soft, dark brown, dry, non plastic, non cohesive	ML/SW	Odor
	78	14.3				
		2.8		(2.5-4.8') SAND, coarse, and GRAVEL, loose, green/gray/tan, dry, non plastic, non cohesive	SW/GW	
		2.0				
5		3.5			GW	Wet at 4.8' bgs
		-		(4.8-5') GRAVEL, large and very coarse, very loose, gray, wet, non plastic, non cohesive		
		-		(5-8') SAND and GRAVEL, coarse, medium dense, light gray, wet, non plastic, non cohesive	SW/GW	
	70	-				
		-		(8-10.5') GRAVEL and SAND, coarse, loose, light gray, wet, non plastic, non cohesive	GW/SW	Slight product; low viscosity; light amber; odor 8-10' bgs
		-				
10		-	No Samples Collected	(10.5-15') SAND, coarse, to GRAVEL, medium dense, green to gray, wet, non plastic, non cohesive	SW/GW	Heavy product; black; low viscosity 10.5-14.7' bgs
		-				
	76	-				Dense/heavy product 14.7-15' bgs
		-				
15		-		(15-17') SAND, coarse, and GRAVEL, loose, light gray and green, wet, non plastic, non cohesive	SW/GW	Light shean 15-17.8' bgs
		-				
		-		(17-17.3') SAND, soft/medium dense, gray, wet, non plastic, non cohesive	SW	
	100	-		(17.3-18.8') SAND, coarse, and GRAVEL, loose to medium dense, light gray and green, wet, non plastic, non cohesive	SW/GW	Heavy product; black; low viscosity 17.8-18.8' bgs
		-		(18.8-19.8') SAND, fine grained, dense and very soft, black, wet, non plastic, non cohesive	SP	Light product; heavy shean 18.8-19.8' bgs
20		-		(19.8-20') CLAY, very soft, black, wet, high plasticity, high cohesivity, no product	CL	
				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-W-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563473.03
Easting (US ft)	: 1456031.69

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	64	-		(0-2') SILTY very fine to medium SAND, medium dense, brown, non plastic, non cohesive	SM	Trace organics
		67.4				
		44.1		(2-3.6') BRICK and SAND, medium dense, yellow, brown and light gray, dry, non plastic, non cohesive	SW/GW	
		30.1				
		10.7		(3.6-6') SAND with SILT, very fine to medium, medium dense, black, dry, non plastic, non cohesive	SW	Trace coal
5		-				
	66	81.5		(6-20') SLAG, medium SAND to medium GRAVEL, medium dense to dense, gray, dry then wet at 9.5', non plastic, non cohesive		
		362.7				
		172.4				
		180.1	No Samples Collected			Light product 9.5-11' bgs Wet at 9.5' bgs
10		-				
		-				Moderate to heavy 11-12.5' bgs
	80	-			SW/GW	Light product 12.5-15'; brown, moderately viscous, moderate odor
		-				
		-				
15		-				No product 15-20' bgs; moderate odor
		-				
	100	-				
		-				
		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-X-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563437.72
Easting (US ft)	: 1455979.55

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	60	-	No Samples Collected	(0-2') SAND, fine to medium grained, with SILT, loose, brown, dry, non plastic, non cohesive	SW	Trace organics
		-				
		1.6		(2-4.7') SILT, hard, brown, dry, low plasticity, cohesive	ML	
		2.4				
5		1.6		(4.7-9.8') SAND, fine to coarse, non-native, with trace COAL GRAVEL, loose, black, dry, non plastic, non cohesive	SW	
	40	-				
		-				
		-				
		4.4				
		1.2				
10		-		(9.8-12.5') BRICK SAND and GRAVEL, medium dense, yellow, wet, non plastic, non cohesive	NA	Wet at 9.8' bgs
		-				
	60	-		(12.5-13.5') SANDY SILT, soft, black, wet, low plasticity, cohesive	ML	Product present 12.5-16.5' bgs; black; viscous; moderate odor
		-		(13.5-16.5') SAND, medium to coarse with small GRAVEL, medium dense, gray, wet, non plastic, non cohesive	SW	
		-				
15		-				
		-				
		-		(16.5-18') GRAVEL, fine to coarse, medium dense, gray, wet	GW	Light product 16.5-18' bgs
	100	-				Heavy product
		-		(18-18.8) GRAVEL, fine to coarse, medium dense, gray, wet, heavy product	GW	Trace product
		-			ML	No product 19.1-20' bgs
		-		(18.8-19.1') SANDY SILT, dense, very dark gray, wet to very moist, low plasticity, cohesive	SW	
20				(19.1-20') SAND, fine to medium, medium dense, brownish gray, wet, non plastic, non cohesive		
				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-Y-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563455.67
Easting (US ft)	: 1455935.49

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	64	-		(0-1.5') SILT, very firm, brown, dry, low plasticity, cohesive	ML	
		-				
		13.4		(1.5-2.3') SILTY SAND, loose, dark brown, dry, non plastic, non cohesive	SM	
		5.5		(2.3-18') SLAG SILT to small GRAVEL, medium dense to dense, gray, light gray and pale brown with trace olive green, dry then wet at 3.5', non plastic, non cohesive		Light to moderate product present 3.5-18' bgs; brown; moderate to high viscosity; moderate to strong odor
		112.9				
5		-				Wet at 3.5'
	62	-				
		130.6				
		26.5				
		30.0				
10		-	No Samples Collected		ML/GW	
		-				
	60	-				
		-				
		-				
15		-				
		-				
	100	-				
		-				
		-		(18-20') SAND, fine to medium, loose grading to dense, gray, wet, non plastic, non cohesive	SW	Sheen in sand 18-19.5' bgs; no visible product; light odor
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-Z-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563498.43
Easting (US ft)	: 1455976.26

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2') SANDY SILT, hard, brown, dry, low plasticity, cohesive	ML	
		-				
	64	22.2		(2-3.1') GRAVEL, medium dense, gray, dry, non plastic, non cohesive	GW	
		2.1		(3.1-4.3') SAND, fine to medium, medium dense, dark brown to black, dry, non plastic, non cohesive	SW	Trace gravel with metallic luster; light
		7.7		(4.3-9') SANDY SILT with trace black GRAVEL, soft, strong brown and brown, very moist, low plasticity, cohesive	ML	Trace oxidation
5		-				
		-				
	66	-				
		85.3				
		39.4		(9-17.5') SLAG SAND to medium GRAVEL, medium dense to dense, gray, wet, non plastic, non cohesive	SW/GW	Product present 9-17.5' bgs; brown; moderate to high viscosity; moderate to high odor
10		-	No Samples Collected			Wet at 9' bgs
		-				
	100	-				
		-				
		-				
15		-				
		-				
	100	-				
		-				
		-				
20				(17.5-19.5') SAND, very fine to medium grained, dense grading to loose, gray, wet, non plastic, non cohesive	SW	
				(19.5-20') CLAY with SAND, soft, gray, wet, medium plasticity, cohesive	CL	
				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-AA-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563540.39
Easting (US ft)	: 1455992.10

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	70	-	No Samples Collected	(0-3.5') SILT with some SAND, very firm, brown and yellowish red, dry, low plasticity, cohesive	ML	Trace organics
		-				
		5.0				
		78.1				
		21.1		(3.5-8.3') SAND, fine to coarse, medium dense, black, dry, non plastic, non cohesive	SW	
5		-				
	72	-				
		15.6				
		225.4		(8.3-14.5') SLAG, SAND and GRAVEL-sized, medium dense, light gray, moist to very moist, non plastic, non cohesive	SW/GW	Trace product 9-9.2'; brown; light odor; viscous
		106.9				
10		-				
	100	-				
		-				
		-				
		-		(14.5-18.2') SLAG, SILT to SAND-sized, medium dense, greenish gray, wet, non plastic, non cohesive	ML/SW	Wet at 14.5'
15		-				
	100	-				
		-				
		-		(18.2-20') SAND, fine to medium, medium dense, gray, wet, non plastic, non cohesive	ML	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-BB-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563549.21
Easting (US ft)	: 1455941.28

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	64	-	No Samples Collected	(0-3') SILT with SAND, very firm, brown, dry, low plasticity, cohesive	ML	
		-				
		4.8				
		4.1		(3-9.3') SAND with small GRAVEL, medium dense, dark brown with some black grains, dry then wet at 8', non plastic, non cohesive	SW	Light product present 8-15'; brown; moderate viscosity; moderate odor; sheen in water
5		5.0				
	50	-				
		-				
		15.7				
		3.6				
		28.4		(9.3-16.5') SLAG, SAND and GRAVEL-sized, medium dense to loose, gray and brown, wet, non plastic, non cohesive	SW/GW	Wet at 8' bgs
10		-				
	100	-				
		-				
		-				
15		-				
	100	-		(16.5-19.6') SAND, very fine to medium, loose to medium dense, gray then pale brown 17-19.6', wet, non plastic, non cohesive	SW	
		-				
		-				
		-				
20				(19.6-20') CLAY, very soft, pale brown, wet, medium plasticity, cohesive	CL	
				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-CC-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/23/16
Weather	: Sunny, 30s
Northing (US ft)	: 563604.28
Easting (US ft)	: 1455937.24

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	50	-	No Samples Collected	(0-3') SANDY SILT, soft, brown, dry, low plasticity, cohesive	ML	Trace organics
		-				
		148.6				
		198.7		(3-5') SILTY SAND, medium dense, brown, dry, non plastic, non cohesive	SM	
		-				
5		-		(5-18') SLAG, SAND and GRAVEL-sized, medium dense to dense, gray and light gray, dry then wet at 13', non plastic, non cohesive	SW/GW	
	90	59.0				
		127.3				
		178.8				
		4.2				
10		-				
	96	-				Moderate product 13.6-14' bgs; brown; moderately viscous; light petroleum odor
		-				
		-				Wet at 13' bgs
15		-				
	92	-				
		-				
		-				
		-		(18-20') SAND, fine to medium, dense to medium dense, dark grayish brown grading to grayish brown, wet, non plastic, non cohesive	SW	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater..

ARM Group LLC
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Boring ID: B18-DD-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/28/16
Weather	: Cloudy, 30s
Northing (US ft)	: 563537.27
Easting (US ft)	: 1455885.66

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	44	Wet	No Samples Collected	(0-2.5') SILTY SAND with SLAG GRAVEL, loose, brown, dry, non plastic, non cohesive	SM	
				(2.5-4') SANDY SILT, very firm, brown, dry, low plasticity, cohesive	ML	
5	70			(4-15.5') SLAG, SILT to GRAVEL-sized, medium dense, light gray to gray, wet, non plastic, non cohesive	ML/GW	NAPL present 4-15.5' bgs; dark brown/blac; viscous; light to moderate layering Wet at 4' bgs
10	50					
15	90			(15.5-19.5') SAND, fine to medium, dense, grayish brown, wet, non plastic, non cohesive	SW	Trace product 15.5-18' bgs; sheen in water
20				End of Boring at 19.5 feet		

Total Borehole Depth: 19.5' bgs.
Boring terminated at 19.5' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-EE-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/28/16
Weather	: Sunny, 30s
Northing (US ft)	: 563592.79
Easting (US ft)	: 1455855.09

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	72	-	No Samples Collected	(0-3') SILT with trace SAND, very firm, brown, dry, low ploasticity, cohesive	ML	Very light gray; metallic luster; gravel with some coal; trace oxidation
		-				
		46.0				
		14.2		(3-7') SLAG, medium to coarse with some GRAVEL, dark brown, strong brown and black, dry then moist at 4.8', non plastic, non cohesive	SW	
		22.0				
5		-				
		-				
	60	127.2		(7-15') SLAG, SAND and GRAVEL-sized, medium dense to dense, light gray and white, moist then wet at 9' bgs, non plastic, non cohesive	SW/GW	Wet at 9' bgs
		3.4				
		0.7				
10		-				
		-				
	80	-				
		-				
		-				
15				End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
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Boring ID: B18-FF-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/28/16
Weather	: Sunny, 30s
Northing (US ft)	: 563634.75
Easting (US ft)	: 1455829.86

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	56	-	No Samples Collected	(0-1.5') SANDY SILT with GRAVEL, soft, brown and light gray, dry, non plastic, non cohesive	ML	
		-				
		44.3		(1.5-3.2') SLAG GRAVEL, medium dense, light gray, dry, non plastic, non cohesive	GW	
		3.9		(3.2-8.1') Non native SAND, fine to coarse, dark brown to black, dry then moist 7.6-8.1', non plastic, non cohesive	SW	
		1.0				
5		-				
		-				
	48	-				
		-				
		-		(8.1-13') GRAVEL with SAND, fine, medium dense, dark brown, wet, non plastic, non cohesive	GW	Wet at 8.1' bgs
		-				
10		-				
		-				
	84	-				
		-				
		-		(13-15') SLAG, GRAVEL and SAND-sized, medium dense, light gray to gray, wet, non plastic, non cohesive	GW/SW	
		-				
15				End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-GG-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/28/16
Weather	: Sunny, 30s
Northing (US ft)	: 563507.93
Easting (US ft)	: 1455838.34

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-				
	80	15.3		(0-2') SANDY SILT, very firm, brown, dry, low plasticity, cohesive	ML	Product present 0-5' bgs; dark brown/black; viscous; light to moderate grading; light odor
		8.1		(2-6') SILTY SAND, medium dense, brown, light gray and pale yellowish green, moist, non plastic, non cohesive	SM	
5		29.5				
	60	-		(6-10') SLAG, fine SAND to small GRAVEL, medium dense, light gray, brown and pale yellowish green, wet, non plastic, non cohesive	SW/GW	Wet at 7' bgs Moderate product with moderate odor
10		-	No Samples Collected	(10-15.5') SLAG, fine SAND to small GRAVEL, medium dense, brown and dark brown, wet, non plastic, non cohesive	SW/GW	Heavy product with strong odor 10-15' bgs
	100	-				
15		-		(15.5-19.2') SAND, dense, dark brown, wet, non plastic, non cohesive	SW	Light to trace product in sand 16-19.2' bgs
	80	-				
		-		(19.2-20') CLAY, dense, strong brown, moist, medium plasticity, cohesive	CL	No product 19.2-20' bgs
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-HH-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/28/16
Weather	: Cloudy, 30s
Northing (US ft)	: 563587.00
Easting (US ft)	: 1455785.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	60	-		(0-2.5') SANDY SILT with some GRAVEL, very firm, brown, dry, low plasticity, cohesive	ML	
		-				
		81.8		(2.5-4') Non native SAND, fine to coarse with COAL granules, medium dense, black, dry, non plastic, non cohesive	SW	
		3.8				
		1375		(4-6') SLAG SAND and GRAVEL, medium dense, strong brown and dark gray, dry then moist at 4.5', non plastic, non cohesive	SW/GW	Very light gray; metallic luster; trace oxidation
5		-				Melted liner 5-10' bgs
	70	-	No Samples Collected	(6-15') SLAG SAND and GRAVEL, medium dense, white and light gray, dry then wet at 10', non plastic, non cohesive		
		3.6				
		3.3				
		5.2				
10		-				Wet at 10'
		-			SW/GW	
	100	-				
		-				
		-				
15				End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
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Boring ID: B18-II-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Cloudy, 40s
Northing (US ft)	: 563583.57
Easting (US ft)	: 1455721.12

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-3') SILT, very firm, yellowish brown, dry, low plasticity, cohesive	ML	Light organics
	66	6.4				
		0.7		(3-8') SAND, very fine to fine 3.5-5', medium to very coarse 7.5-8', medium dense, dark brown, dry, non plastic, non cohesive	SW	COAL present 4.3-4.7' bgs
5		21.9				
		-				
	50	1.9	No Samples Collected			
		0.3		(8-8.4') BRICK, SAND and GRAVEL-sized, medium dense, yellowish, dry, non plastic, non cohesive	SW/GW	
		0.8		(8.4-15') SLAG, SAND with GRAVEL-sized, medium dense to dense, light gray and gray, moist then wet at 9.5', non plastic, non cohesive	SW	Wet at 9.5' bgs
10		-				
	80	-				
15		-		End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-JJ-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Cloudy, 40s
Northing (US ft)	: 563552.82
Easting (US ft)	: 1455751.76

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2') SILT, hard, yellowish brown, dry, low plasticity, cohesive	ML	Trace organics
		3.4				
	60	5.3		(2-3.6') CONCRETE GRAVEL, dense, white, dry	NA	
		16.8		(3.6-4.2') SILT, hard, brown, dry, low plasticity, cohesive	ML	
		-		(4.2-5.4') SAND, fine to medium with some GRAVEL, medium dense, dark brown, dry, non plastic, non cohesive	SW	
5		-		(5.4-18.1') SLAG SAND and GRAVEL, medium dense, gray and light gray, dry but moist 7-7.2' then wet at 11.2', non plastic, non cohesive	SW/GW	NAPL present 9.1-9.3' bgs and trace at 9.5' bgs Wet at 11.2' bgs Heavy to moderate NAPL present 11.2-18.1' bgs; dark brown; viscous; strong odor
		3.8				
	84	2.3				
		6.1				
		10.5	No Samples Collected			
10		-				
		-				
	76	-				
		-				
		-				
15		-				
		-				
	100	-				
		-				
		-		(18.1-19.7') SAND, very fine to medium, dense, gray, wet, non plastic, non cohesive	SW	Light to trace product with sheen 18.1-19.7' bgs; light odor
20				(19.7-20') CLAY, firm, yellowish brown, very moist, medium plasticity, cohesive	CL	
				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-KK-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/28/16
Weather	: Cloudy, 30s
Northing (US ft)	: 563529.12
Easting (US ft)	: 1455785.88

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	40	-	No Samples Collected	(0-7') SAND with some GRAVEL, fine to medium with SILT, medium dense, brown, dry, non plastic, non cohesive	SW-SM	
		-				
		-				
		0.1				
		1.0				
5		-				
		-				
	60	6.9		(7-9') GRAVEL and SAND, medium dense, white, dry, non plastic, non cohesive	SW/GW	Light product 8.5-10' bgs
		81.5				
		395.4		(9-11') SLAG, SAND and GRAVEL, light gray, wet, non plastic, non cohesive	SW/GW	Wet at 9' bgs
10		-				
	70	-		(11.-17.5') SLAG SAND, medium to coarse, dense to medium dense, dark brown, gray and pale yellowish green, wet, non plastic, non cohesive	SW	Heavy product 11.5-17.5' bgs; dark brown; viscous; strong odor
		-				
		-				
		-				
15		-				
		-				
	90	-		(17.5-20') SAND, fine to medium, medium dense to dense, gray, wet, non plastic, non cohesive	SW	Trace product 17.5-20' bgs and light sheen in water; moderate odor
		-				
		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-LL-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Rainy, 40s
Northing (US ft)	: 563499.43
Easting (US ft)	: 1455756.97

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	82	- 44.9 11.9 8.3 25.0	No Samples Collected	(0-5') SILTY SAND with some GRAVEL, medium dense to dense, brown and dark brown, dry but wet 2-2.5'	SM	Ground surface 5-10' below surrounding ground level Increased gravel 2-2.5' bgs Trace product with sheen in water
5	100	- - - - -		(5-7') GRAVEL with SAND, medium dense, dark brown, wet, non plastic, non cohesive	GW	Light to moderate NAPL present; moderate odor; dark brown; moderate viscosity Wet at 5' bgs
				(7-10') Non native SAND, fine to coarse, medium dense, dark brown, wet, non plastic, non cohesive	SW	
10	100	- - - - - - - - -		(10-13') SANDY GRAVEL, medium dense, dark brown, wet, non plastic, non cohesive	GW-SW	Heavy NAPL; moderate viscosity; strong odor; dark brown 10-15' bgs
15	60	- - - - - - - - -		(13-16.5') SAND, fine to medium, medium dense, dark gray, wet, non plastic, non cohesive		
				(16.5-20') CLAY, firm, very pale brown, moist, medium plasticity, cohesive	CL	Only sheen in water, no NAPL 17-20' bgs
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-MM-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Rainy, 40s
Northing (US ft)	: 563466.79
Easting (US ft)	: 1455789.94

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	40	-	No Samples Collected	(0-6') GRAVEL with SAND, loose, brown, wet, non plastic, non cohesive	GW	Ground surface is 5-10' below surrounding area Sheen in water Wet at 3' bgs
		-				
		-				
		0.5				
		0.4				
5		-				
	50	-		(6-10.5') GRAVELLY SAND with SILT, medium dense, dark brown, wet, non plastic, non cohesive	SW-SM/GW	Light to heavy product present 7.5-12.5' bgs; dark brown; moderate to strong odor; moderate viscosity; sheen in water
		-				
		-				
		-				
10		-				
		-		(10.5-11') SANDY CLAY, very soft, dark gray, wet, medium plasticity, cohesive	CL	
		-		(11-12.5') GRAVELLY SAND with SILT, medium dense, dark brown, wet, non plastic, non cohesive	SW-SM/GW	
	100	-		(12.5-13.5') SANDY CLAY, very soft, pale brown, wet, medium plasticity, cohesive	CL	Sheen in water 12.5-14' bgs
		-		(13.5-14') SAND, loose, pale brown, wet, non plastic, non cohesive	SW	
		-		(14-15') CLAY, soft, pale brown, very moist, medium plasticity, cohesive	CL	
15				End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-NN-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Rainy, 40s
Northing (US ft)	: 563444.74
Easting (US ft)	: 1455764.26

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	35	- - - 3.0 3.1	No Samples Collected	(0-3') SILTY SAND with WOOD fragment, medium dense, brown, dry, non plastic, non cohesive	SM	Ground surface is approximately 5-10' below surrounding ground level
5				(3-8') GRAVEL with SAND, medium dense, brown, dry then wet at 4', non plastic, non cohesive	GW	Wet at 4' bgs Sheen in water 7-8' bgs
	62			(8-11.5') SANDY SILT with GRAVEL, firm, dark brown to very dark gray, wet, low plasticity, cohesive	ML	Light to moderate NAPL present; dark brown; moderate viscosity 8-10' bgs
10						
	24			(11.5-15') GRAVELLY SAND with SILT and some CLAY lenses, very dark gray, medium dense, wet, non plastic, non cohesive	SW/GW	Moderate to heavy NAPL 13.8-15' bgs
15						No NAPL 15-20' bgs
	100			(15-20') CLAY, soft to firm, very pale brown, moist, medium plasticity, cohesive	CL	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-OO-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Rainy, 40s
Northing (US ft)	: 563430.59
Easting (US ft)	: 1455794.07

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	60	-	No Samples Collected	(0-3') SILTY SAND with some GRAVEL, medium dense, brown, non plastic, non cohesive	SM	
		-				
		5.8				
		38.3		(3-3.9') CONCRETE GRAVEL, medium dense, white, dry, non plastic, non cohesive	NA	Wet at 3.9' bgs
		4.7		(3.9-9') SANDY GRAVEL, medium dense, brown, wet, non plastic, non cohesive	SW/GW	
5	40	-				
		-				
		-				Light to moderate NAPL present 8-14' bgs; dark brown; moderate viscosity; moderate odor
		-				
		-		(9-10.5') SILTY SAND with some GRAVEL, medium dense, very dark gray, wet, non plastic, non cohesive	SM	
10	70	-		(10.5-13.2') GRAVELLY SAND, medium dense, very dark gray, wet, non plastic, non cohesive	SW	
		-				
		-				
		-		(13.2-14') CLAYEY SAND, fine to medium, medium dense, very dark gray, wet, non plastic, non cohesive	SW-SC	
				(14-15') CLAY, soft, pale brown, very moist, medium plasticity, cohesive	CL	No NAPL 14-15' bgs
15				End of Boring		

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-PP-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 11/29/16
Weather	: Rainy, 40s
Northing (US ft)	: 563398.10
Easting (US ft)	: 1455801.84

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	52	-	No Samples Collected	(0-2.5') SILT and WOOD fragments, soft, brown, moist, non plastic, non cohesive	ML	Strong metallic odor
		-				
		6.8				
		7.7		(2.5-3.4') CONCRETE, loose, gray, dry, non plastic, non cohesive	NA	
		1.0		(3.4-6') SAND and BRICK, loose, dark brown and yellow, moist, non plastic, non cohesive	SW	
5		-				
	60	-		(6-11') SLAG and BRICK, SAND and GRAVEL, medium dense, gray with yellow, dry then wet at 9', non plastic, non cohesive	SW/GW	Wet at 9'
		0.9				
		0.8				
10		-				
		-		(11-19.7') SANDY GRAVEL with SILT grading to GRAVELLY SAND with SILT, medium dense, very dark gray to black, wet, non plastic, non cohesive		Moderate NAPL present 12.1-19.7' bgs; dark brown/black; moderate viscosity; strong odor
	58	-				
		-				
		-				
15		-			SW/GW	
		-				
	60	-				
		-				
		-				Light product with sheen 19.7-20' bgs
20				(19.7-20') SAND, fine to medium, dense, gray, wet, non plastic, non cohesive	SW	
				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to encountering groundwater.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-QQ-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Rainy, 40s
Northing (US ft)	: 563491.53
Easting (US ft)	: 1455860.76

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.5') SILT and SAND, loose, dark brown, non plastic, non cohesive	ML/SW	Light product and strong odor from 0-2.5' bgs
		-				
	70	261.7		(1.5-7.3') SAND and GRAVEL, coarse, medium dense, light gray with chunks of green throughout, non plastic, non cohesive		Heavy NAPL 2.5-14.4' bgs
		60.6				
		-				Wet at 4' bgs
5		-			SW/GW	
		-				
		-				
	70	-		(7.3-7.8') SILT, soft, dark brown, non plastic, non cohesive	ML	
		-		(7.8-10') SAND and GRAVEL, coarse, medium dense, light gray with chunks of green throughout, non plastic, non cohesive	SW/GW	
		-				
10		-	No Samples Collected	(10-14.4') SAND, fine to medium grained, medium dense, black and dark brown, non plastic, non cohesive	SW	
		-				
	96	-				
		-				
		-		(14.4-15') SAND, very fine, dense, light gray, non plastic, non cohesive	SP	Heavy sheen/trace product from 14.4-18' bgs
15		-		(15-18') SAND, very fine, very dense, gray, non plastic, non cohesive	SP	
		-				
	100	-				
		-		(18-20') CLAY, soft, reddish yellow, high plasticity, highly cohesive, no product	CL	
		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-RR-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Rainy, 40s
Northing (US ft)	: 563520.10
Easting (US ft)	: 1455859.80

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	68			(0-2') SILT with fine grained SAND, soft/loose, dark brown, dry, non plastic, non cohesive	ML/SW	Light product and strong odor from 2.1-4.5' bgs
				(2-10') SAND, coarse, and GRAVEL, loose, gray to brown with green throughout, non plastic, non cohesive		Heavy product 4.5-14.5' bgs
5						Wet at 4.5' bgs
	72				SW/GW	
			No Samples Collected			
10				(10-14.5') SAND, coarse, with some GRAVEL, dense, black and gray, non plastic, non cohesive		
	80				SW/GW	
				(14.5-15') GRAVEL, large and coarse, with SAND, light gray, non plastic, non cohesive	GW/SW	Very heavy product 14.5-15' bgs
15						Trace product sheen 15-19.6' bgs
	100			(15-19.6') SAND, very fine, very dense, black/dark gray, non plastic, non cohesive	SP	
				(19.6-20') CLAY, soft, light gray, high plasticity, highly cohesive	CL	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-SS-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Rainy, 40s
Northing (US ft)	: 563512.48
Easting (US ft)	: 1455887.42

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	78	-	No Sample Collected	(0-1') SILT and SAND, soft and loose, dark brown, non plastic, non cohesive	ML/SW	Black product 0-9' bgs
				(1-5') SAND, coarse, and GRAVEL, loose, gray and brown with green chunks throughout, non plastic, non cohesive	SW/GW	
5	84			(5-10') SAND, coarse to medium grained, and GRAVEL, loose to medium dense, gray and brown with green chunks throughout, non plastic, non cohesive	SW/GW	Heavy product 9-14.8' bgs; black
10	100			(10-12.5') SAND, fine to medium grained, medium dense, dark gray, non plastic, non cohesive	SW	
				(12.5-14.8') GRAVEL, coarse, and SAND, very loose, gray, black, and blue, non plastic, non cohesive	GW/SW	
15	78			(14.8-18.5') SAND, very fine, dense, dark gray, non plastic, non cohesive	SP	Sheen/trace product 14.8-18.9' bgs
				(18.5-18.9') CLAY, very hard, gray, non plastic, non cohesive, no product	LC	
				(18.9-20) CLAY, soft, reddish yellow, high plasticity, highly cohesive, no product	CL	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-TT-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/6/16
Weather	: Rainy, 40s
Northing (US ft)	: 563478.19
Easting (US ft)	: 1455911.23

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-2') GRAVEL, coarse, loose, gray with green chunks, dry, non plastic, non cohesive	GW	
	74	-		(2-4.5') SAND and GRAVEL, coarse, loose, gray and tan, non plastic, non cohesive	SW/GW	Product 2.6-8.9' bgs
5		-		(4.5-5') SLAG	NA	
	80	-		(5-10') SAND and GRAVEL, coarse, loose, gray and tan, with some green GRAVEL chunks throughout, non plastic, non cohesive	SW/GW	Wet at 6.2' Heavy product 8.9-14.8' bgs
10	100	-	No Samples Collected	(10-14.8') SAND, fine to medium grained, medium dense, black and gray, non plastic, non cohesive	SW	
15	100	-		(14.8-18.6') SAND, very fine grained, dense, gray to tan, non plastic, non cohesive	SP	Sheen/trace product 14.8-18.6' bgs
		-		(18.6-18.8') CLAY, hard, gray, high plasticity, highly cohesive	CL	
		-		(18.8-20) CLAY, soft, reddish yellow, high plasticity, highly cohesive	CL	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-UU-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563563.91
Easting (US ft)	: 1455826.47

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	84	-	No Samples Collected	(0-1.5') SANDY SILT, soft, reddish yellow and brownish yellow, moist, low plasticity, cohesive	ML	
		0.9		(1.5-3.4') SAND with SILT and some GRAVEL, fine to coarse, loose to medium dense, gray and dark brown, dry, non plastic, non cohesive	SW	
		2.8				
		8.4		(3.4-4.3') SILTY SAND, dense, gray and brown, dry, non plastic, non cohesive	SM	Non native
		3.6		(4.3-6.5') SAND with some GRAVEL, fine to coarse, loose, dark brown to black, dry, non plastic, non cohesive	SW	
5		-				
		-				
	40	-		(6.5-8') GRAVELLY SAND with COAL GRAVEL, fine to coarse, loose, dark brown with trace yellowish red, dry, non plastic, non cohesive	SW/GW	
		1.1		(8-16.5') SLAG SAND and GRAVEL, medium dense, gray, wet, non plastic, non cohesive	GW	Wet at 9' bgs; light oxidation Moderate product 9.4-9.7' bgs; dark brown; moderate odor
		10.6				
10		-				
		-				Moderate to heavy product 11.5-15.5' bgs; strong odor
	70	-				
		-				
		-				
15		-				Light product 15.5-16.5' bgs
		-		(16.5-20') SAND, dense, gray, wet, non plastic, non cohesive, heavy sheen in water	SW	Trace product 16.9-20' bgs
	100	-				
		-				
		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-VV-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563449.62
Easting (US ft)	: 1455902.66

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	66	-		(0-1') CLAY, soft, very pale brown, moist, medium plasticity, cohesive	CL	Trace organics
		-		(1-1.5') QUARTZ GRAVEL, loose, white and pale brown, dry, non plastic, non cohesive	GW	
		14.8		(1.5-12.5') SLAG SAND and GRAVEL, medium dense, gray and white, moist then very moist 4.5-9' then wet at 9', non plastic, non cohesive		Trace grading to light product 2.4-5' bgs
		199.4				
		163.6				
5		-				Light to moderate product 5-10' bgs
	74	-			SW/GW	
		-				
		-				Wet at 9' bgs
		-				
10		-	No Samples Collected			Heavy product 10-15' bgs
	60	-				
		-		(12.5-13.4') GRAVELLY SAND, medium dense, gray, wet, non plastic, non cohesive	SW/GW	
		-		(13.4-16.5') SAND with some GRAVEL, fine to medium, medium dense, black, wet, non plastic, non cohesive	SW	
15		-				
		-				Heavy sheen with no visible product 16.5-18.8' bgs
	100	-		(16.5-18.8') SAND, fine to medium with trace coarse, brownish gray, wet, non plastic, non cohesive	SW	
		-				
		-		(18.8-20') CLAY, hard, very pale brown and reddish yellow, moist, high plasticity, cohesive	CH	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-WW-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563436.29
Easting (US ft)	: 1455866.47

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-0.5') GRAVELLY SILT, soft, brown, moist, non plastic, non cohesive	ML	
		22.0		(0.5-11') SLAG, SAND and GRAVEL, gray, greenish gray and white, moist then wet at 4.7'		Trace to light product 1.2-4.7' bgs
	80	75.3				
		22.5				
		42.1				Wet at 4.7' bgs
5		-			SW/GW	Moderate product 4.7-8.7' bgs; dark brown; moderately viscous; moderate to strong odor
	60	-				
		-				Heavy product 8.7-15' bgs; strong odor
10		-	No Samples Collected			
		-		(11-15') SAND with some GRAVEL, fine to coarse, medium dense, black, wet, non plastic, non cohesive	SW	
	60	-				
		-				
15		-		(15-18') SAND, dense, fine to medium, brownish gray, wet, non plastic, non cohesive	SW	Light sheen in water 15-18' bgs; no visible product
	100	-				
		-		(18-20') CLAY, soft, very pale brown, very moist, high plasticity, cohesive	CH	
20		-		End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-XX-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563312.48
Easting (US ft)	: 1456060.76

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.5') SILTY SAND, very fine to fine, medium dense, brown, dry, non plastic, non cohesive	SW	
		5.6		(1.5-2.7') SILT with SAND, hard, grayish brown, dry, low plasticity, cohesive	ML	
	76	6.1		(2.7-3.4') SAND, medium to coarse with some very coarse, yellowish red, dry, non plastic, non cohesive	SW	
		157.2		(3.4-4.2') SAND, fine to medium with very small GRAVEL, medium dense, brown, dry, non plastic, non cohesive	SW	
		33.8		(4.2-18') SLAG SAND and GRAVEL, medium dense to dense, gray, light gray and white, dry then very moist at 4.5' then wet at 8.5', non plastic, non cohesive		
5		-				
		12.1				
	84	17.5				Wet at 8.5'
		-				
		-				
10		-	No Samples Collected		SW/GW	
		-				
		-				
	70	-				
		-				Very light to light product 13.7-15' bgs
		-				
15		-				Heavy product 15-18' bgs
		-				
		-				
	80	-				
		-				No product 18-20' bgs
		-		(18-20') SLAG or BRICK SAND and GRAVEL, dense, greenish gray, wet, non plastic, non cohesive	SW/GW	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-YY-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563292.48
Easting (US ft)	: 1456070.28

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	80	-	No Samples Collected	(0-1.5') SAND, dense, fine to medium, brown, moist, non plastic, non cohesive	SW	
		8.7				
		16.7		(1.5-3.9') SAND, fine to coarse with some very coarse, dark brown, moist, non plastic, non cohesive	SW	Trace product intermittent 2-3.9' bgs; light odor
		55.6				
		48.7		(3.9-5') SLAG SAND and GRAVEL, dense, white and gray, moist, non plastic, non cohesive	SW/GW	Very light product 3.9-5' bgs; light odor
5		54.0		(5-18') SLAG SAND and GRAVEL, medium dense, white and gray, moist to very moist then wet at 9', non plastic, non cohesive		Trace to very light product 5-9' bgs
	100	-				
		-				
		-				Wet at 9'
10		-				Light product 10-15' bgs
		-			SW/GW	
	64	-				
		-				
		-				
15		-				Heavy product 15-18' bgs
		-				
	70	-				
		-				
		-		(18-20') BRICK or SLAG SAND with GRAVEL, dense, gray, wet, non plastic, non cohesive	SW	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-ZZ-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Sunny, 50s
Northing (US ft)	: 563272.48
Easting (US ft)	: 1456054.09

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	74	-	No Samples Collected	(0-1.5') SAND with some GRAVEL, dense, brown, wet, non plastic, non cohesive	SW	Stormwater
		84.6		(1.5-2.7') SAND, fine to coarse, with some GRAVEL, black, moist, non plastic, non cohesive	SW	Trace to light product; light odor; dark brown 2.1-5' bgs
		47.7				
		75.5		(2.7-5') SILTY SAND with SLAG GRAVEL and SAND 4-5', dense, brown and gray, dry, non plastic, non cohesive	SM	
		26.3				
5	100	-		(5-7.5') SLAG SAND and GRAVEL, medium dense, gray, white and brown, wet 5-6' then moist 7.5', non plastic, non cohesive	SW/GW	Light product 5-6' bgs
		-				
		-				No groundwater encountered
		-				
				End of Boring		
10						

Total Borehole Depth: 7.5' bgs.
Boring terminated at 7.5' bgs due to refusals.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-AAA-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Sunny, 50s
Northing (US ft)	: 563251.52
Easting (US ft)	: 1456040.76

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-	No Samples Collected	(0-1') SILT, hard, brown, dry, low plasticity, cohesive	ML	
		6.0		(1-2.6') SAND, medium to coarse grained, with trace GRAVEL, medium dense, black, moist, no plasticity, no cohesion	SW	Light product 1.5-2.6' bgs
	90	85.3				
		91.3		(2.6-4') SAND, fine to medium grained, with trace GRAVEL, brown, dry, no plasticity, no cohesion	SW	
		50.8		(4-4.5') SAND, medium to coarse grained, with trace GRAVEL, medium dense, black, moist, no plasticity, no cohesion	SW	Moderate product 4-5' bgs
5		495.5		(4.5-8') SLAG GRAVEL with SAND, gray, white, and brown, dry then wet at 7.5', no plasticity, no cohesion	GW/SW	Moderate intermittent product 5-8' bgs
	100	209.3				Liner melted 7-8' bgs
		353.9				Wet at 7.5' bgs
				End of Boring		
10						

Total Borehole Depth: 8' bgs.
Boring terminated at 8' bgs due to refusals.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-BBB-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/7/16
Weather	: Sunny, 50s
Northing (US ft)	: 563262.00
Easting (US ft)	: 1456014.09

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	90	-	No Samples Collected	(0-1') SILTY SAND, medium dense, brown, moist, no plasticity, no cohesion	SM	Trace organics
		0.3		(1-1.7') SILT with SAND, hard, brown, dry, low plasticity, cohesive	ML	
		4.1		(1.7-3.5') SAND, medium to very coarse grained with quartz gravel, medium dense, pale brown (1.7-2.7'), grayish brown (2.7-3.5'), dry, no plasticity, no cohesion	SW	
		49.4		(3.5-4.3') SAND with SILT, dense, brown to dark brown, dry, no plasticity, no cohesion	SW-SM	Light product 3.5-4.5' bgs
		45.2		(4.3-6') Non-native SAND with some GRAVEL and COAL GRANULES, loose, black, dry, no plasticity, no cohesion	SW/GW	
5	60	-		(6-18') SLAG GRAVEL, dense, gray and light gray, dry then wet at 7.5', no plasticity, no cohesion	GW	Wet at 7.5' bgs Trace product 7.5-8.5' bgs
10	80	-				Light to moderate product 13.5-18' bgs
15	90	-		(18-20') BRICK OR SLAG, SAND-sized with some GRAVEL-sized, dense, gray and white, wet, no plasticity, no cohesion	SW	
20				End of Boring		

Total Borehole Depth: 20 bgs.
Boring terminated at 20' bgs due to encountering groundwater.

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Engineers and Scientists

Boring ID: B18-CCC-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/13/16
Weather	: Sunny, 50s
Northing (US ft)	: 563290.57
Easting (US ft)	: 1455998.85

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	78	-	No Samples Collected	(0-1.3') SILTY SAND, medium dense, brown, wet, no plasticity, no cohesion	SM	
		7.2		(1.3-2.5') SILT with SAND, hard, brown, dry, low plasticity, cohesive	ML	
		4.3		(2.5-4.3') SAND, medium to very coarse grained, medium dense, pale brown (2.5-3.3'), grayish brown (3.3-4.3'), dry, no plasticity, no cohesion	SW	
		2.6				
		3.3		(4.3-5') Non-native SAND with some COAL GRANULES, loose, black, dry, no plasticity, no cohesion	SW	
5	75	-		(5-9') SLAG GRAVEL, medium dense, gray and pale brown, wet, no plasticity, no cohesion	GW	Wet at 5' bgs
		10.1				
		8.2				
		4.1				
				End of Boring		
10						

Total Borehole Depth: 9' bgs.
Boring terminated at 9' bgs due to encountering groundwater and refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-DDD-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/13/16
Weather	: Sunny, 50s
Northing (US ft)	: 563312.48
Easting (US ft)	: 1456015.04

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	90	-	No Samples Collected	(0-0.8') SILTY SAND, loose, brown, moist, no plasticity, no cohesion	SM	
		5.8		(0.8-1.7') SILT, hard, grayish green, dark brown, and brown, dry, low plasticity, cohesive	ML	
		11.8		(1.7-4.2') SAND with COAL GRANULES, fine to coarse grained grading to fine to medium grained, medium dense, brown, moist, no plasticity, no cohesion	SW	
		135.6				
		93.7		(4.2-6') SILTY SAND with COAL GRANULES, fine to medium grained, medium dense, black, moist, no plasticity, no cohesion	SM	Light odor 4.2-5' bgs
5	49	-				
		-		(6-8.5') SLAG, SAND and GRAVEL-sized, medium dense to dense, gray, greenish gray, and white, moist then wet at 8.2', no plasticity, no cohesion	SW/GW	
		43.6				Wet at 8.2' bgs Moderate NAPL 8.2-8.5' bgs Dark brown, viscous, moderate odor
		-		End of Boring		
10						

Total Borehole Depth: 8.5' bgs.
Boring terminated at 8.5' bgs due to encountering groundwater and refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-EEE-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/13/16
Weather	: Sunny, 50s
Northing (US ft)	: 563331.53
Easting (US ft)	: 1456039.80

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	80	-	No Samples Collected	(0-0.8') SAND, medium dense, yellowish brown, moist, no plasticity, no cohesion	SW	
		4.8		(0.8-2.1') SILT, hard, yellowish brown, dry, low plasticity, cohesive	ML	
		8.0		(2.1-3.8') SAND, fine to coarse with trace very coarse, medium dense, moist, no plasticity, no cohesion	SW	Trace product with moderate odor 2.5-2.8' bgs
		207.2				
		46.6		(3.8-5') SILTY SAND with some GRAVEL, medium dense to dense, black, dry, no plasticity, no cohesion	SM	Moderate product 4.8-5' bgs
5	100	-		(5-6.7') SLAG, SAND and GRAVEL-sized, medium dense, white and gray, wet, no plasticity, no cohesion	SW/GW	Wet at 5' bgs
		-				
				(6.7-7') SLAG, SAND and GRAVEL-sized, medium dense to dense; gray, greenish gray, and white, moist then wet at 8.2' bgs, no plasticity, no cohesion	SW/GW	
				End of Boring		
10						

Total Borehole Depth: 7' bgs.
Boring terminated at 7' bgs due to encountering groundwater and refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-FFF-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/13/16
Weather	: Sunny, 50s
Northing (US ft)	: 563362.00
Easting (US ft)	: 1455964.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	92	0.0	No Samples Collected	(0-0.7') SAND, fine to medium grained, medium dense, yellowish brown, very moist, no plasticity, no cohesion	SW	
		0.1		(0.7-3.5') SILT, hard, yellowish brown to dark brown, dry, low plasticity, cohesive	ML	
		7.8				
		10.0				
		4.7		(3.5-7.8') CLAY, very firm grading to soft, brownish gray, moist to very moist, med plasticity, cohesive	CL	
5		-				
	70	1.5				
		3.6				
		1.5		(7.8-10.5') SANDY CLAY, soft, very dark gray, wet, low plasticity, cohesive	CL	Wet at 7.8' bgs
		-				
10		-				
	80	-		(10.5-13.7') SANDY GRAVEL, medium dense, brown, wet, no plasticity, no cohesion	SW/GW	Heavy sheen in water 11-15' bgs
		-				
		-				Trace product 13.7-15' bgs
		-		(13.7-16.5') SAND, fine to coarse grained, dense, yellowish brown, wet, no plasticity, no cohesion	SW	
15		-				
	30	-		(16.5-20') SLAG OR BRICK, SAND and GRAVEL-sized, medium dense to dense, grayish green, wet, no plasticity, no cohesion	SW/GW	
		-				
		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-GGG-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/13/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563365.81
Easting (US ft)	: 1455908.37

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-3') CONCRETE, dry, white	NA	
	50	-				
		55.2		(3-7.5') SAND, fine to medium grained, medium dense, black, no plasticity, no cohesion	SW	Metallic grains throughout 3-5' bgs
		1.2				
5		0.7				
	40	-				
		-				
		-				
		-		(7.5-10') SANDY GRAVEL with BRICK, medium dense, dark brown and yellow, wet, no plasticity, no cohesion	SW/GW	Wet at 8' bgs
		-				
10		-	No Samples Collected	(10-17') SAND, fine to coarse grained with GRAVEL, medium dense, black, wet, no plasticity, no cohesion	SW	Sheen in water 9.7-10' bgs Moderate to heavy product 10-12.5' bgs Heavy sheen in water 10-18' bgs
	100	-				Light product 12.5-14.5' bgs
		-				
		-				
15		-				Trace to light product 15-17' bgs
		-				
	100	-		(17-18.1') SLAG OR BRICK SAND and GRAVEL, dense, grayish green, wet, no plasticity, no cohesion	SW/GW	
		-		(18.1-20') SAND, fine to medium grained, dense, gray, wet, no plasticity, no cohesion	SW	
20		-		End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-HHH-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/13/16
Weather	: Cloudy, 50s
Northing (US ft)	: 563316.29
Easting (US ft)	: 1455908.37

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-3') CONCRETE, medium dense, dry, white, no plasticity, no cohesion	NA	
	46	-				
		33.8		(3-6') SAND with COAL GRANULES to GRAVEL, very fine to medium grained, medium dense, black, dry, no plasticity, no cohesion	SW	
5		7.1				
		31.1		(6-9.8') SANDY GRAVEL with SILT with trace GRAVEL, medium dense, very dark brown, wet, no plasticity, no cohesion	SW/GW-GM	Wet at 7' bgs
	60	-				
10		-	No Samples Collected	(9.8-10.5') BRICK SAND, medium dense, yellow, dry, no plasticity, no cohesion	SW	
		-		(10.5-13.5') SLAG with BRICK SAND and GRAVEL, medium dense, yellow and light gray, wet, no plasticity, no cohesion	SW/GW	Light product 11.5-13.5' bgs
	70	-				
		-		(13.5-18.8') SLAG OR BRICK, dense, grayish green, wet, no plasticity, no cohesion	SW/GW	
15		-				
		-				
	74	-				
		-		(18.8-18.9') SAND, fine to medium grained, dark brown, wet, no plasticity, no cohesion	SW	
20		-		(18.9-20') CLAY, firm, reddish yellow and gray mottling, moist, medium plasticity, cohesive	CL	
				End of Boring		
25						

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-III-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563268.67
Easting (US ft)	: 1455913.14

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	90	8.1	No Samples Collected	(0-1.1') SAND with SILT, medium dense, brown, very moist, no plasticity, no cohesion	SW-SM	No water encoutered
		5.9		(1.1-2.6') SANDY GRAVEL with SLAG, dark brown, dry, no plasticity, no cohesion	SW/GW	
		37.8		(2.6-4') SLAG, SAND and GRAVEL-sized, light gray and white, dry, no plasticity, no cohesion	SW/GW	
		10.8		End of boring		
5						

Total Borehole Depth: 4' bgs.
Boring terminated at 4' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-JJJ-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563297.24
Easting (US ft)	: 1455873.14

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	62	-	No Samples Collected	(0-2') SAND with SILT, very fine to medium grained, medium dense to loose, brown, dry, no plasticity, no cohesion	SW-SM	
		-				
		33.7		(2-7.5') SILTY SAND with some GRAVEL, medium dense, very dark brown, dry then moist 7-7.5', wet at 7.5', no plasticity, no cohesion	SM	Medium metallic grains throughout 2.6-7.5' bgs
		0.7				
		0.5				
5		-				
	60	-				Wet at 7.5' bgs
		-		(7.5-9.3') SANDY GRAVEL, small GRAVEL with medium to coarse SAND, medium dense to dense, very dark brown, wet, no plasticity, no cohesion	SW/GW	
		-		(9.3-14.3') SLAG SAND and GRAVEL, dense, light gray, wet, no plasticity, no cohesion	SW/GW	Light product, medium brown with light odor 9.3-14.3' bgs
10		-				
	40	-				
		-				
		-				
		-		(14.3-20') SLAG OR BRICK, dense, grayish green, wet, no plasticity, no cohesion	SW/GW	
15		-				
	60	-				
		-				
		-				
20				End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-KKK-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563325.81
Easting (US ft)	: 1455834.09

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	54	-	No Samples Collected	(0-3.5') SILTY SAND with some small GRAVEL, very fine to medium grained, medium dense, black, dry, no plasticity, no cohesion	SM	Some very fine metallic grains throughout 2.3-4.7' bgs
		18.9				
		1.1				
		0.9		(3.5-6') BRICK GRAVEL with SAND, medium dense, yellow, brown, and red, dry, no plasticity, no cohesion	SW/GW	
5		-				
	50	-		(6-9.3') BRICK GRAVEL with SAND, dense, red, white, and brown, wet, no plasticity, no cohesion	SW/GW	Wet at 7.5' bgs
		-				
		-				Moderate product, dark brown with moderate odor 9.3-10' bgs
10		-		(9.3-13.8') SANDY GRAVEL, medium dense, dark brown, wet, no plasticity, no cohesion	SW/GW	Heavy product 11-13.8' bgs
	78	-				
		-				
		-				No product 13.8-20' bgs
15		-		(13.8-20') SLAG OR BRICK SAND and GRAVEL, medium dense, grayish green, wet, no plasticity, no cohesion	SW/GW	
		-				
	56	-				
		-				
		-				
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-LLL-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563363.91
Easting (US ft)	: 1455836.95

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1') SILT, soft, brown, dry, no plasticity, no cohesion	ML	Trace organics
		-		(1-6') SILTY SAND with some small GRAVEL, very fine to medium grained, medium dense, black, dry, no plasticity, no cohesion		
	56	58.6				Very small metallic luster grains thoughout 2.4-5' bgs
		170.0			SM	
5		156.4				
		-		(6-9.3') GRAVELLY SAND, medium dense, very dark brown, wet, no plasticity, no cohesion		
	36	-			SW/GW	Wet at 8.2' bgs
		-		(9.3-13') SANDY GRAVEL, medium dense, very dark brown, wet, no plasticity, no cohesion		
10		-	No Samples Collected		SW/GW	
		-				
	54	-				
		-		(13-15') SAND with some small GRAVEL, medium dense, very dark brown, wet, no plasticity, no cohesion	SW	Heavy grading to light NAPL, dark brown 13-15' bgs
15		-		(15-18.1') SILTY SAND with some GRAVEL, medium dense, very dark brown to black, wet, no plasticity, no cohesion		Moderate sheen 13-18.1' bgs
		-			SM	
	100	-				Moderate to heavy NAPL 15-18' bgs
		-		(18.1-20') CLAY, very firm, grayish brown grading to reddish yellow, moist, medium plasticity, cohesive	CL	
20		-		End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-MMM-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563361.05
Easting (US ft)	: 1455788.37

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.5') SANDY SILT, soft, dark brown, dry, no plasticity, no cohesion	ML	Moderate organics
		68.5		(1.5-2.6') SLAG SAND and GRAVEL, with SAND, dense, very pale brown and light gray, dry, no plasticity, no cohesion	SW/GW	
	78	0.5				Fine metallic luster grains and trace coal 2.6-3.4' bgs
		0.4		(2.6-3.4') SILTY SAND, medium dense, very dark brown/black, dry, no plasticity, no cohesion	SM	
		0.3		(3.4-5.5') SLAG SAND and GRAVEL, with SAND, very pale brown and light gray, dry but trace moist at 4.8', no plasticity, no cohesion	SW/GW	
5		-		(5.5-9') SLAG GRAVEL with SAND and SILT, dense, gray, brown, and dark brown, wet, no plasticity, no cohesion	SW/GW-GM	Wet at 6.2' bgs
	76	-				
		-				
		-				
		-		(9-9.6') SILTY SAND, fine to coarse grained, greenish gray, wet, no plasticity, no cohesion	SM	Moderate NAPL, dark brown with moderate odor 9.6-10' bgs
10		-	No Samples Collected	(9.6-14.2') SANDY GRAVEL, medium dense, dark brown, wet, no plasticity, no cohesion	SW/GW	Heavy NAPL 10-14.2' bgs
	100	-				
		-				
		-				
		-		(14.2-16.5') SAND, fine to medium grained, medium dense, dark grayish brown, wet, no plasticity, no cohesion	SW	Trace NAPL with heavy sheen 14.2-16.5' bgs
15		-				
		-				
	100	-		(16.5-18.5') SANDY GRAVEL with GRAVELLY SAND intermittent, medium dense, very dark brown, wet, no plasticity, no cohesion	SW/GW	Moderate to heavy product 16.5-18.5' bgs
		-				
		-		(18.5-20') CLAY, very firm, reddish yellow, moist, medium plasticity, cohesive	CL	
20				End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-NNN-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563540.10
Easting (US ft)	: 1456047.42

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	60	-	No Samples Collected	(0-2') SILT with SAND, soft, brown, moist, no plasticity, no cohesion	ML	Trace organics
		-				
		12.6		(2-3.2') SAND with SILT and SLAG GRAVEL, medium dense, brown, dry, no plasticity, no cohesion	SW-SM/ GW	No water encountered
		20.4		(3.2-4.7') SILTY SAND with GRAVEL, medium dense, very dark brown, dry to moist, no plasticity, no cohesion	SM/GW	
		2.1		(4.7-5') SLAG GRAVEL, medium dense, light gray, dry, no plasticity, no cohesion	GW	
5				End of Boring		

Total Borehole Depth: 5' bgs.
Boring terminated at 5' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-OOO-SB

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563593.43
Easting (US ft)	: 1456044.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-2') CONCRETE, medium dense, white, dry, no plasticity, no cohesion	NA	
		-				
	60	5.5		(2-4.5') SAND with some GRAVEL, fine to medium grained, dense, dark brown, dry, no plasticity, no cohesion	SW	
		6.4				
		22.7		(4.5-10') SLAG SAND and GRAVEL, loose, gray and light gray, dry then wet at 7.5', no plasticity, no cohesion		
5			No Samples Collected			
		-				
		-				
	60	445.2			SW/GW	Wet at 7.5' bgs
		394.5				
		267.0				
10				End of Boring		

Total Borehole Depth: 10' bgs.
Terminated at 10' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-PPP-SB

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT
Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563589.62
Easting (US ft)	: 1455992.18

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-1') SILT, soft, brown, dry, no plasticity, no cohesion	ML	
		2.4		(1-2.1') CONCRETE, medium dense, white, no plasticity, no cohesion	NA	
	76	203.2		(2.1-2.7') SAND with some GRAVEL, fine to coarse grained, medium dense, brown, dry, no plasticity, no cohesion	SW	
		195.7		(2.7-4.2') SILT, very firm, brown, dry, low plasticity, cohesive	ML	
		34.2		(4.2-4.5') SILTY SAND with some GRAVEL, medium dense, very dark brown, dry, no plasticity, no cohesion	SM	Small metallic luster grains throughout 4.2-4.5' bgs
5	100	63.7		(4.5-6') SLAG GRAVEL with SAND, medium dense, light gray, dry, no plasticity, no cohesion	GW/SW	No water encountered
				End of Boring		
10						

Total Borehole Depth: 6' bgs.
Terminated at 6' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-QQQ-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563647.72
Easting (US ft)	: 1456039.80

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1') SILT, soft, brown, moist, low plasticity, cohesive	ML	Moderate organics
		18.3		(1-2.7') SAND with GRAVEL, fine to coarse grained, medium dense, yellowish brown, dry, no plasticity, no cohesion	SW/GW	Light oxidation 1.5-2' bgs
	76	23.0				
		92.6		(2.7-3.1') SAND with SILT, fine to medium grained, dense, black, dry, no plasticity, no cohesion	SW-SM	
		6.0		(3.1-5') SAND with SLAG and BRICK GRAVEL, medium dense; gray, brown, yellow, and red; dry, no plasticity, no cohesion	SW/GW	
5		1.7		(5-17.5') SLAG GRAVEL, medium dense, gray, dry to moist then wet at 8', no plasticity, no cohesion		
		-				
	60	-				Wet at 8' bgs
		-				
		-				
10		-	No Samples Collected			
		-			GW	LIght to very light amber brown NAPL 11.5-15' bgs
	70	-				
		-				
		-				
15		-				
		-				
	72	-				No visible product, but sheen in water from 17.5-19.6' bgs
		-		(17.5-19.6') SAND, dense, dark gray, wet, no plasticity, no cohesion	SW	
		-				
20				(19.6-19.9') SAND, dense, very pale brown, wet, no plasticity, no cohesion	SW/CL	
				(19.9-20') SANDY CLAY, soft, very pale brown, wet, low plasticity, cohesive		
				End of Boring		

Total Borehole Depth: 20' bgs.
Terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-RRR-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/14/16
Weather	: Sunny, 40s
Northing (US ft)	: 563643.91
Easting (US ft)	: 1455991.23

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	58	-	No Samples Collected	(0-3') SAND with SLAG GRAVEL, medium dense, brown, dry, no plasticity, no cohesion	SW/GW	
		-				
		8.3				
		44.1		(3-4.2') SILTY SAND, medium dense, black, dry, no plasticity, no cohesion	SM	
		59.3		(4.2-8) SLAG GRAVEL with BRICK, medium dense; light gray, brown, and red; dry, no plasticity, no cohesion	GW	
5		-				
	50	-				
		-				
		-				
		-		(8-10.5') SANDY GRAVEL, medium dense, gray and brown, wet, no plasticity, no cohesion	SW/GW	Wet at 8' bgs
10		-				
		-		(10.5-14.5') SANDY GRAVEL, medium dense, dark brown, wet, no plasticity, no cohesion	SW/GW	Moderate to heavy dark brown NAPL 10.8-15' bgs
	84	-				
		-				
		-				
15		-		(14.5-15.5') SANDY GRAVEL, medium dense, gray, wet, no plasticity, no cohesion	SW/GW	
		-		(15.5-18') SLAG SAND and GRAVEL, medium dense, gray, wet, no plasticity, no cohesion	SW/GW	
	80	-				
		-				
		-		(18-20') SAND, fine to medium grained, dense, gray, wet, no plasticity, no cohesion	SW	
20				End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-SSS-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Cloudy, 30s
Northing (US ft)	: 563639.14
Easting (US ft)	: 1455928.37

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	74	-	No Samples Collected	(0-1') GRAVELLY SAND, medium dense, brown, wet, no plasticity, no cohesion	SW/GW	Wet at 8.6' bgs
		0.2		(1-3.3') SLAG SAND and GRAVEL, medium dense, gray, moist, no plasticity, no cohesion	SW/GW	
		0.3				
		7.9		(3.3-4.2') SILT, medium dense, dark brown, moist, low plasticity, cohesive	ML	
		0.4		(4.2-7') BRICK SAND and GRAVEL, loose, red and yellow, dry, no plasticity, no cohesion	SW/GW	
5		-				
		-				
	68	-		(7-15.1') SANDY GRAVEL, medium dense to dense, light gray and very pale brown, wet, no plasticity, no cohesion	SW/GW	
		3.7				
		32.3				
10		-				
		-				
	80	-				
		-				
		-				
15		-		(15.1-17.7') SAND, fine to medium grained, medium dense, gray, wet, no plasticity, no cohesion	SW	
		-				
	96	-		(17.7-20') CLAY, soft to very firm, yellow to reddish yellow, moist to very moist, med plasticity, cohesive	CL	
		-				
		-				
20				End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-TTT-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563636.29
Easting (US ft)	: 1455875.99

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	54	-	No Samples Collected	(0-2') SANDY SILT with some GRAVEL, firm, brown, dry, no plasticity, no cohesion	ML	Organic matter
		-				
		-		(2-3.2') GRAVELLY SAND, non-native, medium to very coarse, medium dense, dark brown, moist, no plasticity, no cohesion	SW/GW	
		1.3		(3.2-6.5') SLAG and BRICK SAND and GRAVEL, medium dense to loose; gray, dark brown, and yellow; dry, no plasticity, no cohesion	SW/GW	
5		77.9				
	36	-		(6.5-10.5') GRAVELLY SAND, fine to coarse grained, medium dense, yellow and dark brown, wet, no plasticity, no cohesion	SW/GW	Wet at 8.2' bgs
		-				
		-				
10		-				
	76	-		(10.5-15.5') GRAVELLY SAND, medium dense, light gray, gray, and very pale brown, then dark gray 14.6-15', wet, no plasticity, no cohesion	SW/GW	
		-				
		-				
15		-				
	90	-		(15.5-18.5') SAND, fine to medium grained, medium dense, gray then light brownish gray 18-18.5', wet, no plasticity, no cohesion	SW	
		-				
		-		(18.5-20') CLAY, firm to very firm, dry, low plasticity, cohesive	CL	
20				End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-UUU-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563652.48
Easting (US ft)	: 1456141.71

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	62	-	No Samples Collected	(0-4.5') SAND with some SILT and GRAVEL, medium dense, brown, dry, no plasticity, no cohesion	SW	
		-				
		1.6				
		1.3				
		9.7		(4.5-9.5') SLAG SAND and GRAVEL, medium dense to dense, light gray and white, moist to dry, then wet at 8.5', no plasticity, no cohesion		Trace NAPL 5-8.9' bgs
5		10.7				
	86	19.5			SW/GW	
		58.1				Wet at 8.5' bgs
		399.3				Light NAPL, light brown with light odor 8.9-9.5' bgs
		433.6				
				End of boring		
10						

Total Borehole Depth: 9.5' bgs.
Boring terminated at 9.5' bgs due to refusal.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-VVV-SB

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Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563491.53
Easting (US ft)	: 1456151.23

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2') SAND with some GRAVEL, very fine to medium grained, medium dense, brown, dry, no plasticity, no cohesion	SW	
		2.2				
	72	13.2		(2-2.8') CONCRETE SAND with some GRAVEL, medium dense, gray, dry, no plasticity, no cohesion	NA	Trace oxidation 2.8-4.3' bgs
		1.8		(2.8-4.3') SAND, fine to coarse grained, medium dense, brown with trace reddish yellow, dry, no plasticity, no cohesion	SW	
		219.4		(4.3-18') SLAG SAND and GRAVEL, medium dense, white and light gray, dry, no plasticity, no cohesion		
5		-				
		167.7				
	76	84.0				LIght NAPL, medium brown 7.5-10' bgs
		165.2				Wet at 9' bgs
		89.3				
10		-	No Samples Collected			Light to moderate NAPL 10.5-15' bgs
		-			SW/GW	
	90	-				
		-				
		-				
15		-				
		-				
	90	-				
		-				
		-		(18-19.5') SAND, fine to medium grained, medium dense to dense, gray to light gray, wet, no plasticity, no cohesion	SW	
20				(19.5-20') CLAY, hard, light gray, moist, low plasticity, cohesive	CL	
				End of boring		

Total Borehole Depth: 20' bgs.
Terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-WWW-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563486.76
Easting (US ft)	: 1456109.33

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1') SILTY SAND with some GRAVEL, medium dense, brown, wet, no plasticity, no cohesion	SM	
	74	7.6 25.6 21.7 16.6		(1-12') SAND with SLAG GRAVEL and BRICK, medium dense; brown, gray, light gray, and yellow; dry then wet at 9', no plasticity, no cohesion	SW/GW	Wet at 9' bgs
5	70	- - - - - - - - - -	No Samples Collected			
10	2	- - - - - - - - - -		(12-15') SANDY GRAVEL with SILT, medium dense, brown, wet, no plasticity, no cohesion	SW/GW-GM	
15	100	- - - - - - - - - -		(15-19.3') GRAVELLY SAND, medium dense to dense, gray with white, wet, no plasticity, no cohesion	SW/GW	
20				(19.3-20') SAND, medium dense, gray, wet, no plasticity, no cohesion	SW	
				End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-XXX-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563542.00
Easting (US ft)	: 1456103.61

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1') SANDY SILT, soft, brown, moist to dry, no plasticity, no cohesion	ML	
	76	26.9 15.6 23.4 9.5		(1-6.5') GRAVELLY SAND, medium dense; gray, brown, and yellow; dry, no plasticity, no cohesion	SW/GW	
5		-				
	44	-		(6.5-8.7') GRAVEL, loose, gray and yellow, dry, no plasticity, no cohesion	GW	Wet at 7.8' bgs
		-		(8.7-15') SANDY GRAVEL, medium dense, brown then light gray at 11.3, wet, no plasticity, no cohesion	SW/GW	Trace NAPL 9.7-10' bgs Light NAPL, amber brown to dark brown 11.5-15' bgs
10		-	No Samples Collected			
	74	-				
15		-		(15-18') SLAG or BRICK, medium to very coarse SAND with very small GRAVEL, medium dense to dense, greenish gray with white, wet, no plasticity, no cohesion	SW/GW	
	100	-		(18-20') SAND, fine to medium grained, medium dense to dense, gray then light brownish gray 19.2-20', wet, no plasticity, no cohesion	SW	
20		-		End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-YYY-SB

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563599.14
Easting (US ft)	: 1456100.76

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	68	-		(0-2') SILTY SAND with ASPHALT GRAVEL, medium dense to loose, brown and black, dry, no plasticity, no cohesion	SM	
		-				
		9.0		(2-6.5') SLAG GRAVEL and SAND, fine to coarse, medium dense, gray and brown, dry, no plasticity, no cohesion	SW/GW	
		5.8				
5		7.7				
	40	-		(6.5-10.5') SANDY GRAVEL, medium dense, gray and light brown, wet, no plasticity, no cohesion	GW/SW	Wet at 8' bgs
		-				
10		-	No Samples Collected	(10.5-15.5') SILTY SAND with some GRAVEL, dense, white, wet, no plasticity, no cohesion	SM/GW	Light amber brown NAPL 11.5-13.5' bgs
	80	-				
		-				
15		-		(15.5-20') SAND with some GRAVEL, medium to very coarse grained, medium dense to dense, gray with trace white, wet, no plasticity, no cohesion	SW	
	76	-				
		-				
20		-		End of boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

ARM Group LLC
Engineers and Scientists

Boring ID: B18-ZZZ-SB

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 170183M
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 12/19/16
Weather	: Sunny, 30s
Northing (US ft)	: 563649.62
Easting (US ft)	: 1456097.90

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	86	-	No Samples Collected	(0-2') SAND with some SLAG GRAVEL and some SILT, medium dense, brown and gray, dry, no plasticity, no cohesion	SW	
		14.5				
		2.7		(2-2.7') BRICK SAND and GRAVEL, medium dense to dense, very pale brown and light gray, dry, no plasticity, no cohesion	SW/GW	
		1.4		(2.7-6') SILTY SAND with some GRAVEL and COAL GRANULES, medium dense, very dark brown with trace gray and black, dry, no plasticity, no cohesion	SM	
5		3.9				
	40	-		(6-17.8') GRAVEL, very small to large, dense to medium dense, yellowish brown then yellow and brown 16-17.8', wet, no plasticity, no cohesion		Wet at 8' bgs
10		-				
	22	-			GW	Very light amber brown NAPL in water 13.9-15' bgs
15		-				
	80	-		(17.8-20') SAND, fine to medium grained, gray, wet, no plasticity, no cohesion	SW	Trace sheen at 19.5' bgs
20		-		End of Boring		

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs due to Work Plan.

Attachment 4

Parcel B18 NAPL Sampling
Photograph Log
Sparrows Point, Maryland

Photo 1: View of NAPL collected from a B18 well. Take note of the NAPL observed as LNAPL and DNAPL.

Photo 2: Another view of the NAPL collected in Photo 1.

Photo 3: View from the top of the same NAPL jar from Photo 1.

Attachment 5

ARM Group LLC
Engineers and Scientists

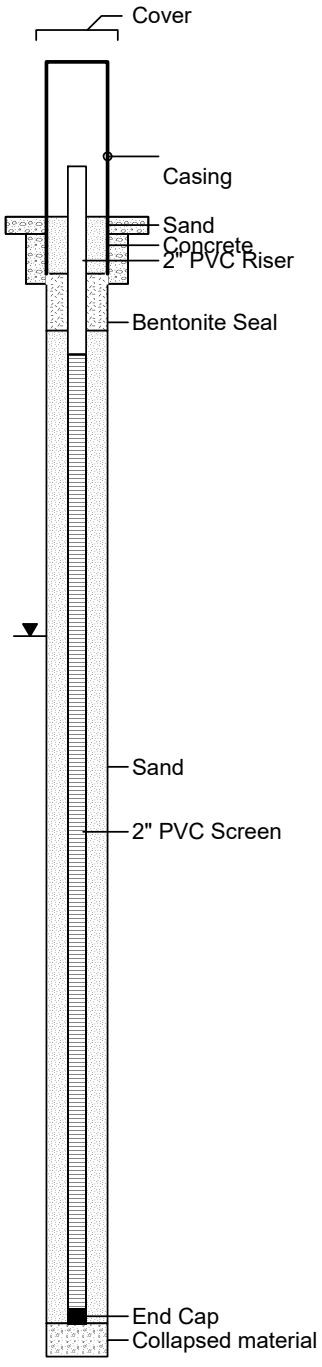
Well ID: SW-084-MWS

(page 1 of 1)

Project Name	: B18 Well Installation
Project Number	: 150300M-14-3
Client	: EnviroAnalytics Group
Site	: Sparrow's Point
Borehole Location	: Parcel B18
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Well Drilling
Driller	: Gary Brugger
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 563545.37
Easting (ft)	: 1455748.29
Date/Time Started	: 10/24/18 / 1415
Date/Time Completed	: 10/25/18 / 1230
Surf. Elev. (ft AMSL)	: 9.06
TOC Elev. (ft AMSL)	: 11.51
Total Well Depth (ft)	: 19.42' bgs
Depth to Water (ft)	: 0 Hr: 11.74' TOC; Trace NAPL
Depth to Water (ft)	: Static: 9.83' TOC
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-20	-	4	(0-1') SILTY SAND with trace GRAVEL and trace ORGANICS, loose, brown, dry, non-plastic, non-cohesive	SM
		0.0	6 9 9		
2	2-0	-	4	(1-8') SILTY SAND with trace ORGANICS, trace limestone GRAVEL, and trace SAND and GRAVEL-sized SLAG, loose to medium dense, brown and black with gray, dry then moist from 7.2-8' bgs, non-plastic, non-cohesive	SM
		-	12 11 16		
4	3-45	-	5		
		0.0	4 6 6		
6	4-40	-	5		
		0.5	4 7 8		
8	5-20	3.1	50/4	(8-18.7') SLAG, SAND and GRAVEL-sized, dense, greenish gray, dry then wet at 10.3' bgs, no plasticity, no cohesion, very light grading to heavy viscous product with moderate odor at 12' bgs	GW/SW
		-			
10	6-30	13.1	20		
		-	50/3		
12	7-100	21.7	6		
		18.9	3 6 4		
14	8-100	20.3	5		
		18.1	7 8 10		
16	9-100	17.0	5		
		24.1	4 6 4		
18	10-100	5.5	WOH	(18.7-20') SANDY CLAY grading to CLAY, soft, light olive brown, very moist, low plasticity, cohesive	CL
		3.8	2 2 2		
20				End of boring	



COMPLETION DETAILS

4.25" Protective Steel Casing with Locking Lid
Weep hole approximately 6" above concrete pad
1.93x2.05' concrete pad
2" expandable-type cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.47'

Grout: Portland w/5% Bentonite
Top: 0' bgs
Bottom: 1.0' bgs

Bentonite Seal: 1/4" chips
Top: 1.0' bgs
Bottom: 2.0' bgs

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 2.42' bgs
Bottom: 19.42' bgs
Total Screen: 17'

Filter Pack: 7 bags-FilPro W.G. #2 Sand
Top: 2.0' bgs
Bottom: 19.42' bgs

2.5" Long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 11/29/18
Purged Amount: 5.5 gallons

ARM Group LLC
Engineers and Scientists

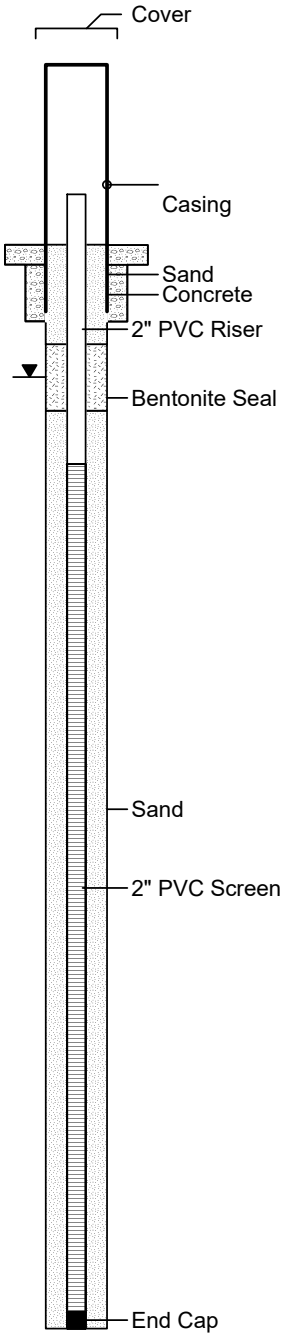
Well ID: SW-085-MWS

(page 1 of 1)

Project Name	: B18 Well Installation
Project Number	: 150300M-14-3
Client	: EnviroAnalytics Group
Site	: Sparrow's Point
Borehole Location	: Parcel B18
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Well Drilling
Driller	: Gary Brugger
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 563464.17
Easting (ft)	: 1455756.77
Date/Time Started	: 10/23/18 / 1230
Date/Time Completed	: 10/24/18 / 1600
Surf. Elev. (ft AMSL)	: 4.57
TOC Elev. (ft AMSL)	: 7.04
Total Well Depth (ft)	: 16.30' bgs
Depth to Water (ft)	: 0 Hr: 5.51' TOC; Trace NAPL
Depth to Water (ft)	: Static: 4.49' TOC
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-35	-	1	(0-1') SILTY SAND with trace GRAVEL, loose, brown, dry, no plasticity, no cohesion	SM
		0.0	1 1 1	(1-5.9') SANDY SILT, soft, brown, moist, low plasticity, cohesive	ML
2	2-10	-	4		
		0.0	3 1 1		
4	3-40	-	4		
		0.0	2 2 1		
6	4-80	0.9	9	(5.9-7.6') GRAVEL with SAND and SILT, loose, black grading to gray, wet, no plasticity, no cohesion	GW-GM/ SW
		0.6	10 6 8		
8	5-75	9.4	4	(7.6-8.2') SANDY SILT, firm to very firm, grayish brown, very moist, low plasticity, cohesive	ML
		19.6	4 5 7	(8.2-12.2') SAND with fine GRAVEL and SILT, medium dense, black, wet, no plasticity, no cohesion, light to moderate product and heavy sheen with a strong odor	SW/GP
10	6-90	0.6	2 2		
		13.5	3 2		
12	7-100	7.3	WOH		SM
			WOH	(12.2-12.4') SILTY SAND, loose to medium dense, grayish brown to black, wet, no plasticity, no cohesion, heavy product and sheen with a strong odor	ML
		4.3	1 1		
14	8-85	3.4	4 6	(12.4-13.2') SANDY SILT, soft, dark gray, very moist to wet, low plasticity, cohesive, light product	SM
		5.1	2 2	(13.2-15.7') SILTY SAND, loose to medium dense, brownish gray to black, wet, non-plastic, non-cohesive, trace to light product from 13.2-14' bgs	
16				(15.7-16') CLAY, firm, light brown, moist, low plasticity, cohesive	CL
				End of boring	
18					



COMPLETION DETAILS

4.25" Protective Steel Casing with Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" expandable-type cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.50'

Grout: Portland w/5% Bentonite
Top: 0' bgs
Bottom: 1.50' bgs

Bentonite Seal: 1/4" pellets
Top: 1.50' bgs
Bottom: 2.50' bgs

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 3.30' bgs
Bottom: 16.30' bgs
Total Screen: 13'

Filter Pack: 7-Bags FilPro W.G. #2 Sand
Top: 2.50' bgs
Bottom: 16.30' bgs

2.5" Long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 11/28/18
Purged Amount: 6.25 gallons

ARM Group LLC
Engineers and Scientists

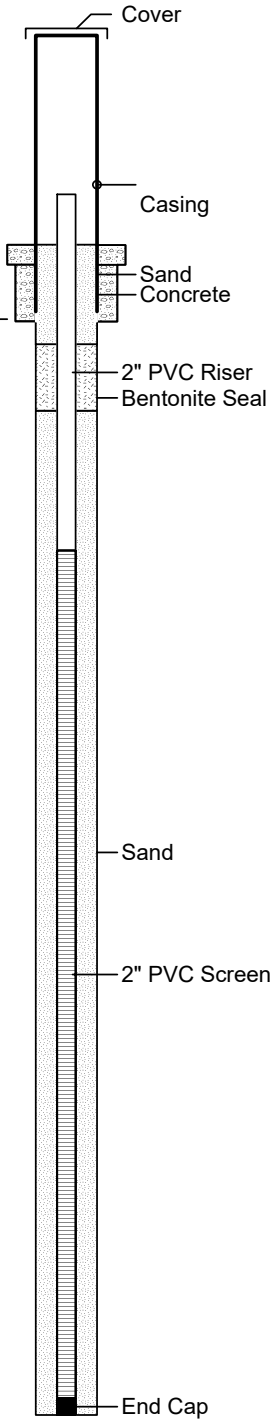
Well ID: SW-086-MWS

(page 1 of 1)

Project Name	: B18 Well Installation
Project Number	: 150300M-14-3
Client	: EnviroAnalytics Group
Site	: Sparrow's Point
Borehole Location	: Parcel B18
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Well Drilling
Driller	: Gary Brugger
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 563417.04
Easting (ft)	: 1455762.93
Date/Time Started	: 10/22/18 / 1440
Date/Time Completed	: 10/23/18 / 1200
Surf. Elev. (ft AMSL)	: 4.39
TOC Elev. (ft AMSL)	: 6.96
Total Well Depth (ft)	: 17.6' bgs
Depth to Water (ft)	: 0 Hr: 5.36' TOC; Trace NAPL
Depth to Water (ft)	: Static: 4.06' TOC
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-40	-	WOH	(0-0.3') SILTY SAND, loose, dark brown, dry, no plasticity, no cohesion	SM
			WOH		
		0.0	2	(0.3-1.2') SANDY SILT, soft, brown, moist, low plasticity, cohesive	ML
2			2		
	2-10	-	7	(1.2-1.5') SILTY SAND, medium dense, very moist, no plasticity, no cohesion	SM
			5		
		0.0	4	(1.5-4') SANDY SILT with some fine GRAVEL, soft, dark brown, very moist, low plasticity, cohesive, light odor	ML
4			9		
	3-15	-	4	(4-8.7') GRAVEL, fine, loose to dense, black, wet, no plasticity, no cohesion, light odor, light to strong odor throughout with black, viscous heavy product 6.8'+ bgs with light sheen	GP
			3		
		0.6	2		
6			2		
	4-75	3.7	6		
			7		
		4.5	7		
8			8		
	5-80	9.1	4	(8.7-14.9') SAND, fine to very coarse, with some fine GRAVEL, medium dense, black, wet, no plasticity, no cohesion, light to moderate product with heavy sheen and odor	SW
			5		
		8.9	5		
10			5		
	6-50	-	6		
			2		
		6.4	1		
12			3		
	7-75	7.6	3		
			2		
		12.0	1		
14			1		
	8-65	2.8	2		
			2		
		0.9	2	(14.9-16') CLAY, very firm, light brown, dry to moist, low plasticity, cohesive	CL
16			2		
				End of boring	
18					



COMPLETION DETAILS

4.25" Protective Steel Casing with Locking Lid
Weep hole approximately 6" above concrete pad
2x2.3' concrete pad
2" expandable-type cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.94'

Grout: Portland w/5% Bentonite
Top: 0' bgs
Bottom: 1.5' bgs

Bentonite Seal: 1/4" chips
Top: 1.5' bgs
Bottom: 2.5' bgs

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 4.60' bgs
Bottom: 17.60' bgs
Total Screen: 13'

Filter Pack: 7 bags-FilPro W.G. #2 Sand
Top: 2.5' bgs
Bottom: 17.60' bgs

2.5" Long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 11/28/18
Purged Amount: 5.5 gallons

Attachment 6

ARM Group LLC
Engineers and Scientists

Boring ID: B18-017-SB/PZ NEW

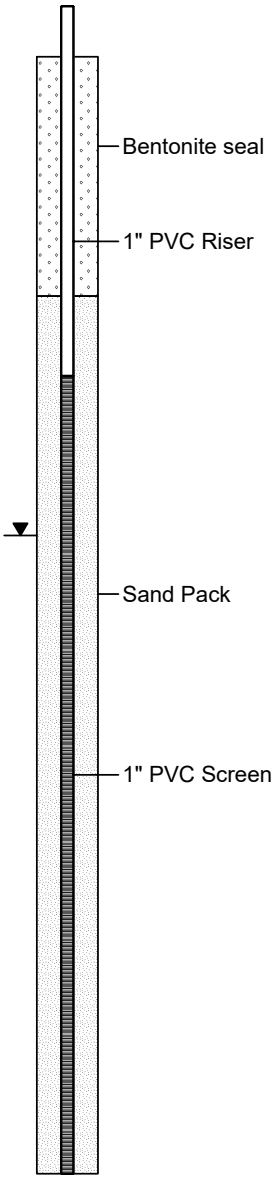
*Replacement of piezometer installed on 10/19/16

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 1/17/2019
Piezometer Installation Date	: 1/17/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563440.45
Easting (US ft)	: 1456274.04
0-Hr DTW	: 9.27' TOC
48-Hr DTW	: 8.96' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	40	-	None	(0-5') BRICK and SLAG, SAND and GRAVEL-sized, medium dense, dark brown and very pale brown with red and gray, dry, non-plastic, non-cohesive	SW/GW	
		-				
		-				
		0.1				
		0.5				
5		1.3		(5-6') Non-native SAND, fine to medium, medium dense, yellowish red and dark brown, dry, non-plastic, non-cohesive	SW	
	100	1.1		(6-13') Non-native SAND and SLAG, SAND and GRAVEL-sized, dense, very light gray, dark gray, and green, dry then wet at 7' bgs, non-plastic, non-cohesive, possible coke ash	SW/GW	Wet at 7' bgs Very light product present from 7-8' bgs Moderate NAPL 9-10' bgs Light to moderate NAPL 10-14' bgs with heavy sheen from 9-14' bgs
		2.4				
		7.5				
		9.6				
10		0.5				
	100	2.8				
		16.0				
		0.2		(13-14') SAND, fine to medium, medium dense to dense, yellowish red and gray, wet, non-plastic, non-cohesive	SW	
				End of Boring		
15						



Boring terminated at 14' bgs due to refusal, water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.96'
Riser: 0 - 4' bgs
Screen: 4 - 14' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 14' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-044-SB/PZ

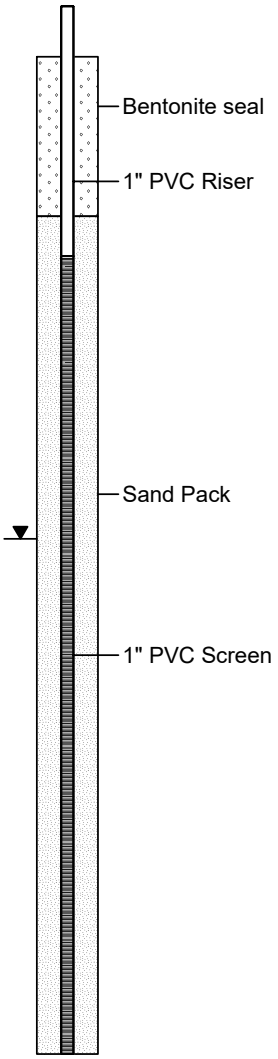
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/20/2016
Piezometer Installation Date	: 10/20/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563460.13
Easting (US ft)	: 1455863.71
0-Hr DTW	: 4.72' TOC
48-Hr DTW	: 9.14' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	92	30.0 38.1 90.2 344.9 259.9		(0-10') SLAG, GRAVEL and SAND-sized, dense, dark gray, dark brown, black, and olive-gray, moist then wet at 7', no plasticity, no cohesion	SW/GW	Product present from 0-10' bgs High viscosity, black, moderate odor, DNAPL
5	90	140.2 71.8 47.8 5.9 36.1				Wet at 5.5' bgs
10	0	- - -		(10-12.5') NO RECOVERY	-	
15				End of Boring		



Boring terminated at 12.5' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.1'
Riser: 0 - 2.5' bgs
Screen: 2.5 - 12.5' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 12.5' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

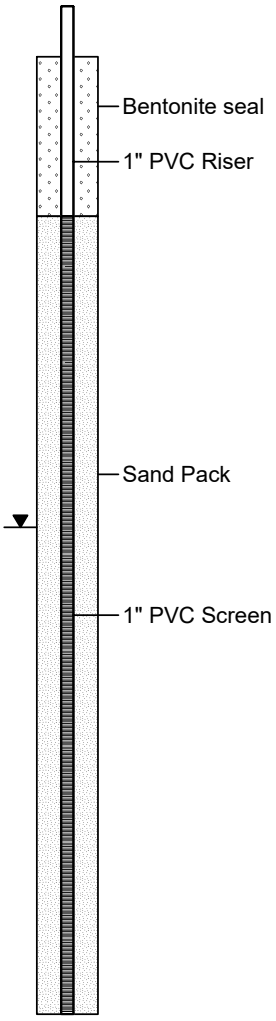
Boring ID: B18-045-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/20/2016
Piezometer Installation Date	: 10/20/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563501.71
Easting (US ft)	: 1455910.74
0-Hr DTW	: 7.81' TOC
48-Hr DTW	: 8.90' TOC

1.28 ft of LNAPL detected at 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		98.9		(0-9.2') SLAG, SAND and GRAVEL-sized, with some large olive green SLAG GRAVEL, dense, grayish brown and black, moist then wet at 5' bgs, no plasticity, no cohesion		Product present from 0-10' bgs High viscosity, black, strong odor, DNAPL, immiscible
	72	174.9				
		133.0				
		257.4				
		236.4			SW/GW	
5		-				Wet at 5' bgs
		34.4				
	84	95.2				
		71.2				
		64.5		(9.2-10') SLAG, SAND and GRAVEL-sized with SILT, dense, black and dark brown, wet, no plasticity, no cohesion	SW/GW	
10		-		(10-12') NO RECOVERY- Drillers stated material was too "sloppy" to recover		
	0				-	
		-				
				End of Boring		
15						



Boring terminated at 12' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3'
Riser: 0 - 2' bgs
Screen: 2 - 12' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 12' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

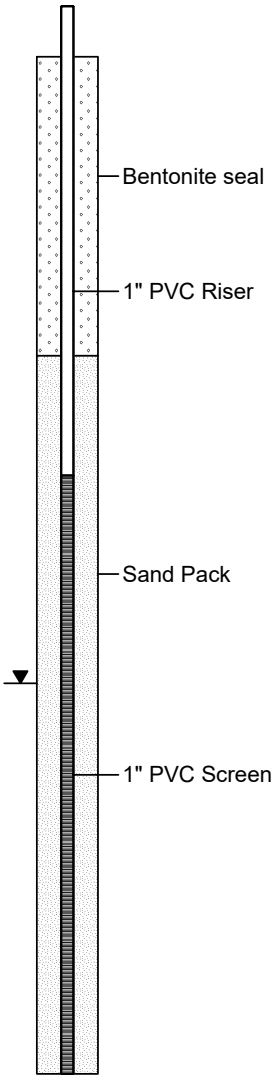
Boring ID: B18-046-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/26/2016
Piezometer Installation Date	: 10/26/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563301.25
Easting (US ft)	: 1456053.72
0-Hr DTW	: 12.60' TOC
48-Hr DTW	: 13.67' TOC

Trace NAPL detected at 0 and 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		3.4	B18-046-SB-1	(0-1') SANDY SILT with GRAVEL, medium dense, grayish brown, dry, no plasticity, no cohesion	ML	
		8.8		(1-1.8') SILT, hard, light greenish gray, pale brown, and brown mottling, dry, low plasticity, cohesive	ML	
	100	370.4		(1.8-3.5') SILTY SAND with very small GRAVEL, fine to coarse, light olive brown, dry, no plasticity, no cohesion	SM	Light product present from 1.8-3.5' bgs
		232.8				
		184.0		(3.5-6') SLAG, SAND AND GRAVEL-sized, with SILT, medium dense, white and light gray, dry, no plasticity, no cohesion	SW/GW	Moderate product with moderate to strong odor from 3.5-5' bgs
5		-				
		-		(6-10') SLAG GRAVEL, dense, light gray, dry then moist 9.5-9.7', saturated at 9.8', no plasticity, no cohesion	GW	Light product from 7-7.5' bgs
	60	295.7	B18-046-SB-8			
		149.2				
		134.6				Wet at 9.8' bgs
10		-		(10-17') NO RECOVERY from 10-15' bgs, continued without liner from 15-17' bgs	-	
		-				
	0	-				
		-				
		-				
15		-				
	0	-				
				End of Boring		
20						



Boring terminated at 17' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.20'
Riser: 0 - 7' bgs
Screen: 7 - 17' bgs [Slot Size: 0.010"]
Sand Pack: 5 - 17' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 5' bgs [Grain Size: 3/8" chips/Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-047-SB/PZ

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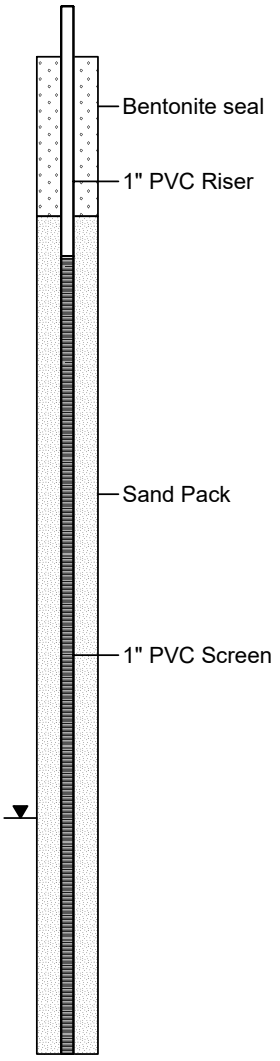
Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/18/2016
Piezometer Installation Date	: 10/18/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563541.54
Easting (US ft)	: 1456367.34
0-Hr DTW	: 12.63' TOC
48-Hr DTW	: 12.74' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B18-047-SB-1	(0-2.5') SLAG, SAND-sized, medium dense, light grayish brown, dry, no plasticity, no cohesion	SW	
		16.1				
	70	17.1		(2.5-4') CINDER BALLAST with large SLAG, GRAVEL-sized, dark brown and dark gray, moist, no plasticity, no cohesion	SW/GW	Cement covered SLAG from 3-4' bgs
		15.2	B18-047-SB-4			Wet at 4' bgs
		235.5		(4-12') SLAG, GRAVEL-sized with SILT, medium dense, brown, dark brown, olive green, and black, wet, no plasticity, no cohesion		Product present from 4-9' bgs Moderately thick with moderate odor; immiscible
5		-				
		-				
	100	-			GW/ML	
		-				
		-				
10		-				
	100	-				
				(12-12.5') SLAG, SILT to SAND-sized, dense, gray and white, wet, no plasticity, no cohesion	ML/SW	
				End of Boring		
15						



Boring terminated at 12.5' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.20'
Riser: 0 - 2.5' bgs
Screen: 2.5 - 12.5' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 12.5' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips/Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

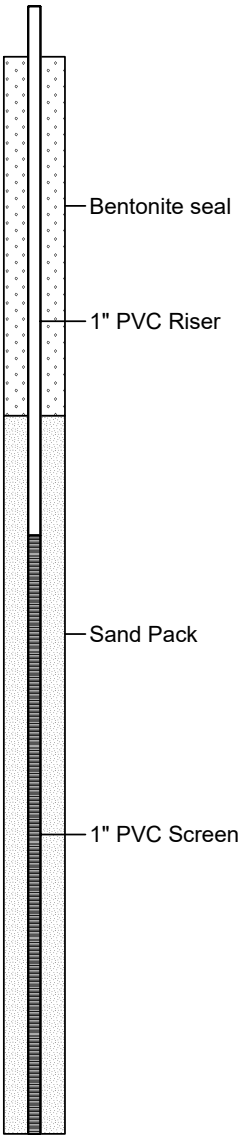
Boring ID: B18-059-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 10/18/2016
Piezometer Installation Date	: 10/18/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563560.53
Easting (US ft)	: 1456451.18
0-Hr DTW	: DRY
48-Hr DTW	: DRY

No DNAPL or LNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B18-059-SB-1	(0-2.5') SLAG, SILT to SAND-sized, medium dense to soft, brown, dry, no plasticity, no cohesion	ML/SW	
		3.5				
	90	64.9		(2.5-3') SILT, hard, dark gray and black, dry, no plasticity, no cohesion	ML	Tar-like substance or NAPL, dark brown, light odor, PID reading is 76.7
		11.9		(3-9') SLAG and BRICK, SILT to GRAVEL-sized, dense, brown, dark gray, white, and very pale brown, dry then wet at 7.5', no plasticity, no cohesion	ML/GW	
		5.4				
5		34.8				
		14.2				
	100		B18-059-SB-7.5			Wet at 7.5' bgs
		677.4				
		122.9				
				End of Boring		
10						



Boring terminated at 9' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.30'
Riser: 0 - 4' bgs
Screen: 4 - 9' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 9' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 3' bgs [Grain Size: Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-061-SB/PZ NEW

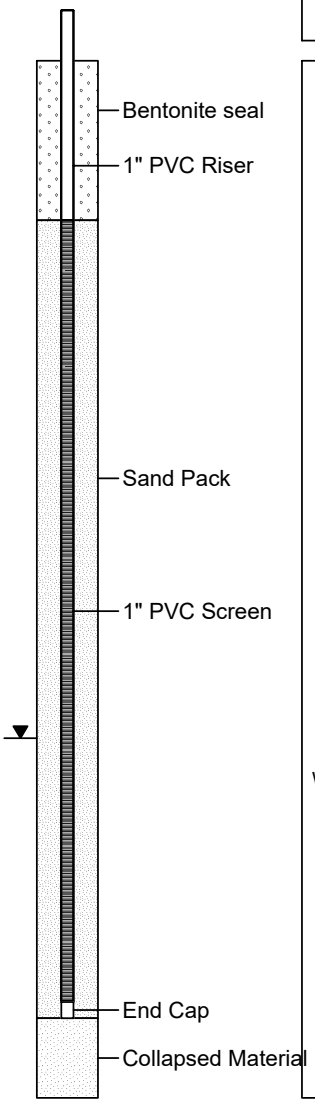
*Replacement of piezometer installed on 10/27/16

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 2/12/2019
Piezometer Installation Date	: 2/12/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563251.62
Easting (US ft)	: 1456303.61
0-Hr DTW	: 11.82' TOC
48-Hr DTW	: 11.59' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	None	(0-1.5') BRICK, SAND and GRAVEL, some CLAY at surface, dense, dark brown and red, wet then moist, no plasticity, no cohesion	NA	
		-		(1.5-7') BRICK, SAND, and GRAVEL, dense, bery pale brown with trace gray, very moist, no plasticity, no cohesion	NA	
	50	0.8				
		0.5				
5		0.5				
		-				
		-				
	20	-		(7-13') BRICK and SLAG, SAND, and fine GRAVEL, medium dense to dense, very dark brown with red, wet, no plasticity, no cohesion	NA	Wet at 9' bgs
		-				
		0.4				
10		-				
	50	0.9				
		0.7				
				End of boring		
15						



Boring terminated at 13' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.10'
Riser: 0 - 2' bgs
Screen: 2 - 12' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 12' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

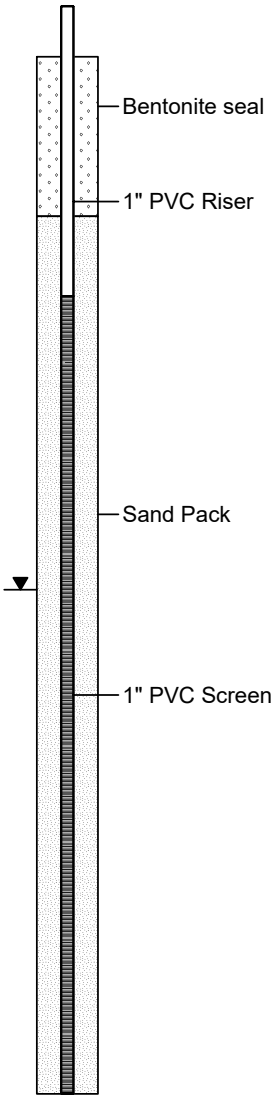
ARM Group LLC
Engineers and Scientists

Boring ID: B18-077-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc
Driller	: Rick Miller
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 6/28/2017
Piezometer Installation Date	: 6/28/2017
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563516.70
Easting (US ft)	: 1456183.33
0-Hr DTW	: 9.16' TOC
48-Hr DTW	: 9.78' TOC
Trace NAPL detected at 0 hours	

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B18-077-SB-1	(0-1.5') SANDY SILT with GRAVEL, medium dense, light brown, dry, no plasticity, no cohesion	ML	
		0.0		(1.5-2.2') SILTY SAND, very fine to coarse, with some GRAVEL, medium dense, dark brown, dry, no plasticity, no cohesion	SM	
	68	0.0		(2.2-4') SAND with GRAVEL grading to SILTY SAND, medium dense, yellow with alternating brown layers, dry, no plasticity, no cohesion	SW/SM	
		0.0	B18-077-SB-4.5			Wet at 4.5' bgs
		0.0		(4-7') SLAG and BRICK, GRAVEL-sized with some SAND-sized,with trace SILT, medium dense to dense, gray, brown, and very pale brown, dry then wet at 4.5' bgs, no plasticity, no cohesion	GW/SW	Petroleum-like product from 7-10' bgs (light from 7-7.5' bgs, moderate from 7.5-8.8' bgs, trace from 8.8-10')
5		-				
		0.0				
	90	0.0		(7-10') SLAG, GRAVEL and SAND-sized, with SILT from 8.8-10' bgs, dense, gray, dark gray, and light gray, wet, no plasticity, no cohesion	GW/SW	
		0.0				
		1.8				
10		-		(10-13') SLAG, SAND and GRAVEL-sized, with trace SILT, medium dense to dense, light gray and light brown, wet, no plasticity, no cohesion	GW/SW	Very light to trace product from 10-13' bgs
	100	-				
		-				
				End of Boring		
15						



Boring terminated at 13' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.10'
Riser: 0 - 3' bgs
Screen: 3 - 13' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips/Granular 30-50 Mesh]

ARM Group LLC
Engineers and Scientists

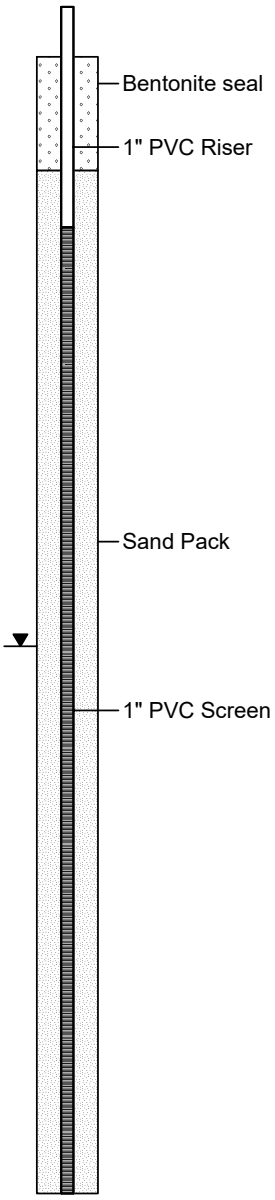
Boring ID: B18-078-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: M. Kedenburg
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Drilling Co.
Driller	: Ryan Sites
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/12/2018
Piezometer Installation Date	: 7/12/2018
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563371.19
Easting (US ft)	: 1456050.52
0-Hr DTW	: 12.61' TOC
48-Hr DTW	: 12.95' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-1') SAND, fine to medium, with GRAVEL and SILT, slightly dense, slightly moist to dry, no plasticity, no cohesion	SW	
		43.6		(1-2.5') CLAY with SAND and GRAVEL, very firm, pale brown, slightly moist, low plasticity, cohesive	CL	
	76	21.8		(2.5-7') SAND with GRAVEL and SILT, medium, slightly dense, dark brown to black, slightly moist, no plasticity, no cohesion	SW	Metal fragments from 3.2-7' bgs
		50.5				
5		9.1				
		-				
		62.3				
	82	0.2		(7-20') GRAVEL with SAND, medium to coarse, dense, pale gray to bluish gray, slightly moist to wet at 12' bgs, no plasticity, no cohesion	GW/SW	
		3.9				
		7.8				
10		-				
		1721				
	65	15000				Wet at 12' bgs
		15000				
		15000				
15		35.6				Dark amber NAPL lenses at 13.5' bgs and 15' bgs
		247.9				
	70	60.3				
		35.6				
		-				
20				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
AMSL: Above mean sea level

Riser Stickup: 2.58'
Riser: 0 - 3' bgs
Screen: 3 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-079-SB/PZ

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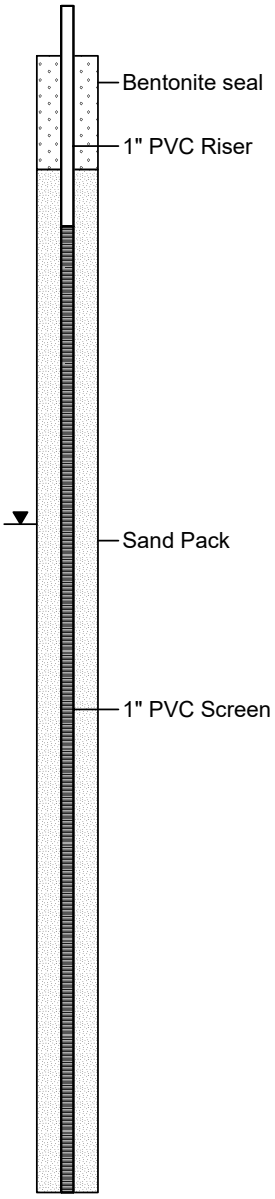
Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: M. Kedenburg
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Drilling Co.
Driller	: Ryan Sites
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/13/2018
Piezometer Installation Date	: 7/13/2018
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563603.26
Easting (US ft)	: 1456035.85
0-Hr DTW	: 11.43' TOC
48-Hr DTW	: 11.50' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	50	-	No Samples Collected	(0-1') SAND with GRAVEL and SILT, fine, loose, pale gray, dry, no plasticity, no cohesion	SP/GW	
		-		(1-5') SAND with GRAVEL, medium, medium dense, black, slightly moist, no plasticity, no cohesion	SP/GW	Metal fragments from 3.25-5' bgs
		0.8				
		2.5				
		1.9				
5	0	-		(5-20') NO RECOVERY	-	
		-				
		-				
10	0	-				
		-				
		-				
		-				
15	0	-				No Water Encountered
		-				
		-				
		-				
		-				
20				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
AMSL: Above mean sea level

Riser Stickup: 3.26'
Riser: 0 - 3' bgs
Screen: 3 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-080-SB/PZ

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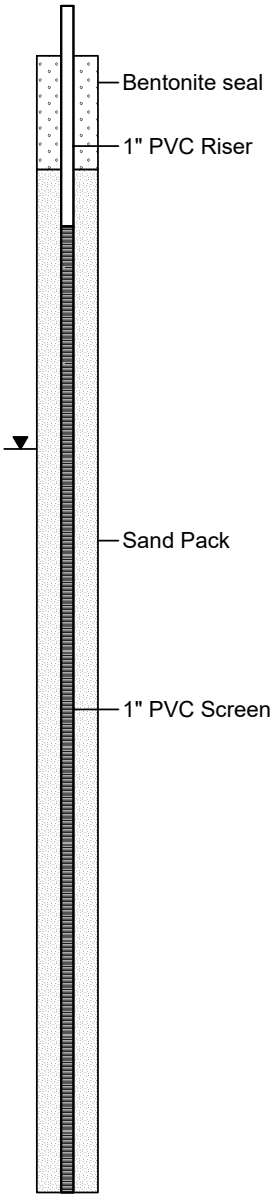
Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: M. Kedenburg
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Drilling Co.
Driller	: Ryan Sites
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/13/2018
Piezometer Installation Date	: 7/16/2018
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563633.14
Easting (US ft)	: 1455835.54
0-Hr DTW	: 11.40' TOC
48-Hr DTW	: 10.92' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-0.3') SAND with SILT and GRAVEL, fine to medium, loose, pale brown, dry, no plasticity, no cohesion	SW-SM	
		-		(0.3-12.5') SAND with GRAVEL, medium, dense, black, dry then wet at 8' bgs, no plasticity, no cohesion	SP/GW	
	50	0.0				
		0.0				
		0.2				
5		-				
		-				
	40	-				
		0.2				
		0.4				
10		2.9				Wet at 8' bgs
		3.2				
	98	0.0		(12.5-15.5') GRAVEL with SAND, coarse, wet, dense, bluish gray, no plasticity, no cohesion	GP/SW	
		0.4				
		3.0				
15		-		(15.5-18') SAND, medium, dense, pale gray to black, wet, no plasticity, no cohesion	SP	
	80	0.0				
		0.0				
		0.0		(18-20') CLAY, very firm to soft, pale brown to reddish yellow, wet, low plasticity, cohesive	CL	
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
AMSL: Above mean sea level

Riser Stickup: 4.00'
Riser: 0 - 3' bgs
Screen: 3 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-081-SB/PZ

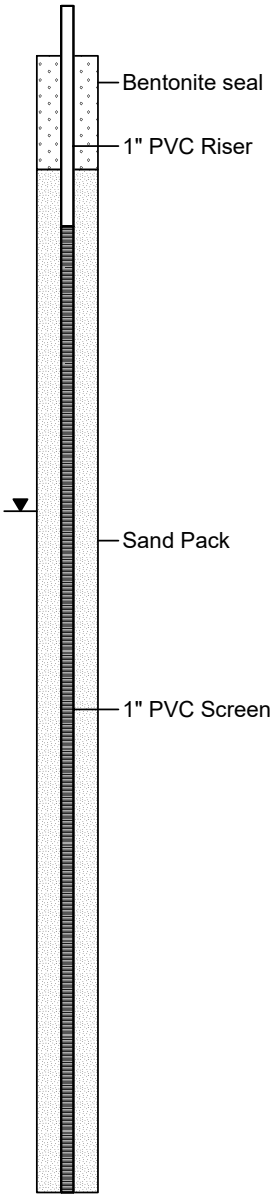
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: M. Kedenburg
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Drilling Co.
Driller	: Ryan Sites
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/12/2018
Piezometer Installation Date	: 7/12/2018
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563336.29
Easting (US ft)	: 1455886.62
0-Hr DTW	: 10.27' TOC
48-Hr DTW	: 10.37' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-0.5') ORGANIC SILT with SAND and GRAVEL, loose, dry, medium brown, low plasticity, cohesive	OL	
		199.1		(0.5-9') SAND with GRAVEL, medium to fine, slightly dense, black, slightly moist, no plasticity, no cohesion		Metal fragments from 1.3-9' bgs
	80	2.1				
		3.9				
		4.8			SW	
5		-				
		-				
	50	85.1				
		14.6				
		3.7		(9-12') BRICK	NA	
10		-				
		-				
	65	1150		(12-14.7') SAND, medium to coarse, with GRAVEL, wet, black, dense, no plasticity, no cohesion	SW	Wet at 12' bgs NAPL from 12-14.75' bgs
		19.5				
		48.9				
15		-		(14.7-16') GRAVEL with SAND, medium to coarse, grayish blue, wet, dense, no plasticity, no cohesion	GW	NAPL sheen at 14.8' bgs and 20' bgs
		-		(16-18') SAND, medium to coarse, with GRAVEL, wet, black, dense, no plasticity, no cohesion	SW	
	40	-				
		39.9		(18-20') GRAVEL with SAND, medium to coarse, grayish blue, wet, dense, no plasticity, no cohesion	GW	
		5.6				
20				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
AMSL: Above mean sea level

Riser Stickup: 2.36'
Riser: 0 - 3' bgs
Screen: 3 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

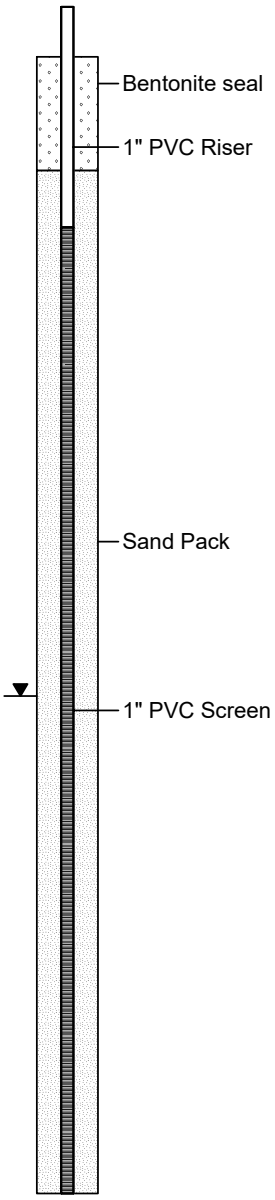
Boring ID: B18-082-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: M. Kedenburg
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Drilling Co.
Driller	: Ryan Sites
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/11/2018
Piezometer Installation Date	: 7/11/2018
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563332.35
Easting (US ft)	: 1456223.58
0-Hr DTW	: 12.00' TOC
48-Hr DTW	: 13.56' TOC

1.51 ft of LNAPL detected at 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-0.3') GRAVEL, loose, gray, dry, no plasticity, no cohesion	GP	
		0.0		(0.3-0.6') SILT, loose, gray to tan, dry, no plasticity, no cohesion	ML	
	70	1.3		(0.6-5.5') SAND with SILT and GRAVEL, fine to coarse grained, loose, gray grading to black, dry, no plasticity, no cohesion	SW-SM	
		1.0				
		0.0				
5		101.5		(5.5-9.5') SAND with GRAVEL, medium to fine, dense, bluish gray with dark amber pockets, moist, no plasticity, no cohesion	SW/GW	Odor from 5.5-20' bgs
		222.1				
	100	133.4				Low viscosity, dark amber NAPL pockets at 6.25' bgs, 7' bgs, 8' bgs, 9.5' bgs, 11.5' bgs, 12.5' bgs, and 14' bgs
		730.2				
		1804				
10		287.4		(9.5-18') GRAVEL with SAND, coarse, dense, pale brown, moist to wet at 10.9' bgs, no plasticity, no cohesion	GP/SW	Wet at 10.9' bgs
		735.3				
	100	131.5				
		219.3				
		50.5				
15		213.1				
		159.4				
	100	221.0				NAPL sheen at 19' bgs
		70.7		(18-20') SAND, fine, very dense, black, wet, no plasticity, no cohesion	SP	
		172.2				
20				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
AMSL: Above mean sea level

Riser Stickup: 2.31'
Riser: 0 - 3' bgs
Screen: 3 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: B18-083-SB/PZ

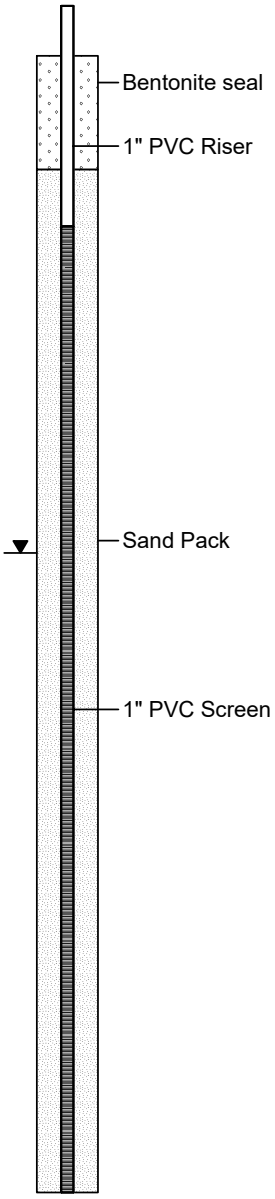
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: M. Kedenburg
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Allied Drilling Co.
Driller	: Ryan Sites
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/12/2018
Piezometer Installation Date	: 7/12/2018
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563609.39
Easting (US ft)	: 1456194.21
0-Hr DTW	: 11.61' TOC
48-Hr DTW	: 11.06' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-1') SAND with GRAVEL and SILT, medium, loose, brown, dry, no plasticity, no cohesion	SW/GW	
		4.3		(1-2.25') SAND with GRAVEL, medium, loose, black, dry, no plasticity, no cohesion	SP	
	80	9.3		(2.25-3.5') GRAVEL with SAND, medium, dry, dense, black to medium brown, no plasticity, no cohesion	GP	Metal fragments from 1.75-2.75' bgs
		4.2				
		0.0		(3.5-6.5') CLAY with SAND and GRAVEL, soft to very firm, black to yellowish red, slightly moist, low plasticity, cohesive	CL	
5		-				
		0.0		(6.5-18.25') GRAVEL with SAND, medium to coarse, white to grayish blue, moist, dense, no plasticity, no cohesion	GW	
	80	4.5				
		1.6				
		0.0				
10		75.8				Wet at 11.25' bgs
		116.1				
	80	3901				NAPL lenses at 12.5' bgs and 13.75' bgs
		1139				
		4.0				
15		1257				
		680.2				
	100	67.1				Sheen at 18.25' bgs
		45.2		(18.25-20') SAND, medium, black to pale gray, wet, dense, no plasticity, no cohesion	SP	
		36.7				
20				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
AMSL: Above mean sea level

Riser Stickup: 2.31'
Riser: 0 - 3' bgs
Screen: 3 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 20' bgs [Grain Size: WG #1]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: SW-029-MWS NEW

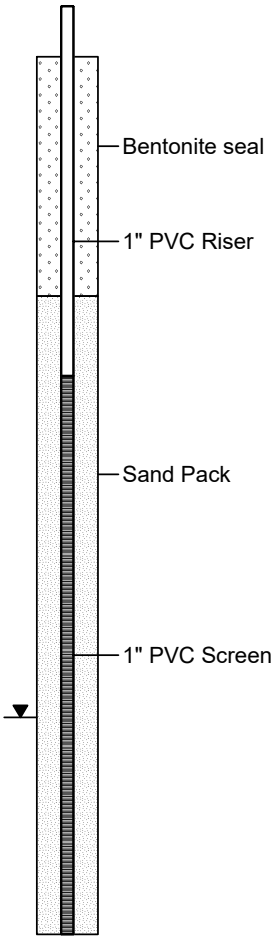
*Replacement piezometer for permanent well installed on 1/27/16

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-14-3
Project Description	: Sparrows Point - Parcel B18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 1/17/2019
Piezometer Installation Date	: 1/17/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 563980.59
Easting (US ft)	: 1456322.97
0-Hr DTW	: 11.10' TOC
48-Hr DTW	: 11.11' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.4') ASPHALT	NA	
		-		(0.4-7') Non-native SAND and SLAG/BRICK, SAND and GRAVEL-sized, dense, dark brown and gray, dry to moist, non-plastic, non-cohesive		
		1.6				
	70	0.6				
		0.7			SWGW	
		105.7				
5						
		-	No Samples Collected			
		0.7				
	80	1.0		(7-10') Non-native SAND and SLAG, SAND and GRAVEL-sized, dense, light gray and white, dry then wet at 8' bgs, non-plastic, non-cohesive, possible coke ash		Wet at 8' bgs
		0.7			SW/GP	
		3.6				
10						
	100	8.8		(10-11') SLAG, SAND and GRAVEL-sized, medium dense, very dark brown with some gray, wet, non-plastic, non-cohesive	SW/GW	Moderate product 10-11' bgs with moderate sheen
				End of Boring		
15						



Boring terminated at 11' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.83'
Riser: 0 - 4' bgs
Screen: 4 - 11' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 11' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: 3/8" chips]