RESPONSE AND DEVELOPMENT WORK PLAN

AREA B: SUB-PARCEL B9-1
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:

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1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area B: Sub-Parcel B9-1 (the Site). Tradepoint Atlantic submitted a letter (dated June 3, 2022; **Appendix A**) requesting an expedited plan review to achieve construction deadlines for the proposed development on this Site. As shown on **Figure 1**, Sub-Parcel B9-1 consists of approximately 4.68 acres located primarily within Parcel B9, but extending slightly into Parcel B5 of the approximately 3,100-acre former steel plant property.

As shown on **Figure 2**, Sub-Parcel B9-1 is slated for development and occupancy as a construction equipment storage and repair yard. Associated water lines, stormwater lines, electric lines, and sanitary sewer lines are also proposed. The planned development activities will generally include paving, installation of utilities, and installation of a guard shack and 16,000 square foot garage. Subsequent site-use will involve workers repairing construction equipment and drivers entering and leaving the Site.

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (MDE), effective September 12, 2014; and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (USEPA), effective November 25, 2014.

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

Sub-Parcel B9-1 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from USEPA on September 12, 2014. Based on this agreement, USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Sub-Parcel B9-1 and complement the statutory requirements of the VCP (Section 7-501 of the Environment Article). Upon submission of a RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a No Further Action Letter (NFA) upon a recordation of an Environmental Covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this RADWP are implemented and a NFA is issued by the Agencies pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the RADWP, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this RADWP.

This RADWP provides a Site description and history; summary of environmental conditions identified by the 2014 Phase I Environmental Site Assessment (ESA); summary of relevant findings and environmental conditions identified by the relevant Phase II Investigations conducted between 2015 and 2020; a human health Screening Level Risk Assessment (SLRA) conducted for the identified conditions; and any necessary engineering and/or institutional controls to facilitate the planned development and address the impacts and potential human health exposures. These controls include work practices and applicable protocols that are submitted for approval to support the development and use of the Site. Engineering/institutional controls approved and installed for this RADWP shall be described in closure certification documentation submitted to the Agencies demonstrating that exposure pathways on the Site are addressed in a manner that protects public health and the environment.

The remainder of Parcel B9 and Parcel B5 will be addressed in separate development plans in accordance with the requirements of the ACO, which may include RADWPs, if necessary. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks

associated with future land use. As discussed below, temporary external construction worker areas with a total area of 1.93 acres will be utilized to install roadway connections for the project outside of the sub-parcel. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction is covered by this RADWP.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Sub-Parcel B9-1 development project consists of approximately 4.68 acres comprising a significant portion of Parcel B9 as well as a small portion of Parcel B5 (**Figure 1**). The development will include completion of a construction equipment storage and repair yard (**Figure 2**). Outside of the main development area designated as Sub-Parcel B9-1, temporary external construction worker areas (not intended for permanent occupancy) with a total area of approximately 1.93 acres within the construction Limit of Disturbance (LOD) will be utilized to install the facility entrance and subgrade utility connections for the project. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM) and is not occupied. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Ground surface elevations at the Site range from approximately 10 to 12 feet above mean sea level (amsl), with the majority of the Site being relatively flat. According to Figure B-2 of the property Stormwater Pollution Prevention Plan (SWPPP) Revision 9 dated September 27, 2021, surface water runoff from the Site is conveyed to the east and is discharged into Old Road Bay through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 001 at the end of the Pennwood Canal.

2.2 SITE HISTORY

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

Historically, the Site contained the Pennwood Power Plant, which produced electricity for the Bethlehem Steel facility. The Pennwood Canal, a man-made channel that served as a source of cooling water for the Pennwood Power Plant, connects Old Road Bay to the former plant. During the Phase I ESA site visit completed by Weaver Boos in 2014, the Pennwood Power Plant contained large out-of-service equipment, with observed surface staining on and below the equipment. Past flooding (at least one previous incident) caused water to pool on the equipment room floor and drain to the adjacent Pennwood Canal. According to Weaver Boos, it is unlikely that the flooding of the Pennwood Power Plant resulted in a significant release, and the powerhouse and canal sediments were not classified as a Recognized Environmental Condition (REC).

A 10,000-gallon lubricating oil underground storage tank (UST) was reportedly closed in place at the Pennwood Power Plant between 1989 and 1990 according to the Phase I ESA. The Pennwood

Power Plant underwent demolition and backfilling during late-2018 and early-2019. A site visit was completed by ARM personnel on December 20, 2019, at which time all demolition materials had been removed and the Site had been regraded.

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos Consultants for the entire Sparrows Point property on May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These RECs included buildings and process areas where releases of hazardous substances and/or petroleum products potentially may have occurred. The Phase I ESA also relied upon findings identified during a previous visual site inspection (VSI) conducted in 1991 as part of the RCRA Facility Assessment (RFA) prepared by A.T. Kearney, Inc. dated August 1993, for the purpose of identifying Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) on the property. This VSI is regularly cited in DCC Report.

Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. There were no RECs, SWMUs, or AOCs identified within the Sub-Parcel B9-1 development area. The following non-REC Finding was identified within the development area:

Pennwood Powerhouse Staining and Sediments (Finding 267):
During the Phase I ESA site visit, the Pennwood Power Plant contained large out-of-service equipment, with observed surface staining on and below the equipment. Past flooding (at least one previous incident) caused water to pool on the equipment room floor and drain to the adjacent Pennwood Canal. According to Weaver Boos, it is unlikely that the flooding of the Pennwood Power Plant resulted in a significant release, and the powerhouse and canal sediments were not classified as a REC. A 10,000-gallon lubricating oil UST was reportedly closed in place at the Pennwood Power Plant between 1989 and 1990 according to the Phase I ESA.

3.2 PHASE II INVESTIGATION RESULTS – SUB-PARCEL B9-1

Phase II Investigations specific to soil and groundwater conditions were performed for the property area including Sub-Parcel B9-1 in accordance with the requirements outlined in the ACO as further described in the following agency-approved Phase II Investigation Work Plans:

- Area B: Parcel B5 (Revision 1) dated December 3, 2015
- Area B: Parcel B9 (Revision 0) dated March 25, 2020
- Area B Groundwater (Revision 3) dated October 6, 2015

All soil samples and groundwater samples were collected and analyzed in accordance with agency-approved protocols during the Phase II Investigations, the specific details of which can be reviewed in each agency-approved Work Plan. Each Phase II Investigation was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment, including RECs, SWMUs, and AOCs, as applicable, as well as numerous other targets identified from former operations that would have the potential for environmental contamination. Samples were also collected at site-wide locations to ensure full coverage of each investigation area. The full analytical results and conclusions of each investigation have been presented to the agencies in the following Phase II Investigation Reports:

- Area B: Parcel B5 (Revision 3) dated July 8, 2019
- Area B: Parcel B9 (Revision 0) dated December 17, 2020
- Area B Groundwater (Revision 0) dated September 30, 2016

This RADWP summarizes the relevant soil and groundwater findings from these Phase II Investigations with respect to the proposed development of Sub-Parcel B9-1.

3.2.1 Phase II Soil Investigation Findings

Based on the scope of development for Sub-Parcel B9-1, 38 soil samples collected from 17 soil borings (including three soil borings from the Parcel B5 Phase II Investigation and 14 soil borings from the Parcel B9 Phase II Investigation) were included in this evaluation of Sub-Parcel B9-1. The 17 boring locations are shown on **Figure 3**, and the samples obtained from these borings provided relevant analytical data for discussion of on-site conditions.

Soil samples collected during the Phase II Investigation were analyzed for the Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs), Oil & Grease, Target Analyte List (TAL) metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot below ground surface (bgs)) were analyzed for polychlorinated biphenyls (PCBs). Soil sampling targets with potential petroleum contamination were also analyzed for total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results were screened against the Project Action Limits (PALs) established in the property-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016, or based on other direct agency guidance. Several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 1** and **Table 2** provide summaries of the detected organic compounds and inorganics in the soil samples collected from the soil borings relevant for this Site evaluation. **Figure S1** to **Figure S4** present the soil sample results that exceeded the PALs among

these soil borings. PAL exceedances consisted of one SVOC (benzo[a]pyrene) two PCBs (Aroclor 1260 and total PCBs), Oil & Grease, and five inorganics (arsenic, cobalt, lead, manganese, and thallium).

Non-aqueous phase liquid (NAPL) was not observed in any of the Phase II soil boring location.

3.2.2 Phase II Groundwater Investigation Findings

Groundwater conditions were investigated as reported in the Area B Groundwater Phase II Investigation Report (Revision 0 dated September 30, 2016). This report included aqueous sample data from five wells sampled during Area B Groundwater Phase II Investigation (SW-037-MWS, SW-038-MWS, SW-039-MWS, SW-073-MWS, and SW16-PZM003). The five monitoring points are within 600 feet of the development area and provide relevant analytical data for the proposed Sub-Parcel B9-1 development project and are shown on **Figure 4**. There is no direct exposure risk for future Composite Workers at the Site because there is no use of groundwater on the Tradepoint Atlantic property; however, groundwater may be encountered in the sub-parcel during some construction tasks. If groundwater is encountered, it will be managed to prevent exposures in accordance with the dewatering requirements outlined in Section 5.2. Additionally, vapor intrusion (VI) risks are evaluated in Section 3.2.3.

Each groundwater monitoring point was inspected for evidence of NAPL using an oil-water interface probe prior to sampling. None of the monitoring points relevant for the proposed development project showed evidence of NAPL during these checks. The groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL metals, hexavalent chromium, total cyanide, TPH-DRO, TPH-GRO, and Oil & Grease. The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP dated April 5, 2016, or based on other direct agency guidance. Similar to the evaluation of soil data, several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 3** and **Table 4** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure GW1** presents the groundwater results that exceeded the PALs. PAL exceedances in the Phase II Investigation groundwater samples collected in the vicinity of the proposed development project consisted of one VOC (chloroform), two SVOCs (naphthalene and pentachlorophenol), DRO, and six total and/or dissolved metals (beryllium, cobalt, hexavalent chromium, thallium, manganese and vanadium). For simplicity, the inorganic PAL exceedances shown on **Figure GW1** do not include duplicate exceedances of total/dissolved metals. If both total and dissolved concentrations exceeded the PAL, the value for total metals is displayed.

3.2.3 Locations of Potential Concern

Groundwater data were screened to determine whether any sample results exceeded the USEPA Vapor Intrusion Target Cancer Risk (TCR) (carcinogen) or Target Hazard Quotient (THQ) (non-carcinogen) Screening Levels. None of the individual sample results exceeded the cumulative VI cancer risk screening level of 1E-5 or the non-cancer VI Hazard Index (HI) value of 1. Therefore, there are no identified VI risks associated with Site development. The VI risk evaluation is summarized in **Table 5**.

Other locations of potential concern which are subject to special requirements could include elevated lead, PCBs, or TPH/Oil & Grease in soil. The soil data for Sub-Parcel B9-1 were evaluated to determine the presence of any such locations of potential concern including: lead concentrations above 10,000 mg/kg, PCB concentrations above 50 mg/kg, or TPH/Oil & Grease concentrations above 6,200 mg/kg. There were no soil concentrations of lead, PCBs, or TPH above the specified criteria. Oil & Grease exceeded the specified criteria at three locations (B9-005-SB, B9-009-SB, and B9-014-SB), as shown on **Figure S3**. These areas are identified as locations of potential concern.

Locations with physical evidence of NAPL are also considered to be locations of potential concern with respect to proposed development. No visual observations of NAPL were noted at any locations for Site. Additionally, no NAPL was detected in any monitoring wells proximate to the proposed development area.

Following demolition of the Penwood Power Plant, a survey was performed for asbestos in soils. All results were included in the Determination of Asbestos in Soil – Parcel B9 (Jenkins Environmental, Inc, November 24, 2021), which was submitted to the MDE Asbestos Division via email on December 13, 2021. This report is also included as an electronic attachment.

3.3 Human Health Screening Level Risk Assessment

3.3.1 Analysis Process

A human health SLRA has been completed based on the analytical data obtained from the characterization of surface and subsurface soils. The SLRA was conducted to evaluate the existing soil conditions to determine if any response measures are necessary.

The SLRA included the following evaluation process:

Identification of Exposure Units (EUs): As shown on **Figure 5**, the Composite Worker SLRA was evaluated using two Exposure Units (EU1 and EU2) with areas of 2.35 acres and 2.33 acres, respectively. EU1 corresponds with the proposed development area, and EU2 corresponds with the proposed non-development area. **Figure 6** shows the proposed capping plan, which is discussed in more detail below. The Construction Worker SLRA

was evaluated using a slightly expanded EU (Site-Wide EU-EXP), covering 6.61 acres in total which includes the 1.93 acres of additional construction worker areas incorporated within the LOD to include the facility entrance outside of the sub-parcel.

It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used within EU1; therefore, regardless of the findings of the Composite Worker baseline SLRA, EU1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, COPC screening was completed assuming a Target Risk (TR) of 1E-6 and Target Hazard Quotient (THQ) of 0.1. The initial screening also identified parameters detected at a frequency greater than 5%. Based on that data set, parameters were identified as COPCs if:

- The compound was detected in soil at a frequency of greater than 5%;
- The maximum detection exceeded the USEPA's Composite Worker Soil Regional Screening Levels (RSLs).

A COPC screening analysis is provided in **Table 6** to identify all compounds above the relevant screening levels.

All aroclor mixtures (e.g., Aroclor 1248, Aroclor 1260) are taken into account for the reported concentrations of total PCBs. The total PCBs concentrations are used to evaluate the carcinogenic risk associated with PCBs.

Exposure Point Concentrations (EPCs):

The COPC soil datasets for each EU were divided into surface (0 to 2 feet bgs), subsurface (>2 feet bgs), and pooled depths for estimation of potential EPCs. Thus, there are three soil datasets associated with each EU. If there were less than 10 sample results, the maximum detected value was used as the soil EPC. If there were 10 or more sample results in the dataset, then a statistical analysis was performed using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model (ALM)-based values (presented in **Table 7**).

Risk Ratios: The surface soil EPCs, subsurface soil EPCs, and pooled soil EPCs were compared to the USEPA RSLs for the Composite Worker and to site-specific Soil

Screening Levels (SSLs) for the Construction Worker based on equations derived in the USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (OSWER 9355.4-24, December 2002). Risk ratios were calculated with a cancer risk of 1E-6 and a non-cancer HQ of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer Hazard Index (HI).

For the Construction Worker, site-specific risk-based evaluations were completed for a range of potential exposure frequencies to determine the maximum allowable exposure frequency for the site-wide EU-EXP that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for the individual target organs. This analysis indicated that the allowable exposure frequency before additional worker protections or more detailed job safety evaluations might be needed is 85 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that construction/excavation leads to a potential Construction Worker exposure to groundwater during development, health and safety plans and management procedures shall be followed to limit exposure risk.

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for each EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU was below the applicable RSL, the EU was identified as requiring no further action for lead. If a mean concentration exceeded the RSL, the mean values were compared to calculated ALM values (ALM Version dated 6/21/2009 updated with the 5/17/2017 OLEM Directive) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 ug/dL. The ALM calculation generates a soil lead concentration of 1,050 mg/kg, which is the most conservative (i.e., lowest) concentration which would yield a probability of 5% of a blood lead concentration of 5 ug/dL. If the arithmetic mean concentrations for the EU were below 1,050 mg/kg, the EU was identified as requiring no further action for lead. The lead averages are presented for surface, subsurface, and pooled soils in **Table 7**. Neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Assessment of TPH/Oil & Grease: EPCs were not calculated for TPH/Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). As shown in **Figure S3**, only three Oil & Grease soil sample results were above the PAL.

Risk Characterization Approach: Generally, if the baseline risk ratio for each non-carcinogenic COPC or cumulative target organ does not exceed 1, and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of 1E-5, then

a no further action determination will be recommended. If the baseline estimate of cumulative cancer risk exceeds 1E-5 but is less than or equal to 1E-4, then capping of the EU will be considered to be an acceptable remedy for the Composite Worker. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability. For the Construction Worker, cumulative cancer risks exceeding 1E-5 (but less than or equal to 1E-4) or HI values exceeding 1 will be mitigated via site-specific health and safety requirements.

It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at EU1; therefore, regardless of the findings of the Composite Worker baseline assessment, EU1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials. The goal of the SLRA is therefore to determine whether additional response actions beyond capping may be needed due to current conditions at the Site.

The USEPA's acceptable risk range is between 1E-6 and 1E-4. If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of 1E-4, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of any non-carcinogen HI exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy.

3.3.2 SLRA Results and Risk Characterization

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel B9-1 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which will be implemented during development at the Site, each of these potential exposure scenarios is relevant for the SLRA.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled soils) in each EU. ProUCL output tables (with computed UCLs) derived from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs within each of the datasets. The ProUCL input tables are also included as electronic attachments. The results were evaluated to identify any samples that may require additional assessment or special management based on the risk characterization approach. The calculated EPCs for the surface, subsurface, and pooled exposure scenarios are provided in **Table 8**.

As indicated above, the EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. A lead evaluation spreadsheet, providing the computations to determine lead averages for each dataset, is also included as an electronic attachment. The average and maximum lead

concentrations are presented for each dataset in **Table 7**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker baseline scenario prior to the placement of industrial fill at the Site are shown in **Table 9** (surface), **Table 10** (subsurface), and **Table 11** (pooled). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	EU1 (2.35 acres)	Surface Soil	Dermal = 2	8E-6
		Subsurface Soil	Dermal = 2	5E-6
		Pooled Soil	Dermal = 2	8E-6
	EU2 (2.33 acres)	Surface Soil	none	4E-6
		Subsurface Soil	none	8E-6
		Pooled Soil	none	5E-6

Based on the risk ratios for Sub-Parcel B9-1, environmental capping is an acceptable remedy to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios for EU1. Capping is not necessary to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios for EU2. At EU1, none of the cancer risk values exceeded 1E-5, however the surface, subsurface, and pooled scenario non-carcinogenic HI values for the dermal system exceeded 1, with elevated thallium as the primary risk driver. At EU2, none of the cancer risk values exceeded 1E-5, and none of the non-carcinogenic HI values exceeded 1. For EU1, capping and institutional controls (to maintain the integrity of the cap) are suitable measures for the protection of the future Composite Worker for both cancer risks and non-cancer hazards. The capping remedy will additionally be protective of slag aggregate which will be used as the primary fill material and pavement subbase at EU1.

Construction Worker Assessment:

Ground intrusive activities which could result in potential Construction Worker exposures are expected to be limited primarily to utility installation tasks performed by specific work crews. Construction Worker risks were evaluated for several different exposure scenarios to determine the maximum exposure frequency for the site-wide EU-EXP that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected duration (85 days) are shown in **Table 12** (surface), **Table 13** (subsurface), and **Table 14** (pooled). The variables entered for calculation of the site-specific Construction Worker SSLs (EU area, input assumptions, and

exposure frequency) are indicated as notes on the tables. The spreadsheet used for computation of the site-specific Construction Worker SSLs is included as **Appendix B**. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker	Site-Wide EU-EXP (6.61 acres) (85 exposure days)	Surface Soil	none	2E-7
		Subsurface Soil	none	3E-7
		Pooled Soil	none	3E-7

Using the selected exposure duration for the site-wide EU-EXP (85 days), the carcinogenic risks were all less than 1E-5, and none of the non-carcinogens caused a cumulative HI to exceed 1 for any target organ system. These findings are below the acceptable limits for no further action established by the agencies. This evaluation indicates that additional site-specific health and safety requirements (beyond standard Level D protection) would be required only if the allowable exposure duration of 85 days were to be exceeded for an individual worker.

No activities at the Site are expected to exceed the allowable duration; however, upgraded Personal Protective Equipment (PPE) beyond standard Level D protection will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied immediately and throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE Standard Operational Procedure (SOP) provided as **Appendix C**.

Institutional controls will be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities. The anticipated institutional controls, including notification requirements, health and safety requirements, and materials management requirements, are specified in Section 5.4.

3.3.3 Evaluation of RCRA Criteria (EU1)

Based on the SLRA results and the proposal to use industrial fill (including processed slag aggregate) within EU1, environmental capping and institutional controls is required within EU1 to mitigate potential Composite Worker risks.

Site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the

protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities.

The proposed VCP capping remedy with institutional controls was evaluated for consistency with the RCRA Threshold Criteria and Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at EU1. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the remedy, as a whole, protects and maintains protection of human health and the environment. This criterion is satisfied when response actions are complete. The purpose of this remedy is to provide a protective barrier between human site users and impacted materials, and to protect the environment by preventing surface water from contacting potentially impacted materials in place. The capping and institutional control remedy would eliminate risk to current and future industrial workers by preventing exposure to areas of EU1 where processed slag aggregate has been placed or where soil concentrations exceed a cancer risk of 1E-5 or a HI of 1. Groundwater does not present a direct human health hazard since there is no groundwater use on the property. Implementation of the proposed use restrictions will address the residual risk and will also protect future workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil/groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the remedy meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect current/future Composite Workers and Construction Workers from potential exposures to COPCs present in soil or groundwater at levels that may result in risks of adverse health effects. Given the controlled access and use restrictions, the proposed remedy will attain soil and groundwater objectives. The activity use restrictions will eliminate current and future unacceptable exposures to both soil and groundwater.

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at EU1. The control measures included in the proposed remedy, such as Materials

Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning for intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the remedy in maintaining protection of human health and the environment after the response objectives have been met. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by slag aggregate, treatment residuals, and/or untreated wastes. The proposed capping remedies have been proven to be effective in the long-term at similar sites with similar conditions. The capping remedy will permanently contain the slag aggregate and other potentially contaminated media in place. In order for the cap to effectively act as a barrier, regular inspections will be performed pursuant to the Institutional Control Operations and Maintenance Plan (O&M Plan).

Institutional controls will be implemented to protect future Composite and Construction Workers against inadvertent contact with potentially impacted media. The anticipated institutional controls are specified in Section 5.4. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. The proposed remedy will maintain protection of human health and the environment over time by controlling exposures to the hazardous constituents potentially remaining in slag aggregate or existing on-site media. The long-term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, land and groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. The capping remedy will prevent the spread of contaminants in wind-blown dust or stormwater and will prevent infiltration through the unsaturated zone from carrying contaminants to the groundwater. Thus, the mobility of contaminants will be reduced by the capping remedy.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The risks to the Construction Worker during remedy implementation are mitigated by executing the modified Level D PPE requirements outlined in **Appendix C**. The short-term risk to site workers following these upgraded health and safety measures during implementation of the remedy will be

low, leading to a high level of short-term effectiveness for protection of future site users and the environment. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security will be used to maintain controlled access during construction.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. The proposed capping remedy for the Composite Worker area will use readily available, typically acceptable, and proven technologies.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual O&M costs, and the net present value (NPV) of this remedy relative to alternatives. The capping remedy remedial costs would be incurred as part of the proposed site development, regardless of the findings of the SLRA.

State Support / Agency Acceptance: The Agencies have been involved throughout the Site investigation process. The proposed use restrictions included in the proposed remedy are generally recognized as commonly employed measures for long-term stewardship.

A capping remedy with institutional controls would satisfy the CERCLA Threshold Criteria and the Balancing Criteria and would do so in a manner that ensures reliable implementation and effectiveness. The remedy is cost-effective and consistent with the proposed development plan for EU1.

3.3.4 Evaluation of RCRA Criteria (EU2)

Based on the data obtained from the characterization of surface and subsurface soils, results from the SLRA indicate that no measures are required within EU2 to mitigate potential Composite Worker risks.

As with EU1, site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities.

The undisturbed scenario (i.e., the scenario which does not require environmental capping) has been evaluated for consistency with the CERCLA Threshold Criteria and the Balancing Criteria as described below. The Threshold Criteria assess the overall protection of human health and the environment, the achievement of media cleanup objectives, and the control of sources of releases at EU2. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the undisturbed scenario, as a whole, protects and maintains protection of human health and the environment. The undisturbed scenario evaluated in the SLRA indicates that risks to current and future industrial workers are acceptable despite a limited number of detections of soil constituents in excess of the Composite Worker RSLs. Groundwater does not present a human health hazard since there is no groundwater use. Implementation of the proposed institutional controls will address the residual risk and will also protect hypothetical current or future Construction Workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil and groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the undisturbed scenario meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect workers (current and future Composite Worker and future Construction Worker) from potential exposures to site-related soil or groundwater constituents at levels that may result in risks of adverse health effects. Given the controlled access and use restrictions, the proposed undisturbed scenario will attain soil and groundwater objectives.

Control the Source of Releases: In its Resource Conservation and Recovery Act (RCRA) Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the undisturbed scenario to reduce or eliminate, to the maximum extent practicable, further releases. None of the soils remaining on-site were identified as exhibiting characteristics of hazardous waste. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at EU2. The control measures included with the proposed undisturbed scenario, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning associated with future intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the undisturbed scenario in maintaining protection of human health and the environment. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes. The Composite Worker evaluation indicated no long-term risks for an industrial worker which might require mitigation. Institutional controls (deed restrictions) will be implemented to protect future Construction Workers against disturbances of the soil that might lead to inadvertent long-term contact with potentially impacted soils or groundwater. These institutional controls are anticipated to include a restriction prohibiting the use of groundwater for any purpose, a written notice to the Agencies of any future soil disturbance activities, health and safety requirements for any excavations, and proper management and characterization of any removed material. The Tenant will be required to sign onto the Environmental Covenant with restriction in the No Further Action Letter (NFA). The long-term effectiveness is high, as institutional controls are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, industrial land uses of this area and existing groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. Environmental capping is not necessary to reduce toxicity, mobility, or volume of waste in this case. No capping remedy is proposed for EU2.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed undisturbed scenario protects human health and the environment during the construction and implementation. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The results of the SLRA indicate that risks to the Construction Worker during implementation are mitigated by limiting workers to the specific exposure duration given in the SLRA (85 days). The short-term risk to site workers following general health and safety measures during implementation of the remedy will be low. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security will be used to maintain controlled access during construction to be protective of site visitors.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. There are no concerns related to implementability in this case.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual Operating and Maintenance (O&M) costs, and the net present value (NPV) of this remedy relative to other alternatives. The undisturbed scenario does not have an associated remedial cost, regardless of the presence of soil containing COPCs.

State/Support Agency Acceptance: The Agencies have been involved throughout the Site investigation process. The proposed use restrictions included in this RADWP are generally recognized as commonly employed measures for long-term stewardship. Ultimately Agency support will be evaluated based on comments received during the public comment period.

The undisturbed scenario with institutional controls will satisfy the CERCLA Threshold Criteria and Balancing Criteria and will do so in a manner that ensures rapid and reliable implementation and effectiveness. The undisturbed scenario is cost-effective and consistent with the proposed development plan for EU2.

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing a construction equipment storage and repair yard on Sub-Parcel B9-1. The proposed development will include permanent improvements on approximately 4.68 acres located primarily within Parcel B9, but extending slightly onto Parcel B5. The proposed future use of Sub-Parcel B9-1 is Tier 3 – Industrial. The remainder of Parcel B5 and Parcel B9 will be addressed in separate development plans in accordance with the requirements of the ACO that will include RADWPs, if necessary. Outside of the main development area, temporary external construction worker areas with a total area of approximately 1.93 acres will be utilized to install the facility entrance and subgrade utility connections for the project. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction work is covered by this RADWP. The Site (4.68 acres encompassing Sub-Parcel B9-1; excluding the temporary construction worker areas) will be partially capped by surface engineering controls. EU1 will be capped and EU2 will not be capped.

Certain compounds are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs. Therefore, soil is considered a potential media of concern. Potential risks to future adult workers associated with impacts to soil and groundwater exceeding the PALs will be addressed through a remedy consisting of surface engineering controls (capping for EU1) and institutional controls (deed restrictions for B9-1). The development plan provides for a containment remedy and institutional controls that will mitigate future adult workers from contacting impacted soil at the Site. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase within EU1. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls regardless of the existing soil conditions. No slag is proposed for use within EU2. If fill is needed within EU2, then it will include MDE approved VCP clean fill materials only.

Future Construction Workers may contact impacted surface and/or subsurface soil during earth movement activities associated with construction activities, including within the temporary external construction worker areas outside of the primary development area. The findings of the Construction Worker SLRA indicated that using the site-specific 85-day exposure frequency for the site-wide EU-EXP, the screening level estimates of Construction Worker cancer risk were less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action).

No activities at the Site are expected to exceed the allowable duration; however, upgraded PPE beyond standard Level D protection will be used in conjunction with the property-wide Health and Safety Plan (HASP) for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied

throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

A restriction prohibiting the use of groundwater for any purpose at the Site will be included as an institutional control in the NFA and COC issued by the Agencies, and a deed restriction prohibiting the use of groundwater will be filed. The groundwater use restriction will protect future Composite Workers from potential direct exposures. Proper water management is required to prevent unacceptable discharges or risks to Construction Workers during development. Work practices and health and safety plans governing groundwater encountered during excavation activities will provide protection for Construction Workers involved with development at the Site.

The development plan for the Site is shown on **Figure 2**. The process of constructing the proposed construction equipment storage and repair yard will involve the tasks listed below. Documentation of the outlined tasks and procedures will be provided in a Sub-Parcel B9-1 Development Completion Report.

4.1 RESPONSE PHASE – GROUNDWATER NETWORK MODIFICATION

There are no temporary groundwater sample collection points or permanent monitoring wells currently located within the proposed LOD. There are several shallow wells located outside of the Site, as shown on **Figure 4**, which are not expected to be impacted by the proposed development work.

4.2 DEVELOPMENT PHASE

4.2.1 Erosion and Sediment Control Installation

Installation of erosion and sediment controls will be completed in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control prior to any construction at the Site. Any soils within EU1 which are disturbed during the installation of erosion and sediment controls will be placed on-site below the cap.

4.2.2 Grading and Site Preparation

Grading activities including both cut and fill will occur within the Sub-Parcel B9-1 boundary. Any material that is not suitable for compaction will be excavated and replaced with subbase material, although it is not anticipated that poor soils will be encountered. Borrow materials will be obtained from MDE-approved sources and will be documented prior to transport to the Site. Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as fill within EU1 only. Other materials approved by the MDE for industrial use may also be used as fill, but the placement of materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Fill sources shall be free of organic material, frozen material, or other deleterious material. In the case that there is excess material (not anticipated), the spoils

will be stockpiled at a suitable location and dealt with in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Jenkins Environmental, Inc., August 17, 2021). This work will be coordinated with MDE accordingly. No excess material will leave the 3,100-acre property without prior approval from MDE.

4.2.3 Installation of Structures and Underground Utilities

The lots and other infrastructure associated with the development of Sub-Parcel B9-1 will be installed as shown on **Figure 2**. Soils relocated or removed during construction or utility trenches may be replaced on-site below the cap based on field observations by the Environmental Professional (EP). Additional protocols for soil monitoring during the installation of utilities at the Site are provided in Section 5.1.2. Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site Humphrey Creek Wastewater Treatment Plant (HCWWTP).

4.2.4 Paving

As shown on **Figure 6**, a significant portion of EU1 will be covered with paving. The paved areas will receive a layer of subbase material which will consist of compacted aggregate base, which may include processed slag aggregate sourced from the Tradepoint Atlantic property. The placement of processed slag aggregate or materials other than MDE-approved clean fill will necessitate that EU1 will be subject to surface engineering controls (i.e., capping).

The required minimum thicknesses of all site-wide pavement sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**. All paved areas at the Site will be installed with a minimum of 4 inches of compacted aggregate base and a minimum of 4 inches of overlying pavement surface (asphalt or concrete), which meet these required minimum thicknesses.

4.2.5 Stormwater Management

New stormwater infrastructure will be installed throughout the Site and will discharge to the Pennwood Canal. Based on the shallow groundwater elevation measurements collected during the site-wide groundwater elevation investigation, excavations may encounter groundwater. As shown on **Figure 7**, the site-wide shallow groundwater elevations range from approximately 6 feet amsl (in the northwest) to 4 ft amsl (in the east). Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site HCWWTP.

Tradepoint Atlantic is working with the MDE Industrial & General Permits Division to renew the property-wide NPDES permit. The stormwater management systems for each parcel are reviewed and approved by Baltimore County for each individual development project.

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1 DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with the development of Sub-Parcel B9-1. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PALs were identified in soil samples across the Site. The PALs are set based on USEPA's RSLs for industrial soils, or other direct guidance from the MDE. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate potential risks from such materials remaining on-site during the development phase. There were no locations in the proposed Site boundary with soil exceedances of the special management criteria for PCBs (50 mg/kg), lead (10,000 mg/kg), or TPH (6,200 mg/kg). As noted in Section 3.2.2, oil & grease exceedances were observed at three locations. NAPL was not detected in any soil borings or on the water table in any piezometers or monitoring wells within the proposed development area.

Following completion of the SLRA, the findings of the Construction Worker evaluation indicated that using the site-specific 85-day exposure frequency for the site-wide EU-EXP, the screening level estimates of Construction Worker cancer risk were less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action). Certain activities at the Site may exceed the allowable duration of 85 days, and if that were the case, Construction Worker risks must be mitigated to facilitate the proposed construction. Upgraded PPE beyond standard Level D protection will be used in conjunction with the HASP for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

Based on the characterization of surface and subsurface soils and the associated SLRA findings, surface engineering controls are an acceptable remedy to be protective of future adult Composite Workers at EU1. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase within EU1. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls (i.e., capping) regardless of the existing soil conditions. The proposed capping sections will meet the required minimum thicknesses for surface engineering controls, which are provided in **Appendix E**.

5.1.1 Erosion/Sediment Control

Erosion and sediment controls will be installed prior to commencing work in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The erosion and sediment controls will be approved by the Agencies. In addition, the following measures will be taken to prevent contaminated soil from exiting the Site:

- Stabilized construction entrance will be placed at site entrance.
- A dry street sweeper will be used as necessary on adjacent roads, and the swept dust will be collected and properly managed.
- Accumulated sediment removed from silt fence, and sediment traps if applicable, shall be periodically removed and returned to the Site.

5.1.2 Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall include the construction manager and the EP providing oversight on the project. During the meeting, the construction manager and the EP shall review the proposed excavation/trenching locations and any associated utility invert elevations. The construction manager will be responsible for conveying all relevant information regarding excavation/grading and/or utility work to the workers who will be involved with these activities. The HASP and PPE SOP for the project shall also be reviewed and discussed.

The EP will provide oversight of soil excavation/trenching activities as described in Section 5.6. Soil excavation/trenching will occur during various phases of construction. In general, and based on the existing sampling information, all excavated materials are expected to be suitable for replacement on the Site. However, the EP will monitor the soil excavation activities for signs of significantly contaminated material which may not be suitable for reuse (as described below). The EP will also be responsible for monitoring organic vapor concentrations in the worker breathing zone within utility trenches and excavations to determine whether any increased level of health and safety protection is required.

To the extent practical, all excavation activities should be conducted in a manner to minimize double or extra handling of materials. Stockpiles shall be stored in a location that is not subjected to concentrated stormwater runoff. Stockpiles shall be managed as necessary to prevent the erosion and off-site migration of stockpiled materials, and in accordance with the applicable provisions of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Soil designated for replacement on-site which does not otherwise exhibit evidence of contamination (as determined by the EP) may be managed in large stockpiles (no size restriction) as long as they remain within the erosion and sediment controls.

All utility trenches will be backfilled with bedding and backfill materials approved by the MDE for industrial use. Utility trench backfill within EU2 will be MDE approved VCP clean fill materials only. A general utility cross section is provided as **Appendix F**. Additional preventative measures will be required if evidence of petroleum contamination is encountered, to prevent the discharge to, or migration of, petroleum product along a utility conduit. Contingency measures have been developed to ensure that utilities will be constructed in a manner that will prevent the migration of any encountered NAPL, and that excavated material will be properly managed. The Utility Excavation NAPL Contingency Plan (**Appendix G**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to inhibit the spread of petroleum product will be conducted in accordance with this plan.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination. In particular, soils will be monitored with a hand-held photoionization detector (PID) for potential VOCs and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management.

Excavated material exhibiting evidence of significant contamination shall be placed in stockpiles (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting to minimize potential exposures and erosion when not in use. Materials stockpiled due to evidence of contamination will be sampled in accordance with waste disposal requirements and transported to an appropriate permitted disposal facility. Plans for analysis of segregated soils for any use other than disposal must be submitted to the MDE for approval.

Excavated material that is visibly impacted by NAPL will be segregated and managed in accordance with the requirements specified in the Utility Excavation NAPL Contingency Plan. Excavated material with indications of possible NAPL contamination will also be containerized or placed in a stockpile (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting until the material can be analyzed for TPH/Oil & Grease and PCBs (total) to characterize the material for appropriate disposal. The Agencies will be notified if such materials are encountered during excavation or utility trenching activities.

5.1.3 Soil Sampling and Disposal

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indications of potential contamination shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be placed on a polyethylene or equivalent tarp and covered with the same to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill at this Site or on other areas of the property depending on the analytical results. A summary of

sampling including a description of the material, estimated volume, and sampling parameters will be submitted to the MDE for approval to determine the suitability of the material for reuse. If the MDE determines that the materials are unsuitable for reuse, the materials will be sampled to determine alternative disposal options.

Soil material may be taken to an appropriate non-hazardous landfill (including Greys Landfill) for proper disposal if the concentrations of excavated sampled materials indicate that the materials are not hazardous, but still are not suitable for reuse. Soil material that is determined to be a hazardous waste shall be shipped off-site in accordance with applicable regulations to an appropriate and permitted RCRA disposal facility. The quantities of all materials that require disposal, if any, will be recorded and identified in the Development Completion Report.

5.1.4 Fill

Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as the primary fill material within EU1 for this project. The placement of processed slag aggregate or materials other than approved clean fill will necessitate that EU1 will be subject to surface engineering controls (i.e., capping). Soil excavated on the Sub-Parcel has been determined to be suitable for re-use within EU1 below the surface engineering controls (capping), unless such materials are determined by the Agencies to be unsuitable for use as outlined in Section 5.1.2 and Section 5.1.3. If fill is needed within EU2, then it will include MDE approved VCP clean fill materials only.

All over-excavated utility trenches will be backfilled with bedding and backfill approved by the MDE for industrial use. Utility trench backfill within EU2 will be MDE approved VCP clean fill materials only. Soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. As with structural fill, processed slag aggregate and other materials approved for industrial use can be used as backfill in utility trenches on EU1 if the area will be covered by a VCP cap. Any utility backfill which will extend into the cap on EU1 (i.e., top 2 feet of backfill in landscaped areas) must meet the VCP clean fill requirements, and a geotextile marker fabric will be placed between the VCP clean fill and any underlying material. Materials permanently placed in areas outside of the Site boundary (i.e., within the temporary external construction worker areas outside of Sub-Parcel B9-1) must meet the VCP clean fill requirements or be otherwise approved by the MDE prior to placement. A general utility detail drawing is provided as **Appendix F**. Material imported to the Site will be screened according to MDE guidance for suitability.

5.1.5 Dust Control

General construction operations, including soil excavation and transport, and trenching for utilities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. Best management practices should be undertaken at the Sparrows Point property as a whole to prevent the generation of dust which could impact other areas of the property

outside of the immediate work zone. To limit worker exposure to contaminants borne on dust and windblown particulates, dust monitoring will be performed in the immediate work zone and at the upwind and downwind perimeter of the Site, and dust control measures will be implemented if warranted based on the monitoring results. The action level proposed for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) during the development activities at the Site will be 3.0 mg/m³. The lowest of the site-specific dust action levels, OSHA Permissible Exposure Limits (PELs), and ACGIH Threshold Limit Value (TLV) was selected as the proposed action level.

The EP will be responsible for the dust monitoring program. Air monitoring will be performed using Met One Instruments, Inc. E-Sampler dust monitors or equivalent real-time air monitoring devices. The EP will set-up dust monitoring equipment at the outset of ground intrusive work or other dust-generating activities, and continuous dust monitoring will be performed during this work. In addition to work area monitoring, a dust monitor will be placed at selected perimeter locations that will correspond to the upwind and downwind boundaries based on the prevailing wind direction predicted for that day. The prevailing wind direction will be assessed during the day, and the positions of the perimeter monitors will be adjusted if there is a substantial shift in the prevailing wind direction.

Once all dust-generating activities are complete (which may occur at a later stage of the project once ground intrusive work has been completed or after the Site has been capped), the dust monitoring program may be discontinued. If additional dust-generating activities commence, additional dust monitoring activities will be performed.

If sustained dust concentrations exceed the action level (3.0 mg/m³) at any of the monitoring locations as a result of conditions occurring at the Site, operations will be stopped temporarily until dust suppression can be implemented. Operations may be resumed once monitoring indicates that dust concentrations are below the action level. The background dust concentration will be utilized to evaluate whether Site activities are the source of the action level exceedance. The background dust concentration will be based on measurements over a minimum of a 1-hour period at the upwind Site boundary. The upwind data will be used to calculate a time weighted average background dust concentration. As noted above, the locations of the perimeter dust monitors may be adjusted periodically if there is a substantial shift in the prevailing wind direction.

As applicable, air monitoring will be conducted during development implementation activities to assess levels of exposure to Site workers, establish that the work zone designations are valid, and verify that respiratory protection being worn by personnel, if needed, is adequate. Concurrent with the work zone air monitoring, perimeter air monitoring will also be performed at the upwind and downwind Site boundaries to ensure contaminants are not migrating off-site. The concentration measured at the downwind perimeter shall not exceed the action level of 3.0 mg/m³, unless caused by background dust from upwind of the Site. If exceedances of the action level are identified downwind for more than five minutes, the background dust concentration shall be evaluated to

determine whether the action level exceedances are attributable to Site conditions. If on-site activities are the source of the exceedances, dust control measures and additional monitoring will be implemented. The dust suppression measures may include wetting or misting using a hose connected to a water supply or a water truck stationed at the Site.

Dust control measures will be implemented as described above to address dust generated as a result of construction activities conducted at the Site. However, based on the nature of the area and/or ongoing activities surrounding the Site, it is possible that windblown particulates may come from surrounding areas. As discussed above, the dust concentration in the upwind portion of the Site will be considered when monitoring dust levels in the work area. A pre-construction meeting will be held to discuss the potential of windblown particulates from other activities impacting the air monitoring required for this RADWP. Site contact information will be provided to address the possibility of upwind dust impacts. If sustained dust is observed above the action level (3.0 mg/m^3) and it is believed to originate from off-site (i.e., upwind) sources, this will immediately be reported to TPA and the MDE-VCP team, as well as the MDE Air and Radiation Administration (ARA).

5.2 WATER MANAGEMENT

This plan presents the protocols for handling any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel B9-1 development.

5.2.1 Groundwater PAL Exceedances

Groundwater samples were collected during the preceding Phase II Investigations from five monitoring wells surrounding the Site. Aqueous PAL exceedances in groundwater in the vicinity of the development LOD included both inorganics and organic compounds. The aqueous PAL exceedances obtained during the Phase II Investigation are summarized on **Figure GW1**. There are no concerns related to potential VI risks/hazards at the Site.

While the concentrations of PAL exceedances are not deemed to be a significant human health hazard for future workers since there is no on-site groundwater use which could lead to direct exposures, proper water management is required during construction to prevent unacceptable discharges or risks to Construction Workers.

5.2.2 Dewatering

Dewatering may be necessary to facilitate the placement and compaction of structural fill and during the stormwater pond construction, installation of underground utilities, and within excavations/trenches. **Figure 7** displays the groundwater elevations underlying the Site for the shallow aquifer zone, based on prior investigation data. If dewatering is required during construction, it shall be done in accordance with all local, state, and federal regulations. Water that collects in excavations/trenches due to intrusion of groundwater, stormwater, and/or dust control waters will be transported to the HCWWTP via the Tin Mill Canal (TMC), following any

pretreatment, if necessary. The water will be treated and discharged in accordance with NPDES Permit No. 90-DP-0064A; I. Special Conditions; A.4; Effluent Limitations and Monitoring Requirements.

It is the intent that any water that must be removed will be ultimately sent (via pumping or trucking) to the HCWWTP via the TMC, following any pretreatment, if necessary. Water in the TMC feeds into the HCWWTP where it is treated prior to release into Bear Creek. Dewatering fluids will be evaluated and then tested (if required) pursuant to the HCWWTP Constituent Threshold Limits for Dewatering Activities related to Remediation, Development, and Capping Protocol. If the groundwater does not meet the constituent threshold limits specified in the protocol, the groundwater will be pre-treated. Any water discharged to the TMC will be pumped through a filter bag or equivalent to remove suspended solids prior to discharge.

Note that additional analyses could be required if warranted based on field observations by the EP. The EP will inspect any water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (sheen, odor, discoloration, presence of product), the water may be sampled and analyzed for some or all of the analyses listed below. In such case, the analyses run will be dependent on the suspected source of contamination and local site conditions. The EP will oversee oil/water separation and disposal of NAPL as necessary.

The results of the analyses will be reviewed by the HCWWTP operator to determine if any wastewater treatment system adjustments are necessary. If the results of the analyses are above the threshold levels listed below, the water will be further evaluated to confirm acceptable treatment at the HCWWTP, or will be evaluated to design an appropriate pre-treatment option. Alternatively, the water may be disposed of at an appropriate off-site facility.

Analysis	Threshold Levels
• Total metals by USEPA Method 6020A	1,000 ppm
• PCBs by USEPA Method 8082	>Non-Detect
• SVOCs by USEPA Method 8270C	1 ppm
• VOCs by USEPA Method 8260B	1 ppm
• Oil & Grease by USEPA Method 1664	200 ppm
• TPH-DRO by USEPA Method 8015B	200 ppm
• TPH-GRO by USEPA Method 8015B	200 ppm

Documentation of any water testing, as well as the selected disposal option, will be reported to the Agencies in the Development Completion Report. Any permits or permit modifications related to dewatering will be provided to the agencies as addenda to this RADWP.

5.3 HEALTH AND SAFETY

A property-wide HASP has been developed and is provided with this RADWP (as an electronic attachment) to present the minimum requirements for worker health and safety protection for all development projects. All contractors working on the Site must prepare their own HASP that provides a level of protection at least as much as that provided by the attached HASP. Alternately, on-site contractors may elect to adopt the HASP provided.

General health and safety controls (level D protection) are adequate to mitigate potential risk to Construction Workers conducting ground intrusive activities for a duration of up to 85 exposure days. However, certain ground intrusive activities at the Site (utility installations for specific crews) may exceed the allowable duration. Therefore, modified Level D PPE will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. Health and safety controls outlined in the HASP and PPE SOP will mitigate any potential risk to Construction Workers from contacting impacted soil and groundwater during development. The modified Level D PPE requirements planned for this development project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**. The EP will be responsible for monitoring organic vapor concentrations in the worker breathing zone within the utility trenches and excavations to determine whether any increased level of health and safety protection (including engineering controls and/or PPE) is required.

Prior to commencing work, the contractor must conduct an on-site safety meeting for all personnel. All personnel must be made aware of the HASP and the PPE SOP. Detailed safety information shall be provided to personnel who may be exposed to COPCs. Workers will be responsible for following established safety procedures to prevent contact with potentially contaminated material.

5.4 INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be placed on the RADWP approval, NFA, and COC. These conditions are anticipated to include the following:

- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater.
- Notice to the Agencies at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy (i.e., through the pavement cap or marker fabric in landscaped areas).
- Notice to the USEPA at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy, only if the proposed duration of ground intrusive

activity would exceed the allowable exposure duration determined in the SLRA and the contractor will not use the modified Level D PPE specified in the approved SOP.

- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any material excavated/pumped at the Site in accordance with applicable local, state, and federal requirements.
- Implementation of inspection procedures and maintenance of the containment remedies.

The owner/operator will file the above deed restrictions as defined by the MDE-VCP in the NFA and COC. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. Tradepoint Atlantic will notify the Tenant of this requirement and will provide the Agencies with contact information for the Tenant prior to issuance of the NFA.

5.5 Post Remediation Requirements

Post remediation requirements will include compliance with the conditions specified in the NFA, COC, and the deed restrictions recorded for the Site. Deed restrictions will be recorded within 30 days after receipt of the final NFA. In addition, the Agencies will be provided with a written notice of any future excavations (as applicable) in accordance with the requirements given in Section 5.5. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal requirements. Written notice may consist of email correspondence and/or hard copy correspondence.

Additional requirements will include inspection procedures and maintenance of the containment remedies to minimize degradation which could lead to future exposures, as well as continued perimeter groundwater monitoring. An O&M Plan will be submitted for Agency approval and will include long-term inspection and maintenance requirements for the capped areas of the Site. The responsible party will perform cap inspections, perform maintenance of the cap, and retain inspection records, as required by the O&M Plan.

5.6 Construction Oversight

Construction Oversight by an EP will ensure and document that the project is built as designed and appropriate environmental and safety protocols are followed. Upon completion, the EP will certify that the project is constructed in accordance with this RADWP.

The EP will monitor all soil excavation and utility trenching activities for signs of contamination that may indicate materials that are not suitable for reuse. In particular, soils will be monitored with a hand-held PID for potential VOC impacts, and will also be visually inspected for staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e.,

sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management (as described in Section 5.1.2; Soil Excavation and Utility Trenching). The EP will also perform routine periodic breathing zone monitoring and PPE spot checks during ground intrusive activities. The EP will also inspect any water that collects in the excavations/trenches on an as-needed basis to coordinate appropriate sampling prior to disposal (as described in Section 5.2.2; Dewatering).

Daily inspections, as necessary, will be performed during general site grading and cap construction activities to verify that appropriate fill materials are being used (as described in Section 5.1.4; Fill), dust monitoring and control measures are being implemented as appropriate (as described in Section 5.1.5; Dust Control), the requirements of the HASP and the PPE SOP are being enforced by the designated Site Safety Officer (as described in Section 5.4; Health and Safety), and surface engineering controls are being installed with the appropriate thicknesses (shown on the RADWP attachments). Oversight by an EP will not be required during construction activities which do not have a significant environmental component, such as above-grade construction.

Records will be developed by the EP to document:

- Compliance with soil screening requirements
- Proper water management, including documentation of any testing and water disposal
- Observations of construction activities during site grading and cap construction
- Proper cap thickness and construction

6.0 PERMITS, NOTIFICATIONS AND CONTINGENCIES

The participant and their contractors will comply with all local, state, and federal laws and regulations by obtaining any necessary approvals and permits to conduct the activities contained herein. Any permits or permit modifications from State or local authorities will be provided as addenda to this RADWP.

A grading permit is required if the proposed grading disturbs over 5,000 square feet of surface area or over 100 cubic yards of earth. A grading permit is required for any grading activities in any watercourse, floodplain, wetland area, buffers (stream and within 100 feet of tidal water), habitat protection areas or forest buffer areas (includes forest conservation areas). Based on the scope of proposed earth disturbance, a grading permit will be required as part of this development project. Erosion and Sediment Control Plans will be submitted to, and approved by, the Agencies prior to initiation of land disturbance for development.

Contingency measures will include the following:

1. The Agencies will be notified immediately of any previously undiscovered contamination, previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices.

2. Any significant change to the implementation schedule will be noted in the progress reports to Agencies.

3. Modified Level D PPE will be used for the entire scope of ground intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project are outlined in the PPE SOP provided as **Appendix C**. If it is not possible to implement the PPE SOP as provided, the agencies will be notified and a RADWP Addendum will be submitted to detail any appropriate mitigative measures.

7.0 IMPLEMENTATION SCHEDULE

Progress reports will be submitted to the Agencies on a quarterly basis. Each quarterly progress report will include, at a minimum, a discussion of the following information regarding tasks completed during the specified quarter:

- Development Progress
- Soil Management (imported materials, screening, stockpiling)
- Soil Sampling and Disposal
- Water Management
- Dust Monitoring
- Notable Occurrences (if applicable)
- Additional Associated Work (if applicable)

The proposed implementation schedule is shown below:

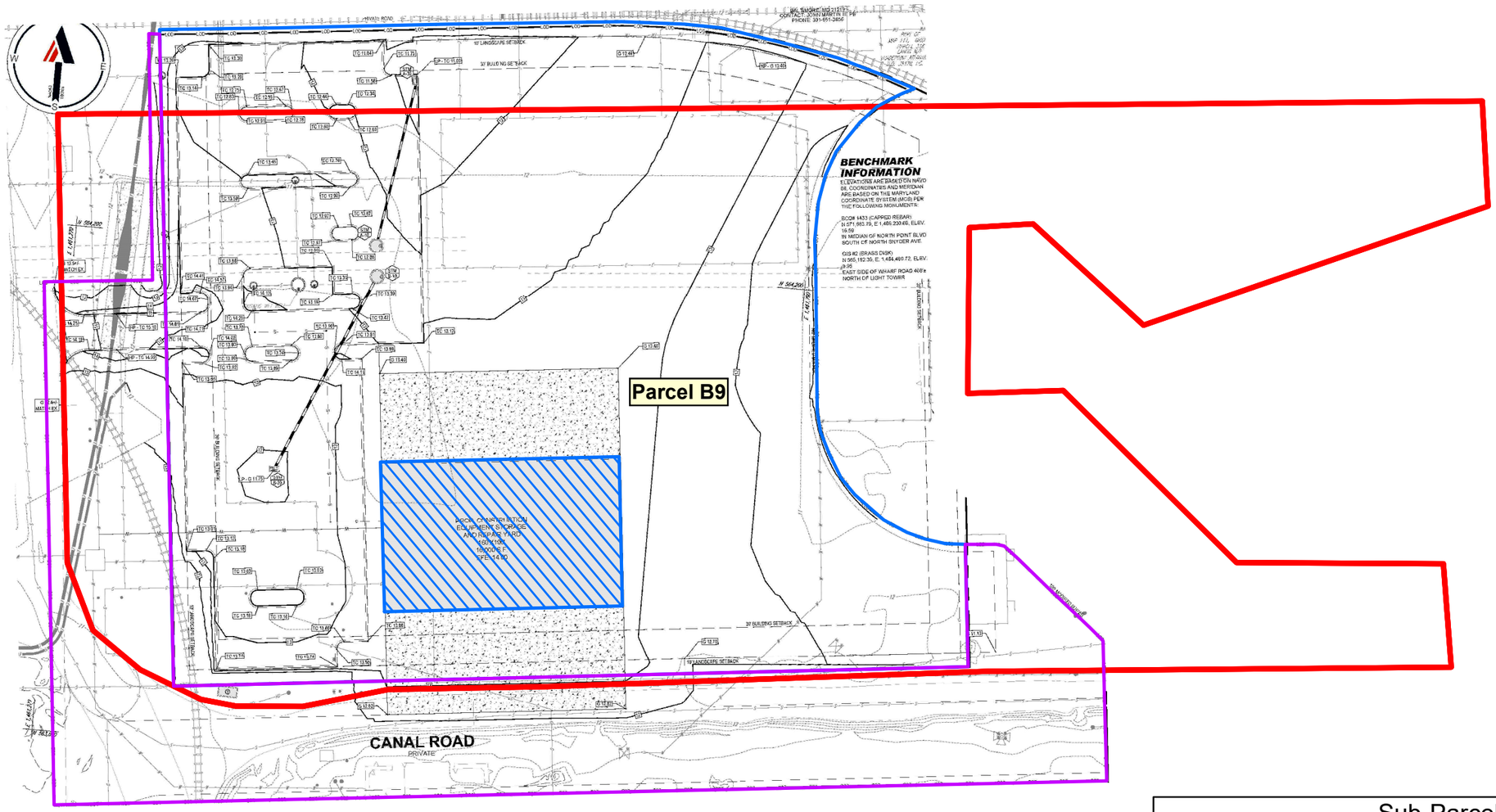
Task	**Proposed Completion Date**
Anticipated RADWP Approval	July 2022
Development:	
Installation of Erosion and Sediment Controls	July 2022 (start)
Slag (or Alternative Fill) Delivery and Placement	July 2022 (start)
Site Preparation / Grading	July 2022 (start)
Utility Installations	August 2022 (start)
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	December 2022
Request for NFA from the Agencies	December 2022
Recordation of institutional controls in the land records office of Baltimore County	Within 30 days of receiving the approval of NFA from the Agencies

Submit proof of recordation with Baltimore County	Upon receipt from Baltimore County

*Notice of Completion of Remedial Actions will be prepared by Professional Engineer registered in Maryland and submitted with the Development Completion Report to certify that the work is consistent with the requirements of this RADWP and the Site is suitable for occupancy and use.

FIGURES


Sub-Parcel B9-1 Boundary
Site Boundary
Parcel Boundaries
Private Property
Parcel A9
Parcel A13
Parcel A5
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A15
Parcel A2
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A4
Parcel A10
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B21
Parcel B22
Parcel B16
Parcel B24
Parcel B15
Parcel B23
Parcel B7
Parcel B25
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
B9-1
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12
Tradepoint Atlantic
Area A and Area B Parcels
June 3, 2022
Figure
1
ARM Group LLC
Engineers and Scientists
0 500 1,000 2,000
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
Area A: Project 210101
Area B: Project 210102



Sub-Parcel B9-1
Development Grading Plan
June 3, 2022

Figure 2

ARM Group LLC
Engineers and Scientists

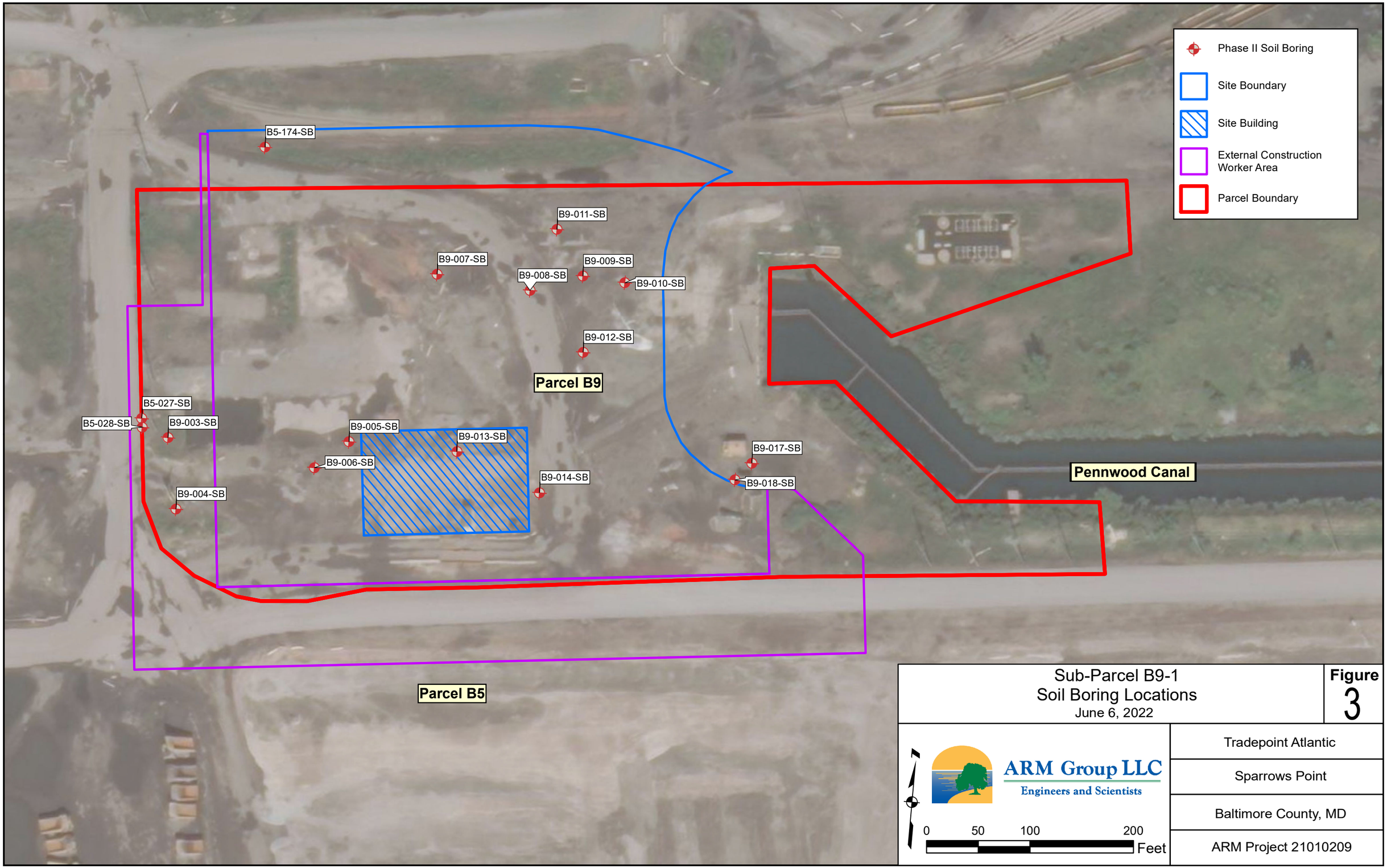
0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209



Sub-Parcel B9-1
Soil Boring Locations
June 6, 2022

Figure 3

ARM Group LLC
Engineers and Scientists

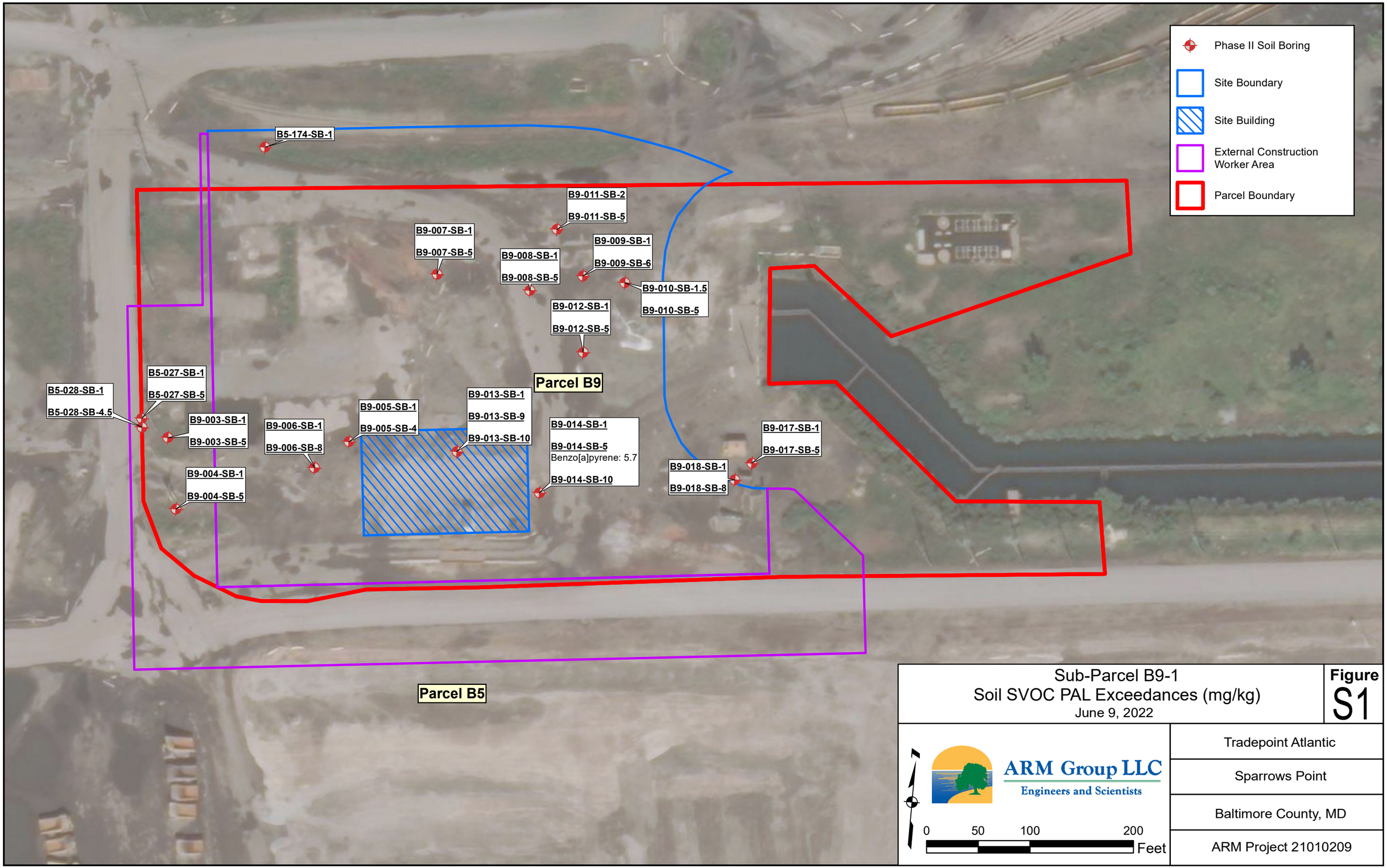
0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209


Phase II Soil Boring
Site Boundary
Site Building
External Construction Worker Area
Parcel Boundary
B5-174-SB-1
B9-011-SB-2
B9-011-SB-5
B9-007-SB-1
B9-007-SB-5
B9-008-SB-1
B9-008-SB-5
B9-009-SB-1
B9-009-SB-6
B9-010-SB-1.5
B9-010-SB-5
B9-012-SB-1
B9-012-SB-5
Parcel B9
B5-027-SB-1
B5-027-SB-5
B5-028-SB-1
B5-028-SB-4.5
B9-003-SB-1
B9-003-SB-5
B9-006-SB-1
B9-006-SB-8
B9-005-SB-1
B9-005-SB-4
B9-013-SB-1
B9-013-SB-9
B9-013-SB-10
B9-014-SB-1
B9-014-SB-5
Benzo[a]pyrene: 5.7
B9-014-SB-10
B9-017-SB-1
B9-017-SB-5
B9-018-SB-1
B9-018-SB-8
B9-004-SB-1
B9-004-SB-5
Parcel B5
Sub-Parcel B9-1
Soil SVOC PAL Exceedances (mg/kg)
June 9, 2022
Figure
S1
ARM Group LLC
Engineers and Scientists
0
50
100
200
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

Sub-Parcel B9-1
Soil PCB PAL Exceedances (mg/kg)
June 9, 2022

Figure S2

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

Sub-Parcel B9-1
Soil Oil and Grease PAL Exceedances (mg/kg)
June 9, 2022

Figure S3

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209


Phase II Soil Boring
Site Boundary
Site Building
External Construction Worker Area
Parcel Boundary
B5-174-SB-1
Arsenic: 13.2
B9-007-SB-1
Arsenic: 3.1
B9-007-SB-5
Arsenic: 4.5
B9-007-SB-10
Arsenic: 5.5
B9-011-SB-2
B9-011-SB-5
Arsenic: 5.7
B9-009-SB-1
Arsenic: 4.3
B9-009-SB-6
B9-008-SB-1
B9-008-SB-5
Arsenic: 8.6
B9-012-SB-1
B9-012-SB-5
B9-010-SB-1.5
Arsenic: 4.3
B9-010-SB-5
Arsenic: 4.3
B5-027-SB-1
Arsenic: 9.4
B5-027-SB-5
Arsenic: 8.9
B5-028-SB-1
Arsenic: 5
Cobalt: 6.7 J-
Manganese: 34,800
B5-028-SB-4.5
Arsenic: 10.2
B9-005-SB-1
Arsenic: 15.8
Thallium: 18.2 J
B9-005-SB-4
Thallium: 23.1 J
B9-013-SB-1
Arsenic: 12.6
B9-013-SB-9
Arsenic: 3.5
B9-013-SB-10
Arsenic: 4.9
Parcel B9
B9-014-SB-1
Arsenic: 4.3
B9-014-SB-5
Arsenic: 56
Lead: 1,470
B9-014-SB-10
Arsenic: 10.4
B9-018-SB-1
Arsenic: 8.5
B9-018-SB-8
Arsenic: 10.8
B9-018-SB-10
Arsenic: 32.2
B9-017-SB-1
B9-017-SB-5
Arsenic: 4
B9-017-SB-10
Arsenic: 10.1
B9-003-SB-1
Arsenic: 8.5
B9-003-SB-5
Arsenic: 5.8
Thallium: 19.2 J
B9-006-SB-1
Arsenic: 4.5
B9-006-SB-8
Arsenic: 16
Manganese: 29,100
B9-004-SB-1
Arsenic: 10.4
B9-004-SB-5
Arsenic: 17.7
Lead: 1,790 J
Thallium: 12.3 J
Parcel B5
Sub-Parcel B9-1
Soil Inorganic PAL Exceedances (mg/kg)
June 9, 2022
Figure
S4
ARM Group LLC
Engineers and Scientists
0
50
100
200
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

Sub-Parcel B9-1
Groundwater Locations
June 7, 2022

Figure 4

ARM Group LLC
Engineers and Scientists

0 100 200 400 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

Sub-Parcel B9-1
Groundwater PAL Exceedances (ug/L)
June 9, 2022

Figure
GW1

ARM Group LLC
Engineers and Scientists

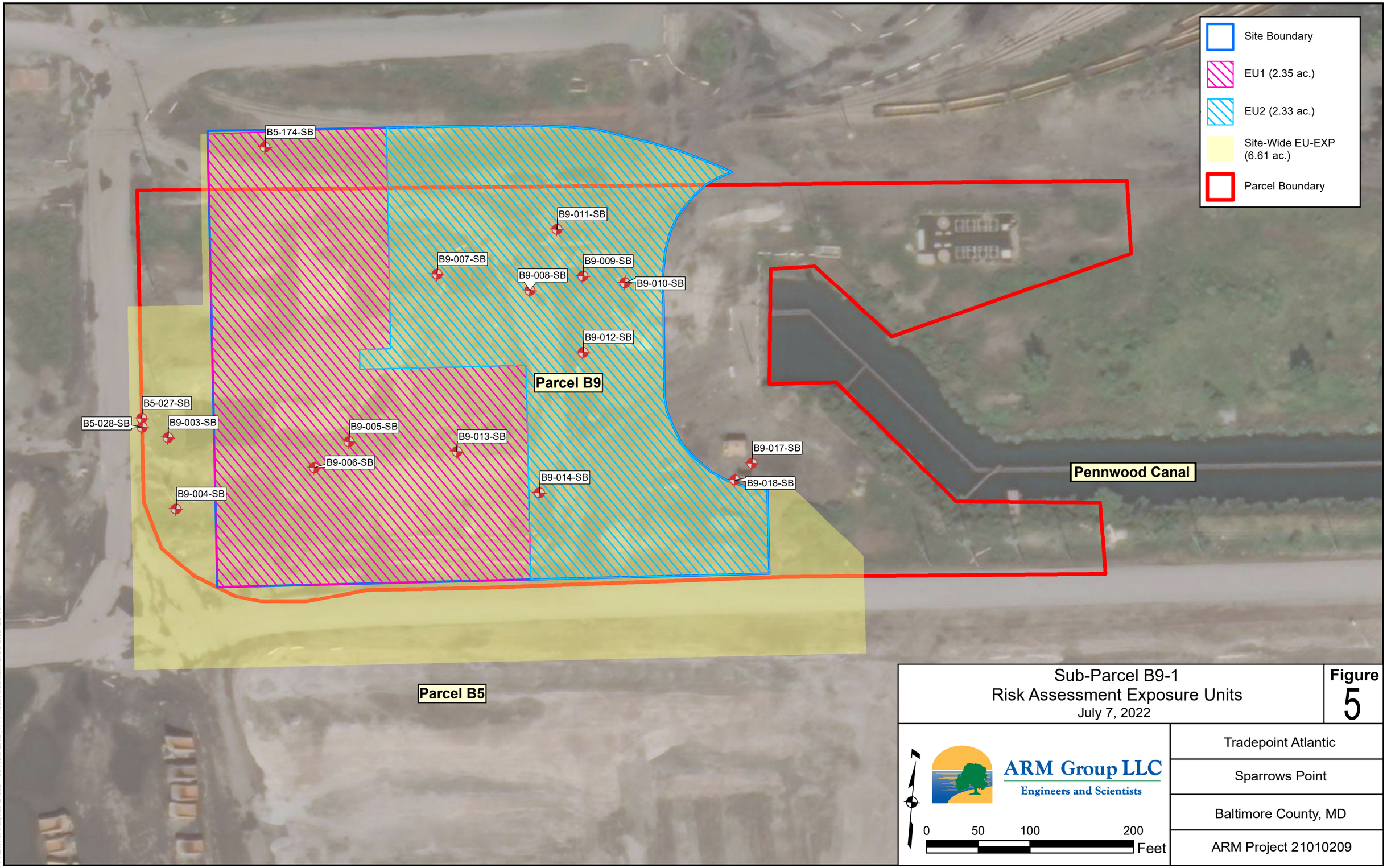
0 100 200 400 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209



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Sub-Parcel B9-1
Risk Assessment Exposure Units
July 7, 2022

Figure 5

ARM Group LLC
Engineers and Scientists

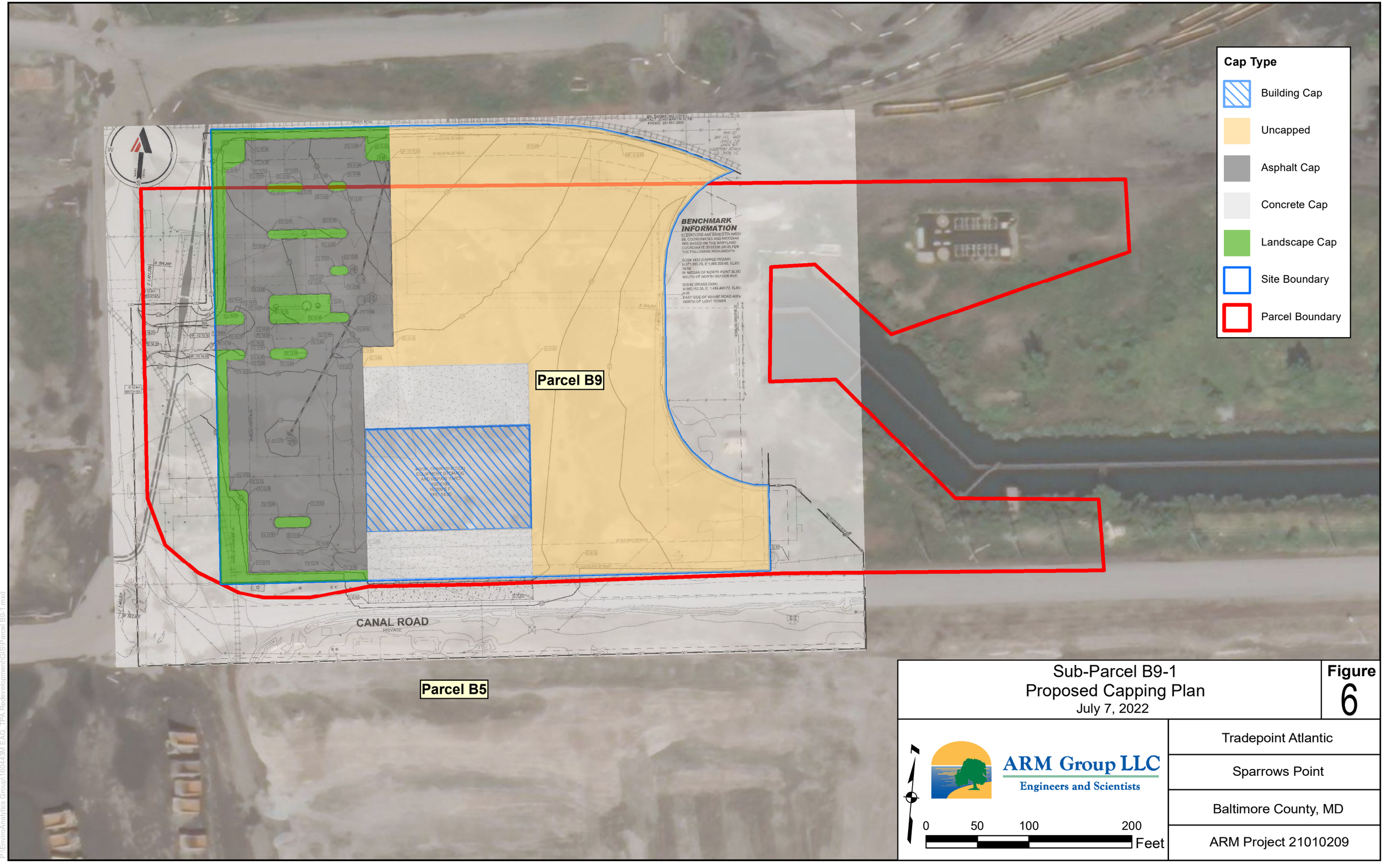
0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209



Sub-Parcel B9-1
Proposed Capping Plan
July 7, 2022

Figure 6

ARM Group LLC
Engineers and Scientists

0 50 100 200 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 21010209

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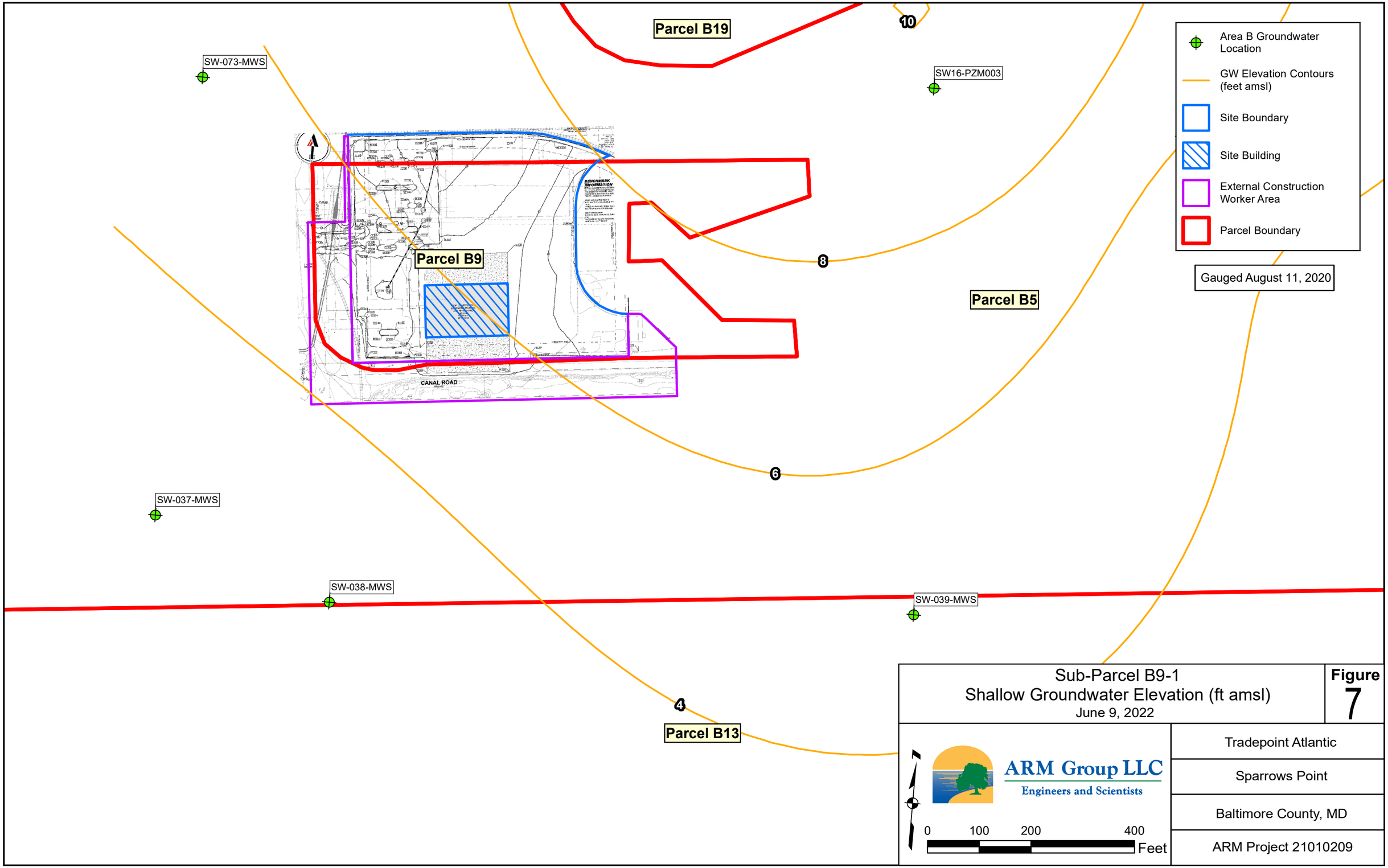
Parcel B19
10
SW-073-MWS
SW16-PZM003
Area B Groundwater Location
GW Elevation Contours (feet amsl)
Site Boundary
Site Building
External Construction Worker Area
Parcel Boundary
Gauged August 11, 2020
Parcel B9
8
Parcel B5
CANAL ROAD
6
SW-037-MWS
SW-038-MWS
SW-039-MWS
4
Parcel B13
Sub-Parcel B9-1
Shallow Groundwater Elevation (ft amsl)
June 9, 2022
Figure
7
ARM Group LLC
Engineers and Scientists
0
100
200
400
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 21010209

TABLES

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B5-027-SB-1 1/20/2016	B5-027-SB-5 1/20/2016	B5-028-SB-1 1/20/2016	B5-028-SB-4.5 1/20/2016	B5-174-SB-1* 1/18/2016	B9-003-SB-1 5/29/2020	B9-003-SB-5 5/29/2020	B9-004-SB-1 5/29/2020	B9-004-SB-5 5/29/2020	B9-005-SB-1 5/29/2020	B9-005-SB-4 5/29/2020	B9-006-SB-1 5/29/2020	B9-006-SB-8 5/29/2020
Volatile Organic Compounds															
1,4-Dioxane	mg/kg	24	*0.1 R*	*0.11 R*	*0.12 R*	*0.12 R*	*0.1 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.12 R*	*0.1 R*	*0.13 R*
2-Butanone (MEK)	mg/kg	190,000	*0.01 U*	*0.011 U*	*0.012 U*	*0.012 U*	*0.01 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.012 U*	*0.01 UJ*	*0.013 U*
Acetone	mg/kg	670,000	*0.01 U*	*0.011 U*	*0.012 U*	**0.075**	*0.01 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.012 U*	0.0055 B	*0.013 U*
Carbon disulfide	mg/kg	3,500	*0.0051 U*	*0.0053 U*	*0.0059 U*	*0.006 U*	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	0.002 J	*0.0051 UJ*	*0.0067 U*
Chloroform	mg/kg	1	*0.0051 U*	**0.016**	*0.0059 U*	*0.006 U*	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.0059 U*	*0.0051 UJ*	*0.0067 U*
Cyclohexane	mg/kg	27,000	*0.01 U*	*0.011 U*	*0.012 U*	0.0069 J	*0.01 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.012 U*	*0.01 UJ*	*0.013 U*
Tetrachloroethene	mg/kg	100	*0.0051 U*	**0.024**	*0.0059 U*	**0.033**	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.0059 U*	*0.0051 UJ*	*0.0067 U*
Toluene	mg/kg	47,000	*0.0051 U*	*0.0053 U*	*0.0059 U*	*0.006 U*	*0.0051 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.0059 U*	*0.0051 UJ*	*0.0067 U*
Semi-Volatile Organic Compounds^															
1,1-Biphenyl	mg/kg	200	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	*0.078 U*	0.022 J	0.037 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
2-Methylnaphthalene	mg/kg	3,000	**0.15**	**0.15**	0.0014 J	**0.089**	**0.11**	**0.22**	**0.071**	**0.21**	**0.089**	**0.2**	**0.034**	**0.13**	**0.018**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	*7.5 U*	*7.7 U*	*7.2 U*	*7.4 U*	*14.5 U*	*1.6 U*	0.021 J	*0.15 U*	*0.15 U*	*1.5 U*	*0.14 U*	*0.14 R*	*0.15 U*
Acenaphthene	mg/kg	45,000	**0.0087**	**0.025**	*0.0073 U*	**0.0095**	**0.017**	0.069 J	0.0065 J	**0.012**	0.0039 J	0.028 J	0.0047 J	0.02 J	0.0032 J
Acenaphthylene	mg/kg	45,000	**0.011**	**0.14**	*0.0073 U*	**0.045**	**0.044**	**0.34**	**0.12**	**0.079**	**0.064**	**0.46**	**0.013**	**0.056**	0.0029 J
Acetophenone	mg/kg	120,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	*0.078 U*	0.061 J	0.042 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Anthracene	mg/kg	230,000	**0.032**	**0.13**	0.0025 J	**0.065**	**0.086**	**0.48**	**0.097**	**0.065**	**0.038**	**0.34**	**0.014**	**0.067**	0.0063 J
Benz[a]anthracene	mg/kg	21	**0.058**	**0.39**	0.0045 J	**0.25**	**0.27**	**1.8**	**0.67**	**0.35**	**0.23**	**1.3**	**0.099**	**0.43**	**0.033**
Benzaldehyde	mg/kg	120,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	*0.078 U*	0.099 J	0.06 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Benzo[a]pyrene	mg/kg	2	0.059 J	0.45 J	0.0023 J	0.22 J	**0.38**	**1.3**	**0.55**	**0.33**	**0.2**	**1.4**	**0.12**	**0.36**	**0.03**
Benzo[b]fluoranthene	mg/kg	21	0.19 J	1.3 J	**0.0083**	0.67 J	**0.85**	**2.2**	**0.74**	**0.5**	**0.31**	**2.3**	**0.16**	**0.58**	**0.038**
Benzo[g,h,i]perylene	mg/kg		0.036 J	0.23 J	0.0023 J	0.11 J	**0.18**	**0.82**	**0.37**	**0.24**	**0.12**	**1.1**	**0.084**	**0.28**	**0.021**
Benzo[k]fluoranthene	mg/kg	210	0.19 J	1.3 J	**0.008**	0.67 J	**0.84**	**0.56**	**0.24**	**0.12**	**0.088**	**0.63**	**0.04**	**0.2**	**0.012**
bis(2-Ethylhexyl)phthalate	mg/kg	160	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	*0.078 U*	*0.073 U*	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Caprolactam	mg/kg	400,000	*9.4 U*	*9.7 U*	*9 U*	*9.3 U*	*18.2 U*	*1.9 U*	*0.19 U*	0.13 J	0.13 J	*1.8 U*	*0.18 U*	*0.18 U*	0.023 J
Carbazole	mg/kg		*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	0.033 J	0.021 J	0.028 J	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Chrysene	mg/kg	2100	**0.11**	**0.52**	0.0043 J	**0.33**	**0.32**	**1.5**	**0.47**	**0.34**	**0.18**	**1.2**	**0.086**	**0.54**	**0.034**
Dibenz[a,h]anthracene	mg/kg	2	0.012 J	0.084 J	*0.0073 U*	0.048 J	**0.082**	**0.23**	**0.11**	**0.072**	**0.045**	**0.28**	**0.02**	**0.077**	0.0064 J
Di-n-butylphthalate	mg/kg	82,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	0.035 B	0.031 B	0.028 B	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Di-n-octylphthalate	mg/kg	8200	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	*0.078 U*	*0.073 U*	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Fluoranthene	mg/kg	30,000	**0.097**	**0.55**	0.0068 J	**0.44**	**0.39**	**3.7**	**0.74**	**0.37**	**0.15**	**1.2**	**0.11**	**0.77**	**0.045**
Fluorene	mg/kg	30,000	**0.013**	**0.024**	*0.0073 U*	**0.015**	**0.014**	0.074 J	**0.015**	**0.012**	*0.0085 U*	**0.037**	0.0039 J	0.017 J	0.0029 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.028 J	0.21 J	0.0014 J	0.11 J	**0.2**	0.91 J	**0.43**	**0.25**	**0.15**	**1.1**	**0.091**	**0.29**	**0.021**
Naphthalene	mg/kg	9	**0.093**	**0.13**	0.0027 B	**0.08**	**0.089**	**0.4**	**0.14**	**0.36**	**0.08**	**0.31**	**0.048**	**0.29**	**0.013**
N-Nitrosodiphenylamine	mg/kg	470	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	*0.078 U*	0.018 J	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 U*	*0.074 U*
Phenanthrene	mg/kg		**0.16**	**0.33**	0.0064 J	**0.29**	**0.34**	**1.7**	**0.33**	**0.34**	**0.12**	**0.44**	**0.057**	**0.5**	**0.044**
Phenol	mg/kg	250,000	*3.8 U*	*3.9 U*	*3.6 U*	*3.7 U*	*7.3 U*	*0.78 U*	0.021 J	0.019 J	*0.076 U*	*0.73 U*	*0.071 U*	*0.072 R*	*0.074 U*
Pyrene	mg/kg	23,000	**0.084**	**0.57**	0.0051 J	**0.35**	**0.36**	**3**	**0.6**	**0.33**	**0.14**	**1.4**	**0.1**	**0.68**	**0.038**
PCBs															
Aroclor 1232	mg/kg	1	*0.019 U*	*N/A*	*0.019 U*	*N/A*	*0.37 U*	*0.096 U*	*N/A*	*0.091 U*	*N/A*	*0.092 U*	*N/A*	*0.091 U*	*N/A*
Aroclor 1248	mg/kg	1	*0.019 U*	*N/A*	*0.019 U*	*N/A*	*0.37 U*	*0.096 U*	*N/A*	*0.091 U*	*N/A*	*0.092 U*	*N/A*	*0.091 U*	*N/A*
Aroclor 1254	mg/kg	0.97	*0.019 U*	*N/A*	*0.019 U*	*N/A*	*0.37 U*	*0.096 U*	*N/A*	*0.091 U*	*N/A*	**0.2**	*N/A*	*0.091 U*	*N/A*
Aroclor 1260	mg/kg	1	*0.019 U*	*N/A*	*0.019 U*	*N/A*	**2.1**	*0.096 U*	*N/A*	*0.091 U*	*N/A*	0.18 JN	*N/A*	*0.023 U*	*N/A*
PCBs (total)	mg/kg	1	*0.13 U*	*N/A*	*0.13 U*	*N/A*	**2.1 J**	*0.87 U*	*N/A*	*0.82 U*	*N/A*	0.37 J	*N/A*	*0.82 U*	*N/A*
TPH/Oil & Grease															
Diesel Range Organics	mg/kg	6,200	**52.5**	**76.9**	**22.9**	**57.2**	**135**	98.6 J	65.8 J	87.2 J	84.1 J	338 J	31.1 J	73.5 J	30.1 J
Gasoline Range Organics	mg/kg	6,200	*9.9 U*	*20.3 U*	*11.9 U*	*17.3 U*	*10.3 U*	*11.3 U*	*11.8 UJ*	*14.1 U*	8.5 J	*15.9 U*	*17.1 U*	*11.7 U*	*16.3 U*
Oil & Grease	mg/kg	6200	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	367 J	*469 U*	190 J	**275**	**10,700**	147 J	**1,700**	*222 U*

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B9-007-SB-1* 6/1/2020	B9-007-SB-5* 6/1/2020	B9-008-SB-1* 5/27/2020	B9-008-SB-5* 5/27/2020	B9-009-SB-1* 10/12/2020	B9-009-SB-6* 10/12/2020	B9-010-SB-1.5 5/26/2020	B9-010-SB-5 5/26/2020	B9-011-SB-2 5/26/2020	B9-011-SB-5 5/26/2020	B9-012-SB-1 5/26/2020	B9-012-SB-5 5/26/2020	B9-013-SB-1* 5/27/2020
Volatile Organic Compounds															
1,4-Dioxane	mg/kg	24	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.11 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
2-Butanone (MEK)	mg/kg	190,000	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Acetone	mg/kg	670,000	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	0.0075 J	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Carbon disulfide	mg/kg	3,500	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	0.0016 J	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Chloroform	mg/kg	1	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Cyclohexane	mg/kg	27,000	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Tetrachloroethene	mg/kg	100	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Toluene	mg/kg	47,000	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Semi-Volatile Organic Compounds^															
1,1-Biphenyl	mg/kg	200	*0.7 U*	*0.08 U*	**0.14**	**0.14**	*18.5 U*	*0.71 U*	**0.19**	**0.14**	*0.074 U*	*0.077 U*	**0.14**	**0.17**	*0.76 U*
2-Methylnaphthalene	mg/kg	3,000	**0.062**	*0.026 U*	**0.31**	**0.29**	*0.3 U*	0.02 J	**0.14**	**0.21**	**0.0072**	0.0036 J	**0.17**	**0.18**	**0.24**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	*1.4 U*	*0.16 U*	*0.14 U*	*0.14 U*	*37 U*	*1.4 U*	*0.15 R*	*0.14 R*	*0.15 U*	*0.15 U*	*0.14 R*	*0.14 R*	*1.5 U*
Acenaphthene	mg/kg	45,000	0.012 J	*0.026 U*	**0.044**	**0.045**	*0.3 U*	*0.037 U*	**0.038**	**0.059**	0.0024 J	*0.0084 UJ*	**0.042**	**0.058**	**0.06**
Acenaphthylene	mg/kg	45,000	**0.04**	*0.026 U*	**0.2**	**0.14**	*0.3 U*	0.014 J	**0.091**	**0.13**	0.0025 J	0.0018 J	**0.11**	**0.14**	**0.28**
Acetophenone	mg/kg	120,000	*0.7 U*	*0.08 U*	0.02 J	0.022 J	*18.5 U*	*0.71 U*	0.036 J	0.022 J	*0.074 U*	*0.077 U*	0.028 J	0.029 J	*0.76 U*
Anthracene	mg/kg	230,000	**0.054**	*0.026 U*	**0.28**	**0.22**	*0.3 U*	0.012 J	**0.19**	**0.32**	0.0071 J	0.002 J	**0.16**	**0.2**	**0.48**
Benz[a]anthracene	mg/kg	21	**0.33**	0.0032 J	**0.88**	**0.65**	*0.3 U*	**0.05**	**0.68**	**1.5**	**0.044**	**0.012**	**0.68**	**1**	**1.3**
Benzaldehyde	mg/kg	120,000	*0.7 U*	*0.08 U*	0.019 J	0.02 J	*18.5 U*	*0.71 U*	0.034 J	0.021 J	*0.074 R*	*0.077 R*	0.034 J	0.027 J	*0.76 U*
Benzo[a]pyrene	mg/kg	2	**0.37**	*0.026 U*	**0.87**	**0.64**	0.21 J	**0.055**	**0.56**	**1.5**	**0.036**	0.0082 J	**0.56**	**0.68**	**1.3**
Benzo[b]fluoranthene	mg/kg	21	**0.49**	*0.026 U*	**1.2**	**1.2**	*0.3 U*	**0.066**	**0.99**	**2**	**0.063**	0.012 J	**1.1**	**1.1**	**1.7**
Benzo[g,h,i]perylene	mg/kg		**0.3**	*0.026 U*	**0.51**	**0.41**	**0.34**	**0.045**	**0.27**	**0.59**	**0.034**	0.0041 B	**0.3**	**0.35**	**0.9**
Benzo[k]fluoranthene	mg/kg	210	**0.13**	*0.026 U*	**0.37**	**0.27**	*0.3 U*	0.029 J	**0.25**	**0.45**	**0.02**	0.0035 J	**0.26**	**0.28**	**0.44**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.23 J	*0.08 U*	0.017 J	0.022 J	*18.5 U*	*0.71 U*	0.05 B	0.024 B	*0.074 U*	0.019 B	0.044 B	0.052 B	*0.76 U*
Caprolactam	mg/kg	400,000	*1.8 U*	*0.2 U*	*0.18 U*	0.022 J	*46.5 U*	*1.8 U*	0.039 J	0.027 J	*0.19 U*	0.031 J	0.032 J	0.031 J	*1.9 U*
Carbazole	mg/kg		*0.7 U*	*0.08 U*	**0.11**	**0.11**	*18.5 U*	*0.71 U*	**0.18**	**0.11**	*0.074 U*	*0.077 U*	**0.097**	**0.14**	0.19 J
Chrysene	mg/kg	2100	**0.27**	*0.026 U*	**0.88**	**0.66**	*0.3 U*	**0.059**	**0.49**	**1.2**	**0.04**	0.009 J	**0.56**	**0.63**	**1.2**
Dibenz[a,h]anthracene	mg/kg	2	**0.064**	*0.026 U*	**0.14**	**0.11**	0.076 J	0.0095 J	**0.075**	**0.15**	0.0056 J	0.0012 J	**0.08**	**0.091**	**0.17**
Di-n-butylphthalate	mg/kg	82,000	0.28 J	0.027 JB	0.043 J	0.057 J	*18.5 U*	*0.71 U*	0.15 B	0.11 B	0.068 B	0.13 B	0.26 J	0.28 J	*0.76 U*
Di-n-ocytlphthalate	mg/kg	8200	*0.7 U*	*0.08 U*	*0.072 U*	*0.072 U*	*18.5 U*	*0.71 U*	*0.073 UJ*	*0.072 U*	*0.074 U*	*0.077 U*	*0.072 U*	*0.072 U*	*0.76 U*
Fluoranthene	mg/kg	30,000	**0.43**	0.0021 J	**1.9**	**2**	0.027 J	**0.1**	**1.1**	**2**	**0.057**	0.012 J	**1.3**	**1.5**	**3.2**
Fluorene	mg/kg	30,000	0.0088 J	*0.026 U*	**0.038**	**0.035**	*0.3 U*	*0.037 U*	**0.022**	**0.041**	0.0019 J	0.0011 J	**0.021**	**0.029**	**0.17**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.28**	*0.026 U*	**0.6**	**0.48**	0.23 J	**0.054**	**0.32**	**0.68**	**0.03**	0.0044 J	**0.34**	**0.41**	**0.99**
Naphthalene	mg/kg	9	**0.24**	*0.026 U*	**1.6**	**2**	*0.3 U*	**0.11**	**0.65**	**1.4**	0.0055 J	0.0059 J	**0.68**	**1.9**	**0.56**
N-Nitrosodiphenylamine	mg/kg	470	*0.7 U*	*0.08 U*	*0.072 U*	*0.072 U*	*18.5 U*	*0.71 U*	*0.073 U*	*0.072 U*	*0.074 U*	*0.077 U*	*0.072 U*	*0.072 U*	*0.76 U*
Phenanthrene	mg/kg		**0.24**	*0.026 U*	**1.5**	**1.5**	*0.3 U*	**0.058**	**0.63**	**1.2**	**0.034**	0.0082 J	**1.1**	**1.2**	**2.7**
Phenol	mg/kg	250,000	*0.7 U*	*0.08 U*	*0.072 U*	*0.072 U*	*18.5 U*	*0.71 U*	*0.073 R*	*0.072 R*	*0.074 U*	*0.077 U*	*0.072 R*	*0.072 R*	*0.76 U*
Pyrene	mg/kg	23,000	**0.4**	0.0018 J	**1.6**	**1.6**	**0.41**	**0.12**	**1**	**1.8**	**0.051**	**0.011**	**1.1**	**1.3**	**2.6**
PCBs															
Aroclor 1232	mg/kg	1	*0.18 U*	*0.1 U*	**0.098**	0.059 J	*0.93 U*	*0.18 U*	0.12 J	**0.1**	*0.019 U*	*0.097 U*	**0.1**	*N/A*	*0.19 U*
Aroclor 1248	mg/kg	1	*0.18 U*	*0.1 U*	0.048 J	*0.093 U*	*0.93 U*	*0.18 U*	*0.18 U*	*0.067 U*	*0.019 U*	*0.097 U*	*0.054 U*	*N/A*	*0.19 U*
Aroclor 1254	mg/kg	0.97	**0.55**	*0.1 U*	*0.091 U*	*0.093 U*	0.22 J	0.06 J	*0.18 U*	*0.091 U*	*0.019 U*	*0.097 U*	*0.09 U*	*N/A*	*0.19 U*
Aroclor 1260	mg/kg	1	*0.18 U*	*0.1 U*	*0.091 U*	*0.093 U*	0.27 J	*0.18 U*	*0.18 U*	*0.091 U*	*0.019 U*	*0.097 U*	*0.09 U*	*N/A*	*0.19 U*
PCBs (total)	mg/kg	1	0.55 J	*0.91 U*	*0.82 U*	*0.83 U*	0.49 J	0.06 J	*1.6 U*	*0.82 U*	*0.17 U*	*0.87 U*	*0.81 U*	*N/A*	*1.7 U*
TPH/Oil & Grease															
Diesel Range Organics	mg/kg	6,200	**169**	**56.4**	**155**	**266**	**2,790**	**191**	**115**	**183**	**85.1**	**48.3**	**137**	**136**	**560**
Gasoline Range Organics	mg/kg	6,200	*10 U*	*10.5 U*	*9.1 U*	*9.8 U*	*11.1 U*	*10.9 U*	*10.2 U*	*10.9 U*	*10.6 U*	*12 U*	*9.3 U*	*11.1 U*	*9.9 U*
Oil & Grease	mg/kg	6200	**2,280**	*484 U*	**283**	**227**	**34,900**	**778**	258 J-	260 J-	130 J-	392 J-	835 J-	303 J-	**1,110**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 1 - Sub-Parcel B9-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B9-013-SB-9* 10/8/2020	B9-013-SB-10* 10/8/2020	B9-014-SB-1* 5/27/2020	B9-014-SB-5* 5/27/2020	B9-014-SB-10* 10/8/2020	B9-017-SB-1* 5/27/2020	B9-017-SB-5* 5/27/2020	B9-018-SB-1* 5/27/2020	B9-018-SB-8* 5/27/2020
Volatile Organic Compounds											
1,4-Dioxane	mg/kg	24	*0.11 U*	**0.1**	*N/A*	*N/A*	*0.11 U*	*N/A*	*N/A*	*N/A*	*0.17 U*
2-Butanone (MEK)	mg/kg	190,000	0.0051 J	0.0048 J	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	*0.017 U*
Acetone	mg/kg	670,000	**0.017**	**0.011**	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	0.0063 J
Carbon disulfide	mg/kg	3,500	0.005 J	0.0029 J	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Chloroform	mg/kg	1	*0.0055 U*	*0.0051 U*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Cyclohexane	mg/kg	27,000	*0.011 U*	0.0021 J	*N/A*	*N/A*	*0.011 U*	*N/A*	*N/A*	*N/A*	0.004 J
Tetrachloroethene	mg/kg	100	*0.0055 U*	*0.0051 U*	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Toluene	mg/kg	47,000	*0.0055 U*	0.0011 J	*N/A*	*N/A*	*0.0054 U*	*N/A*	*N/A*	*N/A*	*0.0085 U*
Semi-Volatile Organic Compounds^											
1,1-Biphenyl	mg/kg	200	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	**0.14**	*0.072 U*	**0.097**	*0.77 U*
2-Methylnaphthalene	mg/kg	3,000	**0.01**	**0.011**	**0.092**	**0.13**	*0.0087 U*	**0.19**	*0.0072 U*	**0.25**	**0.083**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	*0.16 U*	*0.14 U*	*1.5 U*	*1.6 U*	*0.18 U*	*0.15 U*	*0.14 U*	*0.15 U*	*1.5 U*
Acenaphthene	mg/kg	45,000	0.0022 J	0.0062 J	**0.03**	**0.084**	*0.0087 U*	**0.029**	*0.0072 U*	**0.023**	*0.0078 U*
Acenaphthylene	mg/kg	45,000	0.0066 J	**0.0088**	**0.073**	**1.7**	0.0038 J	**0.11**	0.0012 J	**0.062**	0.0073 J
Acetophenone	mg/kg	120,000	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	0.019 J	*0.77 U*
Anthracene	mg/kg	230,000	**0.018**	**0.095**	**0.18**	**0.92**	0.00078 J	**0.15**	*0.0072 U*	**0.1**	0.0045 J
Benz[a]anthracene	mg/kg	21	**0.049**	**0.31**	**0.8**	**7.7**	*0.0087 U*	**0.49**	0.0021 J	**0.36**	**0.044**
Benzaldehyde	mg/kg	120,000	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	0.024 J	*0.77 U*
Benzo[a]pyrene	mg/kg	2	**0.053**	**0.32**	**0.64**	**5.7**	*0.0087 U*	**0.49**	0.0046 J	**0.37**	**0.071**
Benzo[b]fluoranthene	mg/kg	21	**0.067**	**0.32**	**1.3**	**10**	*0.0087 U*	**0.65**	**0.012**	**0.63**	**0.078**
Benzo[g,h,i]perylene	mg/kg		**0.042**	**0.15**	**0.45**	**5.5**	*0.0087 U*	**0.38**	0.0064 J	**0.31**	**0.053**
Benzo[k]fluoranthene	mg/kg	210	**0.031**	**0.14**	**0.34**	**3.2**	*0.0087 U*	**0.2**	0.0041 J	**0.21**	**0.025**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.031 J	0.036 J	0.52 J	0.69 J	0.042 J	0.027 J	*0.072 U*	0.021 J	*0.77 U*
Caprolactam	mg/kg	400,000	*0.19 U*	*0.18 U*	*1.8 U*	*2 U*	*0.22 U*	*0.19 U*	*0.18 U*	*0.18 U*	*1.9 U*
Carbazole	mg/kg		*0.078 U*	**0.081**	0.25 J	0.57 J	*0.088 U*	0.064 J	*0.072 U*	**0.081**	*0.77 U*
Chrysene	mg/kg	2100	**0.051**	**0.24**	**0.88**	**6.5**	*0.0087 U*	**0.46**	**0.025**	**0.4**	**0.041**
Dibenz[a,h]anthracene	mg/kg	2	**0.0089**	**0.047**	**0.13**	**1.3**	*0.0087 U*	**0.098**	0.0018 J	**0.09**	**0.014**
Di-n-butylphthalate	mg/kg	82,000	0.044 J	0.045 J	*0.74 U*	*0.81 U*	0.057 J	0.065 J	0.034 J	0.05 J	*0.77 U*
Di-n-ocytlphthalate	mg/kg	8200	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	*0.073 U*	0.22 J
Fluoranthene	mg/kg	30,000	**0.11**	**0.42**	**1.7**	**12**	*0.0087 U*	**1.1**	**0.015**	**0.87**	**0.03**
Fluorene	mg/kg	30,000	0.0027 J	**0.02**	**0.024**	**0.11**	*0.0087 U*	**0.024**	*0.0072 U*	**0.02**	*0.0078 U*
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.051**	**0.21**	**0.57**	**5.8**	*0.0087 U*	**0.45**	**0.0074**	**0.37**	**0.062**
Naphthalene	mg/kg	9	**0.046**	**0.05**	**0.2**	**0.45**	*0.0087 U*	**0.85**	*0.0072 U*	**0.46**	**0.054**
N-Nitrosodiphenylamine	mg/kg	470	*0.078 U*	*0.072 U*	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	*0.073 U*	*0.77 U*
Phenanthrene	mg/kg		**0.062**	**0.25**	**1**	**5.9**	*0.0087 U*	**0.82**	0.002 J	**0.57**	**0.057**
Phenol	mg/kg	250,000	*0.078 U*	0.025 J	*0.74 U*	*0.81 U*	*0.088 U*	*0.075 U*	*0.072 U*	*0.073 U*	*0.77 U*
Pyrene	mg/kg	23,000	**0.094**	**0.36**	**1.3**	**9**	0.0007 J	**0.95**	0.0052 J	**0.67**	**0.027**
PCBs											
Aroclor 1232	mg/kg	1	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	0.062 J	*N/A*	0.092 J	*N/A*
Aroclor 1248	mg/kg	1	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	*0.093 U*	*N/A*	0.049 J	*N/A*
Aroclor 1254	mg/kg	0.97	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	*0.093 U*	*N/A*	*0.092 U*	*N/A*
Aroclor 1260	mg/kg	1	*N/A*	*N/A*	*0.18 U*	*N/A*	*N/A*	*0.093 U*	*N/A*	*0.092 U*	*N/A*
PCBs (total)	mg/kg	1	*N/A*	*N/A*	*1.6 U*	*N/A*	*N/A*	*0.84 U*	*N/A*	*0.83 U*	*N/A*
TPH/Oil & Grease											
Diesel Range Organics	mg/kg	6,200	**22.6**	**27.5**	**2,410**	**3,210**	**16.9**	**99.4**	**13.7**	**191**	**32.4**
Gasoline Range Organics	mg/kg	6,200	*11.8 U*	*18.2 U*	*12.1 U*	*11.7 U*	*11.6 U*	*9 U*	*14.2 U*	*9.7 U*	*14.2 U*
Oil & Grease	mg/kg	6200	*233 U*	*440 U*	**3,420**	**10,700**	*531 U*	**438**	*111 U*	**414**	*118 U*

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B5-027-SB-1	B5-027-SB-5	B5-028-SB-1	B5-028-SB-4.5	B5-174-SB-1*	B9-003-SB-1	B9-003-SB-5	B9-004-SB-1	B9-004-SB-5	B9-005-SB-1	B9-005-SB-4	B9-006-SB-1	B9-006-SB-8	B9-007-SB-1*
			1/20/2016	1/20/2016	1/20/2016	1/20/2016	1/18/2016	5/29/2020	5/29/2020	5/29/2020	43980	5/29/2020	5/29/2020	5/29/2020	5/29/2020	6/1/2020
Metal																
Aluminum	mg/kg	1,100,000	**11,700**	**19,400**	**7,180**	**27,800**	**6,040**	**14,200**	**11,700**	**15,200**	**7,770**	**13,000**	**29,400**	**29,700**	**8,320**	**14,000**
Antimony	mg/kg	470	*3.2 UJ*	*3.2 UJ*	*2.8 UJ*	*3.3 UJ*	**2.6**	*3 UJ*	*2.9 UJ*	*2.7 UJ*	7.3 J	*2.6 UJ*	*2.5 UJ*	*2.5 UJ*	3.1 J	*2.5 U*
Arsenic	mg/kg	3	**9.4**	**8.9**	**5**	**10.2**	**13.2**	**8.5**	**5.8**	**10.4**	**17.7**	**15.8**	**3**	**4.5**	**16**	**3.1**
Barium	mg/kg	220,000	**165**	**375**	**99.6**	**677**	**117**	179 J	145 J	206 J	196 J	232 J	523 J	244 J	148 J	**407**
Beryllium	mg/kg	2,300	**1.5**	**1.8**	*0.93 U*	**2.4**	0.66 J	**1.1**	**0.97**	**1.4**	0.66 J	**1.7**	**3.3**	**5.6**	**0.9**	**1.2**
Cadmium	mg/kg	980	**2**	0.59 B	0.46 B	1.1 B	**2.1**	**2.3**	**1.6**	**2.7**	**4**	**5.1**	0.72 J	0.51 J	**2.2**	**11.2**
Chromium	mg/kg	120,000	200 J	61.1 J	1,710 J	97.1 J	**119**	**199**	**430**	**190**	**248**	**291**	**455**	**129**	**12.3**	**562**
Chromium VI	mg/kg	6.3	*1.1 UJ*	*1.1 UJ*	**6.7 J-**	0.18 J-	*1.1 U*	*1.2 R*	0.77 B	*1.1 R*	1.1 B	*1.1 R*	0.7 B	*1.1 R*	*1.1 R*	0.68 J
Cobalt	mg/kg	350	**9.8**	**10.3**	0.51 B	**9.9**	**19.7**	**12.6**	**8.8**	**13**	**34.1**	**15.4**	3.5 J	1.8 J	**16.9**	**5.2**
Copper	mg/kg	47,000	54.2 J	96.3 J	26.4 J	57.3 J	**191**	74.3 J	71.8 J	94.7 J	288 J	67.8 J	23.7 J	17.2 J	153 J	**68.4**
Iron	mg/kg	820,000	143,000 J	34,700 J	214,000 J	33,500 J	**167,000**	**87,400**	**59,300**	**76,000**	**192,000**	**75,000**	**41,100**	**27,200**	**162,000**	**73,100**
Lead	mg/kg	800	159 J	131 J	*2.3 UJ*	88.2 J	**219**	205 J	174 J	239 J	**1,790 J**	225 J	24.4 J	48.3 J	57.6 J	**187**
Manganese	mg/kg	26,000	**5,730**	**7,940**	**34,800**	**21,500**	**4,740**	**6,050**	**9,170**	**8,440**	**5,010**	**15,500**	**21,400**	**6,180**	**29,100**	**11,300**
Mercury	mg/kg	350	0.093 J-	*0.12 R*	*0.11 R*	0.026 J-	0.054 J	**0.33**	**0.19**	**0.32**	**0.2**	**0.5**	**0.47**	**0.14**	*0.11 U*	**46.9**
Nickel	mg/kg	22,000	**64.9**	**36.4**	**17.7**	**54.6**	**58.9**	**60.6**	**25.9**	**49.9**	**121**	**64.4**	**13.8**	**13.5**	**32.6**	**39.3**
Selenium	mg/kg	5,800	*4.2 U*	*4.2 U*	*3.7 U*	*4.4 U*	*3.1 U*	*4 UJ*	*3.8 UJ*	*3.6 UJ*	*3.6 UJ*	*3.5 UJ*	*3.4 UJ*	*3.4 UJ*	*3.4 UJ*	*3.4 U*
Silver	mg/kg	5,800	1.6 B	*3.2 U*	**4.8**	0.92 B	2 J	*3 U*	*2.9 U*	*2.7 U*	*2.7 U*	*2.6 U*	*2.5 U*	*2.5 U*	1.3 J	*2.5 U*
Thallium	mg/kg	12	*10.6 U*	*10.5 U*	*9.3 U*	*11 U*	*7.6 U*	7.2 J	**19.2 J**	3.4 J	**12.3 J**	**18.2 J**	**23.1 J**	*8.5 U*	4.4 J	6.4 J
Vanadium	mg/kg	5,800	140 J	123 J	619 J	280 J	**207**	406 J	1,700 J	189 J	1,040 J	1,440 J	1,930 J	80.5 J	35.2 J	**442**
Zinc	mg/kg	350,000	881 J	132 J	43 J	175 J	**682**	**816**	**619**	**546**	**1,300**	**2,750**	**252**	**109**	**517**	**553**
Other																
Cyanide	mg/kg	150	0.91 J+	1.5 J+	*0.56 U*	0.46 J+	**0.71**	1.6 J+	1 J+	13.3 J+	5.1 J+	1.4 J+	1.4 J+	2.3 J+	1.1 J+	**1.6**

Detections above reporting limit in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
N/A indicates that the parameter was not analyzed for this sample
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B9-007-SB-5* 6/1/2020	B9-007-SB-10* 6/1/2020	B9-008-SB-1* 5/27/2020	B9-008-SB-5* 5/27/2020	B9-009-SB-1* 10/12/2020	B9-009-SB-6* 10/12/2020	B9-010-SB-1.5 5/26/2020	B9-010-SB-5 5/26/2020	B9-011-SB-2 5/26/2020	B9-011-SB-5 5/26/2020	B9-012-SB-1 5/26/2020	B9-012-SB-5 43977	B9-013-SB-1* 5/27/2020
Metal															
Aluminum	mg/kg	1,100,000	**11,300**	*N/A*	**15,900**	**6,130**	**9,690**	**5,440**	**8,280**	**8,220**	**39,600**	**22,300**	**16,200**	**8,430**	**7,590**
Antimony	mg/kg	470	*3 U*	*N/A*	*2.7 U*	*2.6 U*	*2.7 U*	*2.6 U*	*3.1 UJ*	*3.1 UJ*	*3.2 UJ*	*3.4 UJ*	*3.1 UJ*	*3.3 UJ*	*2.7 U*
Arsenic	mg/kg	3	**4.5**	**5.5**	**3**	**8.6**	**4.3**	**2.7**	**4.3**	**4.3**	*2.7 U*	**5.7**	**2.6**	*2.7 U*	**12.6**
Barium	mg/kg	220,000	**88.7**	*N/A*	**79.5**	**57.3**	**199**	**63.6**	76.9 J	86.3 J	332 J	371 J	120 J	81.8 J	**140**
Beryllium	mg/kg	2,300	0.69 J	*N/A*	0.52 J	0.35 J	0.76 J	0.24 J	0.32 J	0.42 J	**7.4**	**1.3**	0.57 J	0.32 J	0.6 J
Cadmium	mg/kg	980	0.74 J	*N/A*	1.2 J	0.95 J	0.88 J	0.4 J	0.84 J	0.94 J	*1.6 U*	0.8 J	1.1 J	0.96 J	**3.6**
Chromium	mg/kg	120,000	**42.8**	*N/A*	**698**	**618**	**42.9**	**160**	627 J	789 J	137 J	61.9 J	770 J	996 J	**250**
Chromium VI	mg/kg	6.3	*1.2 U*	*N/A*	**2.7**	*1.1 U*	*1.2 U*	*1 U*	*1.1 R*	*1.1 R*	*1.1 R*	*1.2 R*	1.4 J-	*1.1 R*	0.87 J
Cobalt	mg/kg	350	**5.3**	*N/A*	**5.3**	**8.7**	3 J	1.9 J	**8.1**	**5.2**	0.69 J	**8.3**	**6.3**	5.2 J	**13.9**
Copper	mg/kg	47,000	**20.2**	*N/A*	**49.6**	**75.2**	**31.5**	**15.2**	**41.5**	**49.1**	3.6 J	**63.9**	**59.3**	**55.6**	**172**
Iron	mg/kg	820,000	**17,700**	*N/A*	**183,000**	**268,000**	**20,500**	**31,600**	**150,000**	**181,000**	**28,700**	**32,900**	**158,000**	**179,000**	**92,400**
Lead	mg/kg	800	**51**	*N/A*	**58.1**	**45.7**	**47.4**	**29.4**	60.7 J	50.2 J	7.8 J	196 J	73.7 J	52.4 J	**333**
Manganese	mg/kg	26,000	**1,010**	*N/A*	**24,700**	**15,600**	**1,740**	**3,380**	**14,600**	**14,100**	**5,300**	**1,540**	**19,000**	**17,400**	**5,340**
Mercury	mg/kg	350	0.019 J	*N/A*	0.11 J	**0.13**	0.077 J	0.074 J	0.097 J	0.1 J	*0.11 U*	*0.11 U*	**0.11**	0.1 J	**1.4**
Nickel	mg/kg	22,000	**14.5**	*N/A*	**51.5**	**62.1**	**14.9**	**9.2**	**43.4**	**38.6**	3.6 J	**26.4**	**46.5**	**40.3**	**168**
Selenium	mg/kg	5,800	*3.9 U*	*N/A*	*3.7 U*	*3.5 U*	*3.6 U*	*3.5 U*	*4.1 U*	*4.1 U*	*4.3 U*	*4.6 U*	*4.1 U*	*4.3 U*	*3.6 U*
Silver	mg/kg	5,800	*3 U*	*N/A*	*2.7 U*	*2.6 U*	*2.7 U*	*2.6 U*	*3.1 UJ*	*3.1 UJ*	*3.2 UJ*	*3.4 UJ*	*3.1 UJ*	*3.3 UJ*	*2.7 U*
Thallium	mg/kg	12	*9.9 U*	*N/A*	*9.1 U*	*8.7 U*	*8.9 U*	3 J	*10.2 U*	*10.3 U*	*10.7 U*	*11.5 U*	*10.2 U*	*10.9 U*	*9 U*
Vanadium	mg/kg	5,800	**81.9**	*N/A*	**555**	**426**	**57.1**	**140**	588 J	740 J	116 J	65.9 J	805 J	598 J	**484**
Zinc	mg/kg	350,000	**124**	*N/A*	**240**	**227**	**325**	**97.7**	214 J	202 J	12.2 J	294 J	416 J	226 J	**1,010**
Other															
Cyanide	mg/kg	150	0.2 J	*N/A*	**1.3**	**1**	**1.3**	0.48 J	**1.3**	**1.5**	0.57 J	**2.1**	**1.9**	**1.8**	**1.5**

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

Table 2 - Sub-Parcel B9-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B9-013-SB-9*	B9-013-SB-10*	B9-014-SB-1*	B9-014-SB-5*	B9-014-SB-10*	B9-017-SB-1*	B9-017-SB-5*	B9-017-SB-10*	B9-018-SB-1*	B9-018-SB-8*	B9-018-SB-10*
			10/8/2020	10/8/2020	5/27/2020	5/27/2020	10/8/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020	5/27/2020
Metal													
Aluminum	mg/kg	1,100,000	**23,700**	**21,100**	**9,730**	**11,400**	*N/A*	**9,800**	**44,300**	*N/A*	**9,540**	**9,700**	*N/A*
Antimony	mg/kg	470	*2.8 U*	*2.7 U*	*2.7 U*	**3**	*N/A*	*2.7 U*	*2.6 U*	*N/A*	*2.6 U*	*2.9 U*	*N/A*
Arsenic	mg/kg	3	**3.5**	**4.9**	**4.3**	**56**	**10.4**	*2.2 U*	**4**	**10.1**	**8.5**	**10.8**	**32.2**
Barium	mg/kg	220,000	**368**	**256**	**100**	**187**	*N/A*	**66.2**	**646**	*N/A*	**141**	**82.3**	*N/A*
Beryllium	mg/kg	2,300	**2.3**	**1.7**	0.79 J	**5.7**	*N/A*	0.37 J	**6.2**	*N/A*	**0.97**	0.6 J	*N/A*
Cadmium	mg/kg	980	0.44 J	0.6 J	0.57 J	**6.7**	*N/A*	0.94 J	0.33 J	*N/A*	**1.8**	1.1 J	*N/A*
Chromium	mg/kg	120,000	**67.4**	**54**	**97.3**	**120**	*N/A*	**633**	**13**	*N/A*	**673**	**13.8**	*N/A*
Chromium VI	mg/kg	6.3	*1.2 U*	*1.1 U*	0.71 J	*1.3 U*	*N/A*	*1.1 U*	*1.1 U*	*N/A*	*1.1 U*	*1.2 U*	*N/A*
Cobalt	mg/kg	350	**8.1**	**5.2**	3.5 J	**43.3**	*N/A*	**4.5**	2.7 J	*N/A*	**8.9**	**70.6**	*N/A*
Copper	mg/kg	47,000	**14.3**	**15.2**	**25.8**	**968**	*N/A*	**42.8**	**10.9**	*N/A*	**108**	**1,120**	*N/A*
Iron	mg/kg	820,000	**20,400**	**25,100**	**20,800**	**153,000**	*N/A*	**161,000**	**13,300**	*N/A*	**175,000**	**205,000**	*N/A*
Lead	mg/kg	800	**172**	**30.4**	**83.9**	**1,470**	**18.4**	**52.1**	**5.8**	*N/A*	**188**	**215**	*N/A*
Manganese	mg/kg	26,000	**4,070**	**3,090**	**1,730**	**1,950**	*N/A*	**13,100**	**7,960**	*N/A*	**17,200**	**18,400**	*N/A*
Mercury	mg/kg	350	*0.11 U*	*0.11 U*	**1.4**	**2.2**	*N/A*	0.083 J	*0.11 U*	*N/A*	**0.78**	*0.11 U*	*N/A*
Nickel	mg/kg	22,000	8.1 J	**13**	**21.3**	**521**	*N/A*	**34.3**	2.5 J	*N/A*	**86**	**20.9**	*N/A*
Selenium	mg/kg	5,800	*3.7 U*	*3.6 U*	*3.6 U*	*4 U*	*N/A*	*3.5 U*	2.7 J	*N/A*	*3.5 U*	*3.9 U*	*N/A*
Silver	mg/kg	5,800	*2.8 U*	*2.7 U*	*2.7 U*	*3 U*	*N/A*	*2.7 U*	*2.6 U*	*N/A*	*2.6 U*	0.69 J	*N/A*
Thallium	mg/kg	12	*9.3 U*	*9.1 U*	*9.1 U*	*10 U*	*N/A*	*8.9 U*	*8.7 U*	*N/A*	*8.7 U*	*9.8 U*	*N/A*
Vanadium	mg/kg	5,800	**158**	**245**	**82.9**	**411**	*N/A*	**447**	**50.3**	*N/A*	**1,030**	**49.1**	*N/A*
Zinc	mg/kg	350,000	**125**	**59.6**	**161**	**6,070**	*N/A*	**362**	**10.4**	*N/A*	**430**	**759**	*N/A*
Other													
Cyanide	mg/kg	150	0.75 J	**1.1**	0.29 J	1.1 J	*N/A*	1.1 J	0.43 J	*N/A*	**3.3**	0.73 J	*N/A*

Detections above reporting limit in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*indicates non-validated data
N/A indicates that the parameter was not analyzed for this sample
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 3 - Sub-Parcel B9-1
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	SW-037-MWS	SW-038-MWS	SW-039-MWS	SW-073-MWS	SW16-PZM003
			2/2/2016	2/2/2016	2/2/2016	2/2/2016	12/9/2015
Volatile Organic Compounds							
1,1-Dichloroethane	µg/L	2.7	1 U	1 U	1 U	1 U	0.38 J
Acetone	µg/L	14,000	10 UJ	10 UJ	10 UJ	6.8 J	10 R
Chloroform	µg/L	0.22	**3**	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	700	0.58 J	1 U	1 U	0.91 J	1 U
Toluene	µg/L	1,000	1 U	1 U	1 U	0.71 J	1 U
Trichloroethene	µg/L	5	0.6 J	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	1.5 J	3 U	3 U	**4.1**	3 U
Semi-Volatile Organic Compounds^							
1,4-Dioxane	µg/L	0.46	0.063 J	0.041 J	0.1 U	0.1 U	**0.36**
2-Methylnaphthalene	µg/L	36	0.1 U	0.05 J	**0.21**	**0.59**	0.1 U
Acenaphthene	µg/L	530	0.1 U	0.037 J	0.03 J	**0.37**	0.1 U
Acenaphthylene	µg/L	530	0.1 U	0.1 U	0.1 U	0.023 J	0.1 U
Anthracene	µg/L	1,800	0.018 J	0.09 J	0.046 J	**0.28**	0.034 J
Benz[a]anthracene	µg/L	0.03	0.016 J	0.1 U	0.1 UJ	0.043 J	0.1 U
Carbazole	µg/L		1 U	1 U	1 U	0.23 J	1 U
Chrysene	µg/L	25	0.1 U	0.1 U	0.1 UJ	0.03 J	0.1 U
Fluoranthene	µg/L	800	0.029 J	0.015 J	0.026 J	**0.42**	0.052 J
Fluorene	µg/L	290	0.1 U	0.02 J	0.026 J	**0.22**	0.061 J
Naphthalene	µg/L	0.12	0.055 B	0.099 B	**0.11**	**0.42**	0.027 B
Pentachlorophenol	µg/L	1	2.6 U	2.5 U	**1 J**	2.5 U	2.5 U
Phenanthrene	µg/L		0.027 J	0.033 J	**0.11**	**0.63**	**0.21**
Phenol	µg/L	5,800	1 U	1 U	1 U	0.27 J	1 U
Pyrene	µg/L	120	0.025 J	0.1 U	0.035 J	**0.42**	0.038 J
TPH							
Diesel Range Organics	µg/L	47	**345 J**	**489 J**	**598 J**	**929 J**	**225 J**

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.

UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

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

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

R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 4 - Sub-Parcel B9-1
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	SW-037-MWS	SW-038-MWS	SW-039-MWS	SW-073-MWS	SW16-PZM003
			2/2/2016	2/2/2016	2/2/2016	2/2/2016	12/9/2015
Metal							
Aluminum	µg/L	20,000	**770**	**250**	**125**	**125**	**4,370**
Barium	µg/L	2,000	**71.3**	**64.5**	**51.5**	**149**	**13.1**
Beryllium	µg/L	4	*1 U*	*1 U*	*1 U*	*1 U*	**5.1**
Cadmium	µg/L	5	*3 U*	*3 U*	*3 U*	*3 U*	1.8 J
Chromium	µg/L	100	0.99 J	**17.3**	0.81 J	**8.8**	1.7 J
Chromium VI	µg/L	0.035	*10 U*	**5 J**	*10 U*	*10 U*	*10 U*
Cobalt	µg/L	6	*5 U*	*5 U*	*5 U*	*5 U*	**158**
Copper	µg/L	1,300	*5 U*	*5 U*	*5 U*	*5 U*	**22.6**
Iron	µg/L	14,000	29.5 B	*70 U*	13 B	*70 U*	**8,680**
Manganese	µg/L	430	**11.3**	*5 U*	1.6 B	*5 U*	**2,360**
Mercury	µg/L	2	*0.2 U*	*0.2 U*	*0.2 U*	*0.2 U*	0.06 B
Nickel	µg/L	390	*10 U*	0.93 J	*10 U*	0.75 B	220 J
Selenium	µg/L	50	*8 U*	4 J	5.4 J	6.4 J	*8 U*
Thallium	µg/L	2	*10 U*	*10 U*	**4.1 J**	*10 U*	*10 U*
Vanadium	µg/L	86	**61.3**	**111**	2.8 B	**17.7**	1.6 B
Zinc	µg/L	6,000	*10 U*	*10 U*	*10 U*	*10 U*	**403**
Aluminum, Dissolved	µg/L	20,000	**699**	**249**	**120**	**125**	**4,260**
Barium, Dissolved	µg/L	2,000	**67.3**	**64.3**	**51.4**	**150**	**13**
Beryllium, Dissolved	µg/L	4	*1 U*	*1 U*	*1 U*	*1 U*	**5.2**
Cadmium, Dissolved	µg/L	5	*3 U*	*3 U*	*3 U*	*3 U*	1.6 J
Chromium, Dissolved	µg/L	100	1 J	**17.4**	*5 U*	**9.7**	1.8 B
Cobalt, Dissolved	µg/L	6	*5 U*	*5 U*	*5 U*	*5 U*	**153**
Copper, Dissolved	µg/L	1,300	*5 U*	*5 U*	*5 U*	*5 U*	**18.8**
Iron, Dissolved	µg/L	14,000	13.9 B	*70 U*	*70 U*	12.1 B	**8,840**
Manganese, Dissolved	µg/L	430	1.4 B	*5 U*	*5 U*	*5 U*	**2,280 J**
Nickel, Dissolved	µg/L	390	*10 U*	0.99 B	1 B	0.7 B	212 J
Selenium, Dissolved	µg/L	50	*8 U*	*8 U*	3.7 J	7.1 J	*8 U*
Vanadium, Dissolved	µg/L	86	**61.5**	**108**	2.6 B	**17.6**	1.4 B
Zinc, Dissolved	µg/L	6,000	0.67 B	1.3 B	1.2 B	1.7 B	388 J
Other							
Cyanide	µg/L	200	4.6 J	*10 U*	*10 U*	*10 U*	*10 U*

Detections above reporting limit in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.
B: This analyte was not detected substantially above the level of the associated method or field blank.

Table 5 - Sub-Parcel B9-1
Cumulative Vapor Intrusion Comparison

				SW-037-MWS		SW-038-MWS		SW-039-MWS		SW-073-MWS		SW16-PZM003	
				2/2/2016		2/2/2016		2/2/2016		2/2/2016		12/9/2015	
Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk													
1,4-Dioxane	SVOC		130,000	0.063 J	4.85E-12	0.041 J	3.2E-12	0.1 U	0	0.1 U	0	0.36	2.8E-11
Naphthalene	SVOC		200	0.055 B	2.75E-09	0.099 B	5.0E-09	0.11	5.5E-09	0.42	2.1E-08	0.027 B	1.4E-09
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	0.38 J	1.2E-08
Chloroform	VOC		36	3	8.33E-07	1 U	0	1 U	0	1 U	0	1 U	0
Ethylbenzene	VOC		150	0.58 J	3.9E-08	1 U	0	1 U	0	0.91 J	6.1E-08	1 U	0
Cumulative Vapor Intrusion Cancer Risk					9E-07		5E-09		6E-09		8E-08		1E-08
Non-Cancer Risk													
Trichloroethene	VOC	Immune	22	0.6 J	2.7E-02	1 U	0	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					3E-02		0		0		0		0
Cyanide	Other	Reproductive	840	4.6 J	1.3	10 U	0	10 U	0	10 U	0	10 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					1		0		0		0		0

Yellow highlighted values indicate exceedances of the cumulative vapor intrusion criteria: TCR>1E-05 or THI>1

Conc. = Concentration
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
B: This analyte was not detected substantially above the level of the associated method or field blank.
J: The positive result reported for this analyte is a quantitative estimate.

Table 6 - Sub-Parcel B9-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	B9-010-SB-1.5	0.19		0.02	0.12	35	28.57	410	20	no
1,4-Dioxane	123-91-1	B9-013-SB-10	0.10		0.10	0.10	6	16.67	24	450	no
2-Butanone (MEK)	78-93-3	B9-013-SB-9	0.0051	J	0.0048	0.005	13	15.38		19,000	no
2-Methylnaphthalene	91-57-6	B9-008-SB-1	0.31		0.001	0.12	35	88.57		300	no
Acenaphthene	83-32-9	B9-014-SB-5	0.084		0.002	0.03	35	77.14		4,500	no
Acenaphthylene	208-96-8	B9-014-SB-5	1.70		0.001	0.18	36	91.67			no
Acetone	67-64-1	B5-028-SB-4.5	0.075		0.006	0.02	13	38.46		67,000	no
Acetophenone	98-86-2	B9-004-SB-1	0.061	J	0.02	0.03	35	25.71		12,000	no
Aluminum	7429-90-5	B9-017-SB-5	44,300		5,440	15,111	34	100.00		110,000	no
Anthracene	120-12-7	B9-014-SB-5	1.10		0.0008	0.18	36	91.67		23,000	no
Antimony	7440-36-0	B9-004-SB-5	7.30	J	2.6000	4.00	34	11.76		47	no
Aroclor 1232	11141-16-5	B9-010-SB-1.5	0.12	J	0.06	0.09	22	31.82	0.72		no
Aroclor 1248	12672-29-6	B9-018-SB-1	0.05	J	0.05	0.05	22	9.09	0.95		no
Aroclor 1254	11097-69-1	B9-007-SB-1	0.55		0.06	0.26	22	18.18	0.97	2	no
Aroclor 1260	11096-82-5	B5-174-SB-1	2.10		0.18	0.85	22	13.64	0.99		YES (C)
Arsenic	7440-38-2	B9-014-SB-5	56.0		2.6	9.55	38	92.11	3	48	YES (C/NC)
Barium	7440-39-3	B5-028-SB-4.5	677		57.3	213	34	100.00		22,000	no
Benz[a]anthracene	56-55-3	B9-014-SB-5	7.70		0.002	0.81	41	95.12	21		no
Benzaldehyde	100-52-7	B9-004-SB-1	0.10	J	0.02	0.04	33	27.27	820	12,000	no
Benzo[a]pyrene	50-32-8	B9-014-SB-5	5.70		0.002	0.70	39	94.87	2.1	22	YES (C)
Benzo[b]fluoranthene	205-99-2	B9-014-SB-5	10.0		0.008	1.09	44	93.18	21		no
Benzo[g,h,i]perylene	191-24-2	B9-014-SB-5	5.50		0.002	0.55	37	91.89			no
Benzo[k]fluoranthene	207-08-9	B9-014-SB-5	3.90		0.004	0.47	36	91.67	210		no
Beryllium	7440-41-7	B9-011-SB-2	7.40		0.24	1.68	34	97.06	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	B9-014-SB-5	0.69	J	0.02	0.16	35	28.57	160	1600	no
Cadmium	7440-43-9	B9-007-SB-1	11.2		0.33	1.98	34	88.24	9300	98	no
Caprolactam	105-60-2	B9-004-SB-5	0.13	J	0.022	0.05	35	25.71		40,000	no
Caprolactam	105-60-2	B9-004-SB-1	0.13	J	0.022	0.05	35	25.71		40,000	no
Carbazole	86-74-8	B9-014-SB-5	0.57	J	0.021	0.14	35	42.86			no
Carbon disulfide	75-15-0	B9-013-SB-9	0.005	J	0.002	0.003	13	30.77		350	no
Chloroform	67-66-3	B5-027-SB-5	0.016		0.02	0.02	13	7.69	1	100	no

Table 6 - Sub-Parcel B9-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Chromium	7440-47-3	B5-028-SB-1	1,710	J	12.3	340	34	100.00		180,000	no
Chromium VI	18540-29-9	B5-028-SB-1	6.7	J-	0.18	1.89	24	29.17	6	350	YES (C)
Chrysene	218-01-9	B9-014-SB-5	6.5		0.004	0.76	40	92.50	2100		no
Cobalt	7440-48-4	B9-018-SB-8	70.6		0.69	11.5	34	97.06	1,900	35	YES (NC)
Copper	7440-50-8	B9-018-SB-8	1,120		3.60	124	34	100.00		4,700	no
Cyanide	57-12-5	B9-004-SB-1	13.3	J+	0.20	1.70	34	97.06		120	no
Cyclohexane	110-82-7	B5-028-SB-4.5	0.007	J	0.002	0.004	13	23.08		2,700	no
Dibenz[a,h]anthracene	53-70-3	B9-014-SB-5	1.3		0.001	0.15	36	91.67	2.1		no
Di-n-butylphthalate	84-74-2	B9-007-SB-1	0.28	J	0.03	0.11	35	31.43		8,200	no
Di-n-butylphthalate	84-74-2	B9-012-SB-5	0.28	J	0.03	0.11	35	31.43		8,200	no
Di-n-ocytlphthalate	117-84-0	B9-018-SB-8	0.22	J	0.22	0.22	35	2.86		820	no
Fluoranthene	206-44-0	B9-014-SB-5	12.0		0.002	1.28	46	97.83		3,000	no
Fluorene	86-73-7	B9-013-SB-1	0.17		0.001	0.03	35	77.14		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B9-014-SB-5	5.80		0.001	0.60	37	94.59	21		no
Iron	7439-89-6	B9-008-SB-5	268,000		13,300	102,991	34	100.00		82,000	YES (NC)
Lead^	7439-92-1	B9-004-SB-5	1,790	J	5.80	199.66	35	97.14		800	YES (NC)
Manganese	7439-96-5	B5-028-SB-1	34,800		1,010	11,120	34	100.00		2,600	YES (NC)
Mercury	7439-97-6	B9-007-SB-1	46.9		0.02	2.24	32	78.13		35	YES (NC)
Naphthalene	91-20-3	B9-008-SB-5	2.00		0.006	0.56	40	87.50	8.6	59	no
Nickel	7440-02-0	B9-014-SB-5	521		2.50	55.3	34	100.00	64,000	2200	no
N-Nitrosodiphenylamine	86-30-6	B9-004-SB-1	0.02	J	0.02	0.02	35	2.86	470		no
PCBs (total)*	1336-36-3	B5-174-SB-1	2.10	J	0.06	0.71	22	22.73	0.94		YES (C)
Phenanthrene	85-01-8	B9-014-SB-5	5.90		0.002	0.88	44	93.18			no
Phenol	108-95-2	B9-013-SB-10	0.03	J	0.019	0.02	30	10.00		25,000	no
Pyrene	129-00-0	B9-014-SB-5	9.00		0.0007	1.05	45	100.00		2300	no
Selenium	7782-49-2	B9-017-SB-5	2.70	J	2.70	2.70	34	2.94		580	no
Silver	7440-22-4	B5-028-SB-1	4.80		0.69	2.20	34	11.76		580	no
Tetrachloroethene	127-18-4	B5-028-SB-4.5	0.03		0.024	0.03	13	15.38	100	39	no
Thallium	7440-28-0	B9-005-SB-4	23.1	J	3.00	10.8	34	26.47		1.2	YES (NC)
Toluene	108-88-3	B9-013-SB-10	0.001	J	0.001	0.001	13	7.69		4,700	no
Vanadium	7440-62-2	B9-005-SB-4	1,930	J	35.2	464	34	100.00		580	YES (NC)
Zinc	7440-66-6	B9-014-SB-5	6,070		10.4	610	34	100.00		35,000	no

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

COPC = Constituent of Potential Concern
TR = Target Risk
HQ = Hazard Quotient
C = Compound was identified as a cancer COPC
NC = Compound was identified as a non-cancer COPC

*PCBs (total) include the sum of all detected aroclor mixtures, including those without RSLs (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^Lead is assessed separately through the ALM and IEUBK models.

Table 7 - Sub-Parcel B9-1
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
EU1 (2.35 ac.)	Surface	333	206
	Sub-Surface	172	71
	Pooled	333	139
EU2 (2.33 ac.)	Surface	188	84
	Sub-Surface	1,470	213
	Pooled	1,470	152
Site-Wide EU-EXP (6.61 ac.)	Surface	333	129
	Sub-Surface	1,790	256
	Pooled	1,790	194

Table 8 - Sub-Parcel B9-1
Soil Exposure Point Concentrations

	EU1 (2.35 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	**Maximum Value**	**15.8**	**Maximum Value**	**16.0**	**Maximum Value**	**16.0**
Chromium VI	**Maximum Value**	**0.87**	NA	NA	**Maximum Value**	**0.87**
Cobalt	**Maximum Value**	**19.7**	**Maximum Value**	**16.9**	**Maximum Value**	**19.7**
Iron	**Maximum Value**	**167,000**	**Maximum Value**	**162,000**	**Maximum Value**	**167,000**
Manganese	**Maximum Value**	**15,500**	**Maximum Value**	**29,100**	**Maximum Value**	**29,100**
Mercury	**Maximum Value**	**1.40**	**Maximum Value**	**0.47**	**Maximum Value**	**1.40**
Thallium	**Maximum Value**	**18.2**	**Maximum Value**	**23.1**	**Maximum Value**	**23.1**
Vanadium	**Maximum Value**	**1,440**	**Maximum Value**	**1,930**	**Maximum Value**	**1,930**
Total PCBs	**Maximum Value**	**2.10**	NA	NA	**Maximum Value**	**2.10**
Benzo[a]pyrene	**Maximum Value**	**1.40**	**Maximum Value**	**0.32**	**Maximum Value**	**1.40**

Bold indicates maximum value used as the EPC
NA indicates no detections

Table 8 - Sub-Parcel B9-1
Soil Exposure Point Concentrations

	EU2 (2.33 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	**Maximum Value**	**8.50**	KM H-UCL	21.4	KM H-UCL	11.7
Chromium VI	**Maximum Value**	**2.70**	NA	NA	95% KM (t) UCL	1.22
Cobalt	**Maximum Value**	**8.90**	**Maximum Value**	**70.6**	95% Chebyshev (Mean, Sd) UCL	29.0
Iron	**Maximum Value**	**183,000**	**Maximum Value**	**268,000**	95% Chebyshev (Mean, Sd) UCL	198,595
Manganese	**Maximum Value**	**24,700**	**Maximum Value**	**18,400**	95% Student's-t UCL	13,658
Mercury	**Maximum Value**	**46.9**	**Maximum Value**	**2.20**	975% KM (Chebyshev) UCL	19.2
Thallium	**Maximum Value**	**6.40**	**Maximum Value**	**3.00**	**Maximum Value**	**6.40**
Vanadium	**Maximum Value**	**1,030**	**Maximum Value**	**740**	95% Chebyshev (Mean, Sd) UCL	686
Total PCBs	**Maximum Value**	**0.55**	**Maximum Value**	**0.06**	**Maximum Value**	**0.55**
Benzo[a]pyrene	**Maximum Value**	**0.76**	95% KM (t) UCL	1.18	Gamma Adjusted KM-UCL	1.05

Bold indicates maximum value used as the EPC
NA indicates no detections

Table 8 - Sub-Parcel B9-1
Soil Exposure Point Concentrations

	EU1-EXP (6.61 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% KM (t) UCL	8.54	KM H-UCL	15.2	KM H-UCL	11.1
Chromium VI	95% KM (t) UCL	2.57	**Maximum Value**	**0.18**	95% KM (t) UCL	1.47
Cobalt	95% KM (t) UCL	10.2	95% H-UCL	26.5	KM H-UCL	17.6
Iron	95% Student's-t UCL	135,975	95% Chebyshev (Mean, Sd) UCL	187,148	95% Chebyshev (Mean, Sd) UCL	158,605
Manganese	95% Student's-t UCL	15,236	95% Student's-t UCL	14,362	95% Adjusted Gamma UCL	14,474
Mercury	99% KM (Chebyshev) UCL	32.3	95% KM (Chebyshev) UCL	0.84	95% KM (Chebyshev) UCL	8.15
Thallium	95% KM (t) UCL	8.70	95% KM (t) UCL	9.14	95% KM (t) UCL	8.26
Vanadium	95% Student's-t UCL	612	95% Adjusted Gamma UCL	861	95% Adjusted Gamma UCL	641
Total PCBs	Gamma Adjusted KM-UCL	0.75	**Maximum Value**	**0.06**	95% KM (t) UCL	0.54
Benzo[a]pyrene	95% Student's-t UCL	0.69	Gamma Adjusted KM-UCL	1.10	Gamma Adjusted KM-UCL	0.72

Bold indicates maximum value used as the EPC

Table 9 - Sub-Parcel B9-1
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (2.35 ac.)					EU2 (2.33 ac.)				
			Composite Worker					Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	**15.8**	3.00	480	5.3E-06	0.03	**8.50**	3.00	480	2.8E-06	0.02
Chromium VI	**Respiratory**	**0.87**	6.30	3,500	1.4E-07	0.0002	**2.70**	6.30	3,500	4.3E-07	0.0008
Cobalt	**Dermal**	**19.7**	1,900	350	1.0E-08	0.06	**8.90**	1,900	350	4.7E-09	0.03
Iron	**Gastrointestinal**	**167,000**		820,000		0.2	**183,000**		820,000		0.2
Manganese	**Nervous**	**15,500**		26,000		0.6	**24,700**		26,000		1
Mercury	**Nervous**	**1.40**		350		0.004	**46.9**		350		0.1
Thallium	**Dermal**	**18.2**		12		2	**6.40**		12		0.5
Vanadium	**Dermal**	**1,440**		5,800		0.2	**1,030**		5,800		0.2
Total PCBs		**2.10**	0.94		2.2E-06		**0.55**	0.94		5.9E-07	
Benzo[a]pyrene	**Developmental**	**1.40**	2.1	220	6.7E-07	0.006	**0.76**	2.1	220	3.6E-07	0.003
					8E-06	↓				**4E-06**	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
Bold indicates maximum value
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	2
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Total HI	Cardiovascular	0
	Dermal	1
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 10 - Sub-Parcel B9-1
Subsurface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (2.35 ac.)					EU2 (2.33 ac.)				
			Composite Worker					Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	**16.0**	3.00	480	5.3E-06	0.03	21.4	3.00	480	7.1E-06	0.04
Chromium VI	**Respiratory**	NA	6.30	3,500			NA	6.30	3,500		
Cobalt	**Dermal**	**16.9**	1,900	350	8.9E-09	0.05	**70.6**	1,900	350	3.7E-08	0.2
Iron	**Gastrointestinal**	**162,000**		820,000		0.2	**268,000**		820,000		0.3
Manganese	**Nervous**	**29,100**		26,000		1	**18,400**		26,000		0.7
Mercury	**Nervous**	**0.47**		350		0.001	**2.20**		350		0.006
Thallium	**Dermal**	**23.1**		12		2	**3.00**		12		0.3
Vanadium	**Dermal**	**1,930**		5,800		0.3	**740**		5,800		0.1
Total PCBs		NA	0.94				**0.06**	0.94		6.4E-08	
Benzo[a]pyrene	**Developmental**	**0.32**	2.1	220	1.5E-07	0.001	1.18	2.1	220	5.6E-07	0.005
					5E-06	↓				**8E-06**	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
Bold indicates maximum value
NA indicates no detections
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	2
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Total HI	Cardiovascular	0
	Dermal	1
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 11 - Sub-Parcel B9-1
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (2.35 ac.)					EU2 (2.33 ac.)				
			Composite Worker					Composite Worker			
			RSLs (mg/kg)		Risk Ratios			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	**16.0**	3.00	480	5.3E-06	0.03	11.7	3.00	480	3.9E-06	0.02
Chromium VI	**Respiratory**	**0.87**	6.30	3,500	1.4E-07	0.0002	1.22	6.30	3,500	1.9E-07	0.0003
Cobalt	**Dermal**	**19.7**	1,900	350	1.0E-08	0.06	29.0	1,900	350	1.5E-08	0.08
Iron	**Gastrointestinal**	**167,000**		820,000		0.2	198,595		820,000		0.2
Manganese	**Nervous**	**29,100**		26,000		1	13,658		26,000		0.5
Mercury	**Nervous**	**1.40**		350		0.004	19.2		350		0.05
Thallium	**Dermal**	**23.1**		12		2	**6.40**		12		0.5
Vanadium	**Dermal**	**1,930**		5,800		0.3	686		5,800		0.1
Total PCBs		**2.10**	0.94		2.2E-06		**0.55**	0.94		5.9E-07	
Benzo[a]pyrene	**Developmental**	**1.40**	2.1	220	6.7E-07	0.006	1.05	2.1	220	5.0E-07	0.005
					8E-06	↓				**5E-06**	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
Bold indicates maximum value
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	2
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Total HI	Cardiovascular	0
	Dermal	1
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 12 - Sub-Parcel B9-1
Surface Soils
Construction Worker Risk Ratios

85 Day		EU1-EXP (6.61 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	8.54	44.4	280	1.9E-07	0.03
Chromium VI	Respiratory	2.57	60.7	2,345	4.2E-08	0.001
Cobalt	Dermal	10.2	6,739	2,581	1.5E-09	0.004
Iron	Gastrointestinal	135,975		707,475		0.2
Manganese	Nervous	15,236		10,738		1
Mercury	Nervous	32.3		1,449		0.02
Thallium	Dermal	8.70		40.4		0.2
Vanadium	Dermal	612		4,578		0.1
Total PCBs		0.75	14.4		5.2E-08	
Benzo[a]pyrene	Developmental	0.69	50.5	21.3	1.4E-08	0.03
					2E-07	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 13 - Sub-Parcel B9-1
Subsurface Soils
Construction Worker Risk Ratios

85 Day		EU1-EXP (6.61 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	15.2	44.4	280	3.4E-07	0.05
Chromium VI	**Respiratory**	**0.18**	60.7	2,345	3.0E-09	0.00008
Cobalt	**Dermal**	26.5	6,739	2,581	3.9E-09	0.01
Iron	**Gastrointestinal**	187,148		707,475		0.3
Manganese	**Nervous**	14,362		10,738		1
Mercury	**Nervous**	0.84		1,449		0.0006
Thallium	**Dermal**	9.14		40.4		0.2
Vanadium	**Dermal**	861		4,578		0.2
Total PCBs		**0.06**	14.4		4.2E-09	
Benzo[a]pyrene	**Developmental**	1.10	50.5	21.3	2.2E-08	0.05
					3E-07	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Bold indicates maximum value
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 14 - Sub-Parcel B9-1
Pooled Soils
Construction Worker Risk Ratios

85 Day		EU1-EXP (6.61 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	11.1	44.4	280	2.5E-07	0.04
Chromium VI	Respiratory	1.47	60.7	2,345	2.4E-08	0.0006
Cobalt	Dermal	17.6	6,739	2,581	2.6E-09	0.007
Iron	Gastrointestinal	158,605		707,475		0.2
Manganese	Nervous	14,474		10,738		1
Mercury	Nervous	8.15		1,449		0.006
Thallium	Dermal	8.26		40.4		0.2
Vanadium	Dermal	641		4,578		0.1
Total PCBs		0.54	14.4		3.8E-08	
Benzo[a]pyrene	Developmental	0.72	50.5	21.3	1.4E-08	0.03
					3E-07	↓

SSLs calculated using equations in 2002 EPA Supplemental Guidance
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness
EPC: Exposure Point Concentration
HQ: Hazard Quotient
HI: Hazard Index

Total HI	Cardiovascular	0
	Dermal	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

APPENDIX A

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

June 3, 2022

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review
Tradepoint Atlantic Parcel B9

Dear Ms. Brown:

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (effective September 12, 2014); and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (effective November 25, 2014).

On September 11, 2014, Tradepoint Atlantic submitted an application to the Maryland Department of the Environment's (Department) Voluntary Cleanup Program (VCP).

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel B9 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic, or another entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this work plan are implemented and a No Further Action letter is issued by the Department pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the work plan, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this work plan.

Engineering and institutional controls approved as part of this Site Response and Development Work Plan shall be described in documentation submitted to the Department demonstrating that the exposure pathways on the sub-parcel are addressed in a manner that protects public health and the environment. This information shall support Tradepoint Atlantic's request for the issuance of a COC for the larger parcel.

Please do not hesitate to contact Tradepoint Atlantic for further information.

Thank you,

Peter Haid

Vice President Environmental
TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219
T 443.649.5055 C 732.841.7935
phaid@tradepointatlantic.com

APPENDIX B

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B9-1

Description	Variable	Value
Days worked per week	DW	5
Exposure duration (yr)	ED	1
Hours worked per day	ET	8
A/constant (unitless) - particulate emission factor	Aconst	12.9351
B/constant (unitless) - particulate emission factor	Bconst	5.7383
C/constant (unitless) - particulate emission factor	Cconst	71.7711
Dispersion correction factor (unitless)	FD	0.185
Days per year with at least .01" precipitation	P	130
Target hazard quotient (unitless)	THQ	1
Body weight (kg)	BW	80
Averaging time - noncancer (yr)	ATnc	1
Soil ingestion rate (mg/d)	IR	330
Skin-soil adherence factor (mg/cm2)	AF	0.3
Skin surface exposed (cm2)	SA	3300
Event frequency (ev/day)	EV	1
Target cancer risk (unitless)	TR	01E-06
Averaging time - cancer (yr)	ATc	70
A/constant (unitless) - volatilization	Aconstv	2.4538
B/constant (unitless) - volatilization	Bconstv	17.566
C/constant (unitless) - volatilization	Cconstv	189.0426
Dry soil bulk density (kg/L)	Pb	1.5
Average source depth (m)	ds	3
Soil particle density (g/cm3)	Ps	2.65
Total soil porosity	Lpore/Lsoil	0.43
Air-filled soil porosity	Lair/Lsoil	0.28

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B9-1

Area of site (ac)	Ac	6.61	→ EU1-EXP
Overall duration of construction (wk/yr)	EW	17	
Exposure frequency (day/yr)	EF	**85**	
Cars per day	Ca	5	
Tons per car	CaT	2	
Trucks per day	Tru	5	
Tons per truck	TrT	20	
Mean vehicle weight (tons)	w	**11**	
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**15.9**	
Overall duration of construction (hr)	tc	**2,856**	
Overall duration of traffic (s)	Tt	**2,448,000**	
Surface area (m2)	AR	**26,750**	
Length (m)	LR	**164**	
Distance traveled (km)	ΣVKT	**139**	
Particulate emission factor (m3/kg)	PEFsc	**67,262,236**	
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**9.00**	
Total time of construction (s)	Tcv	**2,448,000**	

Input
Calculation

Chemical	RfD & RfC Sources	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				44.6	14,106	44.4	287	12,997	280
Chromium(VI)	A/C/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	0.01	1			-	1.90E+01				66.2	722	60.7	2,366	259,949	2,345
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	0.01	1			-	4.50E+01					6,739	6,739	3,032	17,330	2,581
Iron	P	-	-	7.00E-01	-	1	7.00E-01	0.01	1			-	2.50E+01							707,475		707,475
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	0.01	1			-	6.50E+01							14,277	43,325	10,738
Mercuric Chloride (and other salts)	I	-	-	2.00E-03	3.00E-04	0.07	1.40E-04	0.01	1			-								1,457	259,949	1,449
Thallium (Soluble Salts)	P	-	-	4.00E-05	-	1	4.00E-05	0.01	1			-	7.10E+01							40.4		40.4
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							4,833	86,650	4,578
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	2.08E+4	25.7	32.9	14.4			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	9.25E+5	52.4	1,371	50.5	225	23.5	21.3

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php

APPENDIX C

Sparrows Point Development - PPE Standard Operational Procedure, Revision 3

Planning, Tracking/Supervision, Enforcement, and Documentation

Planning

- Response and Development Work Plan (RDWP) for each individual redevelopment sub-parcel identifies and documents site conditions.
- RDWP is reviewed and approved by regulators.
- Contractor HASP to address site-specific conditions and PPE requirements:
    - Contractor H&S professional to sign-off on PPE requirements for site workers;
    - Job Safety Analysis (JSA) to be performed for ground intrusive work.
- Project Environmental Professional (EP) assigned to each construction project – monitors project during environmentally sensitive project phases and is available to construction contractor on an as needed basis. EP responsibilities include the following:
    - Dust monitoring
    - Routine ground intrusive breathing space air monitoring
    - Soil tracking
    - Water handling oversight
    - Ground intrusive work observation
    - Notification for unexpected conditions
- Pre-construction meeting identifies EP roles and responsibilities and reviews site conditions.
- Contractor to perform job-site HazCom. HazCom to be addressed in Contractor HASP and include:
    - PPE requirements,
    - Exposure time limits,
    - Identification of chemicals of concern and potential effects of over-exposure (adverse reactions),
    - Methods and routes of potential exposure.
- All personnel that will be performing ground intrusive work within impacted soils shall sign-off on HazCom.
- If, based on a thorough review of Site conditions, it is expected that construction workers will have the potential to encounter materials considered hazardous waste under RCRA or DOT regulations, HAZWOPER-trained personnel will be utilized.

Tracking/Supervision

- Contractor to record any day that there is ground intrusive work and confirm that proper PPE is being worn.
- EP will note ground intrusive work on daily work sheets and perform at least one spot check per day.
- EP will log on daily work sheets PPE compliance for all intrusive work areas at least once per day.

- EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically.

Work Zones Delineation

- Exclusion Zone – The Exclusion Zones will include the areas proposed for excavation or with active trenches, excavations, or ground intrusive work, at a minimum. Personnel working within the exclusion zone will be required to wear Modified Level D PPE as described in this SOP. EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically. The Exclusion Zones will be identified each work day.
- Contamination Reduction Zone – This work zone is located outside of the exclusion zone, but inside of the limits of development (LOD). The Contamination Reduction Zone will be located adjacent to the Exclusion Zone, and all personal decontamination including removal of all disposable PPE/removal of soil from boots will be completed in the Contamination Reduction Zone.

Documentation

- Contractor HASP and HazCom.
- Contractor ground intrusive tracking record.
- HASP and HazCom sign-in sheets.
- EP pre-con memos.
- EP daily work sheets.
- Records documenting intrusive work and proper PPE use to be provided in completion report.

Enforcement

- Non-compliance of PPE requirements will result in disciplinary action up to and including prohibition from working on Sparrows Point.

Unknown and/or Unexpected Conditions

If unknown and/or unexpected conditions are encountered during the project that the EP determines to have a reasonable potential to significantly impact construction worker health and safety, the following will be initiated:

1. Job stoppage,
2. TPA and MDE notification,
3. Re-assessment of conditions.

Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

Modified Level D PPE

Modified Level D PPE will include, at a minimum, overalls such as polyethylene-coated Tyvek or clean washable cloth overalls, latex (or similar) disposable gloves (when working in wet/chemical surroundings) or work gloves, steel-toe/steel-shank high ankle work boots with taped chemical-protective over-boots (as necessary), dust mask, hard hat, safety glasses with

side shields, and hearing protection (as necessary). If chemical-protective over-boots create increased slip/trip/fall hazardous, then standard leather or rubber work boots could be used, but visible soils from the sides and bottoms of the boots must be removed upon exiting the Exclusion Zone.

APPENDIX D

GENERAL GRADING NOTES

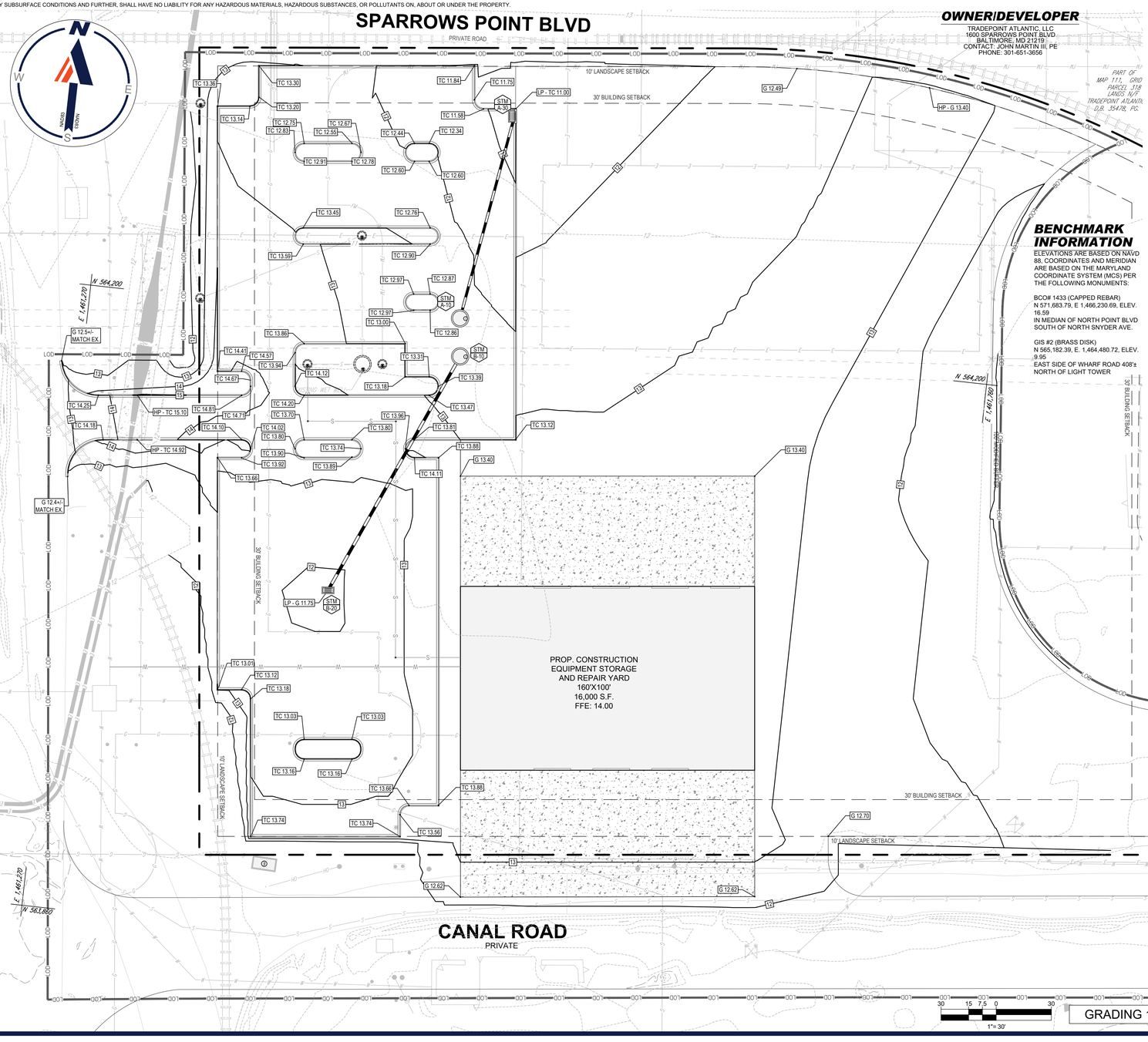
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT AND/OR DISCREPANCY BETWEEN THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR THE RELATIVE OR APPLICABLE CODES, REGULATIONS, LAWS, RULES, STATUTES AND/OR ORDINANCES, IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD, IN WRITING, OF SAID CONFLICT AND/OR DISCREPANCY PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR'S FAILURE TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE CONTRACTOR'S FULL AND COMPLETE ACCEPTANCE OF ALL RESPONSIBILITY TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND IN FULL COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, LAWS, STATUTES, ORDINANCES AND CODES AND, FURTHER, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SAME.
2. SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT REFERENCED IN THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING UNSUITABLE MATERIALS WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL EXCAVATED OR FILLED AREAS MUST BE COMPACTED AS OUTLINED IN THE GEOTECHNICAL REPORT. MOISTURE CONTENT AT TIME OF PLACEMENT MUST BE SUBMITTED IN A COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT MUST BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER/DEVELOPER, OR OWNER/DEVELOPER'S REPRESENTATIVE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED AS DIRECTED BY THE GEOTECHNICAL REPORT. EARTHWORK ACTIVITIES INCLUDING, BUT NOT LIMITED TO, EXCAVATION, BACKFILL, AND COMPACTING MUST COMPLY WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. EARTHWORK ACTIVITIES MUST COMPLY WITH THE STANDARD STATE DOT SPECIFICATIONS FOR ROADWAY CONSTRUCTION (LATEST EDITION) AND ANY AMENDMENTS OR REVISIONS THERETO.
3. THE CONTRACTOR MUST COMPLY, TO THE FULLEST EXTENT, WITH THE LATEST OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE "MEANS AND METHODS" REQUIRED TO MEET THE INTENT AND PERFORMANCE CRITERIA OF OSHA, AS WELL AS ANY OTHER ENTITY THAT HAS JURISDICTION FOR EXCAVATION AND/OR TRENCHING PROCEDURES AND CONSULTANT SHALL HAVE NO RESPONSIBILITY FOR OR AS RELATED FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES.
4. PAVEMENT MUST BE SAW CUT IN STRAIGHT LINES, AND EXCEPT FOR EDGE OF BUTT JOINTS, MUST EXTEND TO THE FULL DEPTH OF THE EXISTING PAVEMENT. ALL DEBRIS FROM REMOVAL OPERATIONS MUST BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS WILL NOT BE PERMITTED.
5. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT TOPS MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
6. THE CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCING ANY CONSTRUCTION. CONTRACTOR MUST CONFIRM AND ENSURE 0.75% MINIMUM SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS; 1.0% ON ALL CONCRETE SURFACES; AND 1.0% MINIMUM ON ASPHALT (EXCEPT WHERE ADA REQUIREMENTS LIMIT GRADES), TO PREVENT PONDING. CONTRACTOR MUST IMMEDIATELY IDENTIFY, IN WRITING TO THE ENGINEER, ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER NOTIFICATION, MUST BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS THE DESIGN ENGINEER FOR ANY DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM SAME.
7. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE EXISTING LOCAL ASPHALT GRADE UNLESS OTHERWISE NOTED. FIELD ADJUST TO CREATE A MINIMUM OF 0.75% GUTTER GRADE ALONG CURB FACE. IT IS CONTRACTOR'S OBLIGATION TO ENSURE THAT DESIGN ENGINEER APPROVES FINAL CURBING CUT SHEETS PRIOR TO INSTALLATION OF SAME.
8. REFER TO SITE PLAN FOR ADDITIONAL NOTES.
9. IN THE EVENT OF DISCREPANCIES AND/OR CONFLICTS BETWEEN PLANS OR RELATIVE TO OTHER PLANS, THE SITE PLAN WILL TAKE PRECEDENCE AND CONTROL. CONTRACTOR MUST IMMEDIATELY NOTIFY THE DESIGN ENGINEER, IN WRITING, OF ANY DISCREPANCIES AND/OR CONFLICTS.
10. CONTRACTOR IS REQUIRED TO SECURE ALL NECESSARY AND/OR REQUIRED PERMITS AND APPROVALS FOR ALL OFF SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. CONTRACTOR MUST SUPPLY A COPY OF APPROVALS TO ENGINEER AND OWNER PRIOR TO INITIATING ANY WORK.
11. WHERE RETAINING WALLS (WHETHER OR NOT THEY MEET THE JURISDICTIONAL DEFINITION) ARE IDENTIFIED ON PLANS, ELEVATIONS IDENTIFIED ARE FOR THE EXPOSED PORTION OF THE WALL. WALL FOOTINGS/FOUNDATION ELEVATIONS ARE NOT IDENTIFIED HEREIN AND ARE TO BE SET/DETERMINED BY THE CONTRACTOR BASED ON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS.
12. CONSULTANT IS NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, SHALL HAVE NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.

BALTIMORE COUNTY STANDARD GRADING PLAN NOTES

1. THE PROPOSED GRADING SHOWN ON THIS PLAN MEETS THE REQUIREMENTS SET FORTH BY BALTIMORE COUNTY DEPARTMENT ON ENVIRONMENTAL PROTECTION AND SUSTAINABILITY AND COMPLIES WITH ARTICLE 33, TITLE 5 OF THE BALTIMORE COUNTY CODE. HOWEVER, DUE TO BUILDING TYPES AND LAYOUT, SOME FIELD ADJUSTMENTS MAY BE REQUIRED. ALL CHANGES MUST COMPLY WITH THE ABOVE MENTIONED REQUIREMENTS.
2. ALL SWALES HAVE BEEN DESIGNED BY THE ENGINEER TO CONVEY RUNOFF ACCORDING TO BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN STANDARDS.
3. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT OR OTHER FOREST RETENTION AREAS, EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
4. STORMWATER MANAGEMENT HAS BEEN ADDRESSED VIA THREE (3) WET PONDS LOCATED ON THE EAST AND WEST SIDES OF THE PROPERTY AND A FEE-IN-LIEU FOR 6.00 ACRES.

SITE SPECIFIC GRADING NOTES

1. ALL UTILITIES SHOWN ARE PRIVATE UNLESS OTHERWISE NOTED.
2. THE SUBJECT DEVELOPMENT AREA IS LOCATED IN FLOOD ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, BALTIMORE COUNTY, MARYLAND (UNINCORPORATED AREAS) PANEL 555 OF 580", MAP NUMBER 24005I0555G, MAP REVISED MAY 5, 2014, AND PLAN PREPARED BY PAI, DEV. PLANS REVIEW, DATED SEPTEMBER 21, 2016, PER MAP 0555F, DATED SEPTEMBER 26, 2008
3. ADDITIONAL EXISTING UTILITIES AND SITE FEATURES LOCATED WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" OR "TO BE RELOCATED" MAY REQUIRE REMOVAL, TO BE FILLED WITH GROUT, OR RELOCATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER OR TRADEPOINT DEVELOPMENT. CONTRACTOR TO REFER TO THE GEOTECHNICAL REPORT AND COORDINATE WITH THE GEOTECHNICAL ENGINEER TO DETERMINE WHICH EXISTING UTILITIES SHOULD BE GROUTED.
4. EXISTING UTILITIES NOTED AS "TO REMAIN" WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED DEVELOPMENT.
5. ALL BUILDING DOWNSPOUTS ARE TO DISCHARGE AT GRADE AND SHEET FLOW TO THE PROPOSED INLETS.
6. ANY BENCHMARK THAT IS LOCATED WITHIN THE LOD AND WILL BE DISTURBED DURING CONSTRUCTION IS TO BE RESET PRIOR TO BEGINNING CONSTRUCTION.
7. EXISTING GRADES SHOWN ON THIS PLAN ARE FROM THE APPROVED MASS GRADING PLANS. IF ACTUAL EXISTING GRADES DIFFER FROM WHAT IS SHOWN ON THESE PLANS, CONTRACTOR IS TO NOTIFY BOHLER IN WRITING.
8. EXISTING MANHOLE, CLEANOUT, AND VALVE COVERS WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" ARE TO BE ADJUSTED TO MEET FINAL GRADES.
9. ALL UTILITIES AND STORM DRAIN SHOWN ON THIS PLAN WERE TO HAVE BEEN INSTALLED DURING MASS GRADING. CONTRACTOR IS TO VERIFY ALL UTILITIES AND STORM DRAIN ON THIS PLAN HAVE BEEN INSTALLED, AND IS TO NOTIFY BOHLER IN WRITING IF ANY DISCREPANCIES ARE FOUND. IF NECESSARY, CONTRACTOR IS TO ADJUST RIM ELEVATIONS OF INLETS, MANHOLES, CLEANOUT COVERS OR VALVE COVERS TO MEET FINAL GRADES SHOWN ON THIS PLAN.
10. PROPOSED CONCRETE CURB AND GUTTER SHALL BE 6" HIGH IN EMPLOYEE AND EXECUTIVE PARKING AREAS, AND 12" HIGH IN TRUCK PARKING AREAS.



OWNER/DEVELOPER

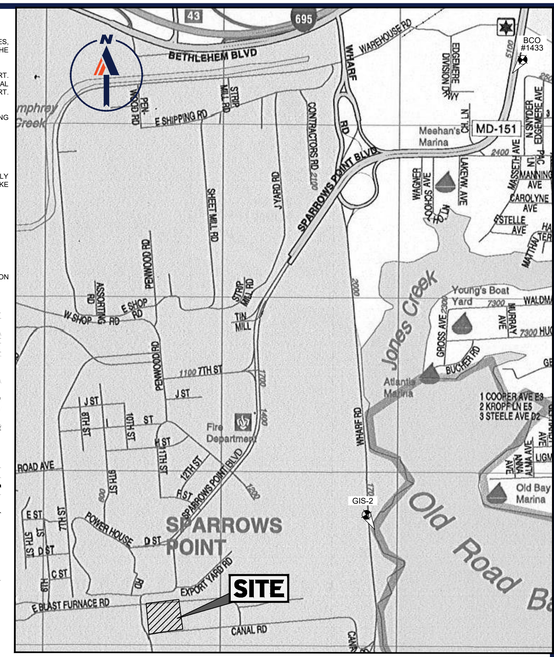
TRADEPOINT ATLANTIC, LLC
1600 SPARROWS POINT BLVD
BALTIMORE, MD 21219
CONTACT: JOHN MARTIN III, PE
PHONE: 301-651-3656

BENCHMARK INFORMATION

ELEVATIONS ARE BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

BCO# 1433 (CAPPED REBAR)
N 571,683.79, E 1,466,230.69, ELEV. 16.59
IN MEDIAN OF NORTH POINT BLVD SOUTH OF NORTH SNYDER AVE.

GIS #2 (BRASS DISK)
N 565,182.39, E. 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408'± NORTH OF LIGHT TOWER



LOCATION MAP

SCALE: 1"=1000'

OWNER'S/DEVELOPER'S CERTIFICATION - GRADING

I/WE CERTIFY THAT ALL GRADING ON THIS SITE WILL BE DONE IN ACCORDANCE WITH THE CURRENT GRADING REQUIREMENTS AS SET FORTH BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY AND WITH THE REQUIREMENTS SPECIFIED IN ARTICLE 33, TITLE 5 OF THE BALTIMORE COUNTY CODE.

SIGNATURE OF OWNER/DEVELOPER | TITLE | DATE

PRINT NAME

LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
120 / 121	CONTOUR LINE	120 / 121
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 BC 515.50
S	SANITARY SEWER LINE	S
W / I	UNDERGROUND WATER LINE / INDUSTRIAL WATER LINE	W / I
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM	SANITARY SEWER FORCE MAIN	FM
LOD	LIMIT OF DISTURBANCE	LOD
NB	IDA CRITICAL AREA BOUNDARY	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB

MARYLAND COORDINATE SYSTEM (MCS)

STORMWATER MANAGEMENT PERMIT IS REQUIRED

BALTIMORE COUNTY
DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

APPROVED FOR GRADING

DATE

30 15 7.5 0 30
1"= 30'

GRADING 1 OF 1

LIMIT OF DISTURBANCE: 259,917 S.F. OR 5.97 AC.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

811 Know what's below. Call before you dig.
ALWAYS CALL 811
It's fast. It's free. It's the law.

FOR CONCEPT PURPOSES ONLY

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MDA220044.00
DRAWN BY: DMD
CHECKED BY: MJG
DATE: 05/16/2022
CAD I.D.:

PROJECT:

CONSTRUCTION DOCUMENTS

FOR

TRADEPOINT ATLANTIC

MMM MAINTENANCE FACILITY

1331 POWERHOUSE ROAD
BALTIMORE, MD 21219
TM 111, GRID 14, PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 6/9/23

SHEET TITLE:

GRADING PLAN

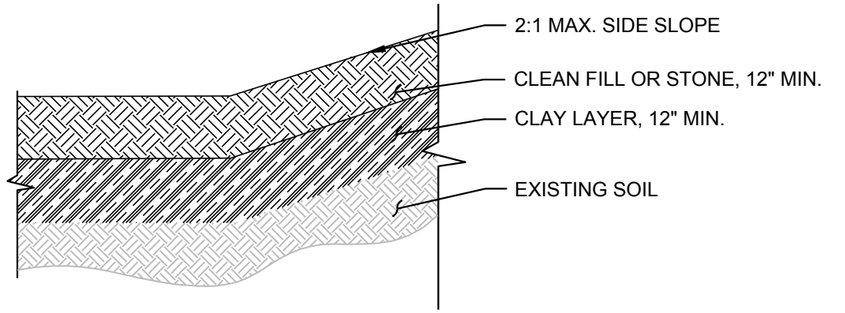
SHEET NUMBER:

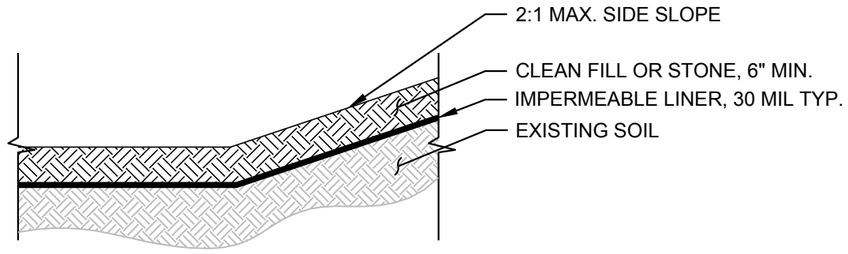
C-401

ORG. DATE - 05/16/2022

May 31, 2022
C:\PROGRAMDATA\BOHLER\DEV2022\C3D2022\TEMP\ACPUBLISH_19980\MDA220044.00 - GRAD 3---LAYOUT C-401 GRADING PLAN.DWG

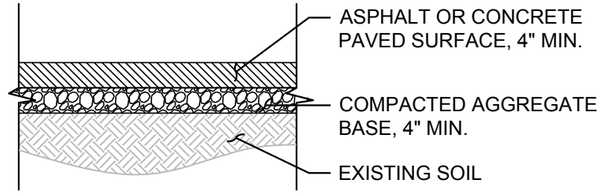
APPENDIX E



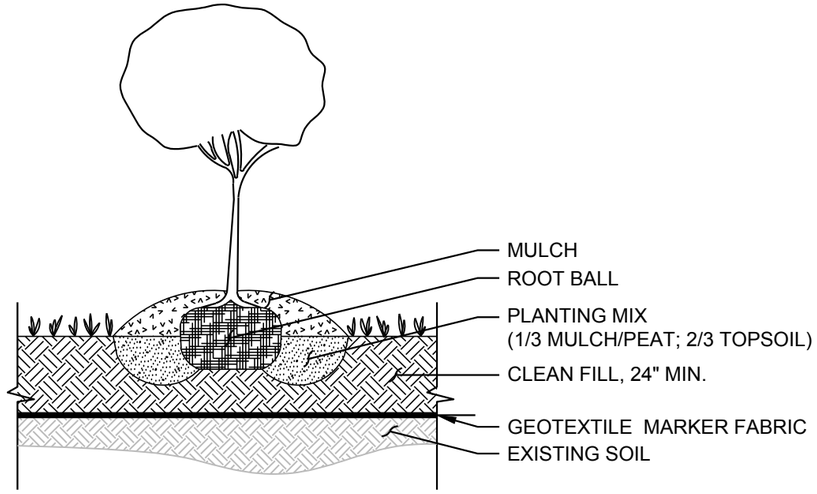


TYPICAL POND SECTIONS
NOT TO SCALE

TYPICAL LANDSCAPE SECTION
NOT TO SCALE



TYPICAL PAVING SECTION
NOT TO SCALE



TYPICAL PLANTING SECTION
NOT TO SCALE

GEOTEXTILE MARKER FABRIC SPECIFICATIONS

THE GEOTEXTILE MARKER FABRIC SHALL BE A NONWOVEN PERVIOUS SHEET OF POLYPROPYLENE MATERIAL. ADD STABILIZERS AND/OR INHIBITORS TO THE BASE MATERIAL, AS NEEDED, TO MAKE THE FILAMENTS RESISTANT TO DETERIORATION BY ULTRAVIOLET LIGHT, OXIDATION AND HEAT EXPOSURE. REGRIND MATERIAL, WHICH CONSISTS OF EDGE TRIMMINGS AND OTHER SCRAPS THAT HAVE NEVER REACHED THE CONSUMER, MAY BE USED TO PRODUCE THE GEOTEXTILE. POST-CONSUMER RECYCLED MATERIAL MAY BE USED. GEOTEXTILE SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING THE EDGES. GEOTEXTILES SHALL MEET THE REQUIREMENTS SPECIFIED IN TABLE 1. WHERE APPLICABLE, TABLE 1 PROPERTY VALUES REPRESENT THE MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPAL DIRECTION. VALUES FOR APPARENT OPENING SIZE (AOS) REPRESENT MAXIMUM AVERAGE ROLL VALUES

TABLE 1

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec^{-1}	1.7	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	135 (5500)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

ARM Group LLC
Engineers and Scientists

designed RJC
checked TNP
drawn RJC
scale N/A
date 9/8/2020
project no. 160443M

drawing title: MINIMUM CAPPING SECTION DETAILS

project title: SPARROWS POINT TRADEPOINT ATLANTIC

SPARROWS POINT
BALT. COUNTY, MARYLAND

Sheet 1

APPENDIX F

GENERAL NOTES:

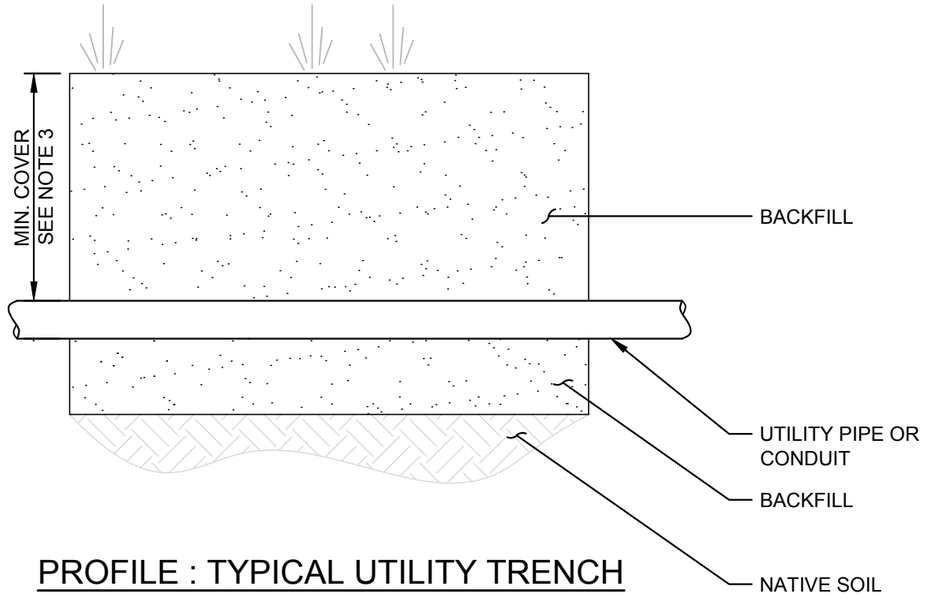
1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

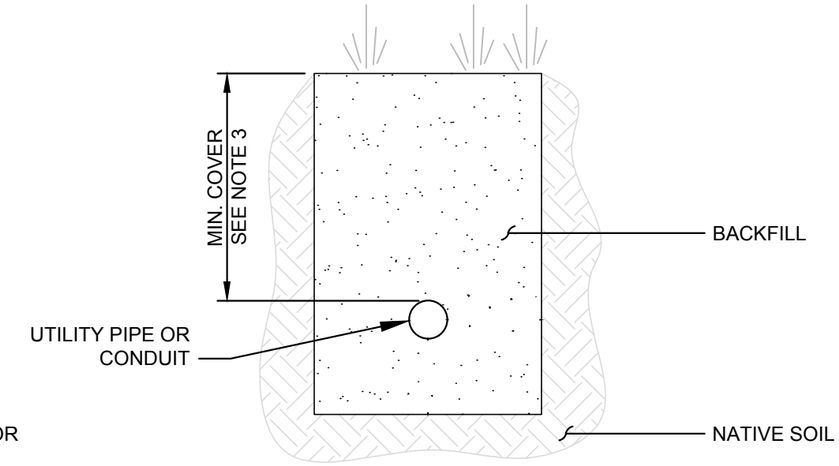
3. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

4. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

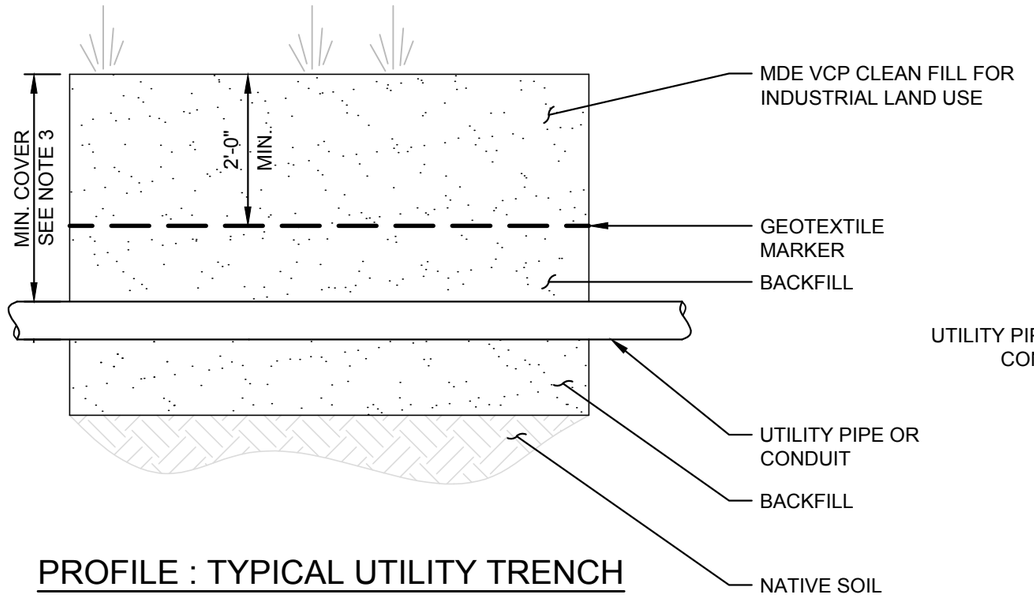
5. FOR ANY UTILITY SEGMENT WHICH GOES THROUGH AN AREA WHICH IS DESIGNATED TO RECEIVE A LANDSCAPED CAP, THE UPPER 2 FEET OF BACKFILL MUST MEET THE REQUIREMENTS OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE. IN THIS CASE THE MDE VCP CLEAN FILL WILL BE UNDERLAIN BY A GEOTEXTILE MARKER FABRIC. UTILITY SEGMENTS WHICH GO THROUGH AREAS WHICH DO NOT REQUIRE CAPPING OR ARE DESIGNATED TO RECEIVED A PAVED CAP WILL BE BACKFILLED WITH MATERIALS APPROVED BY MDE FOR THIS USE.



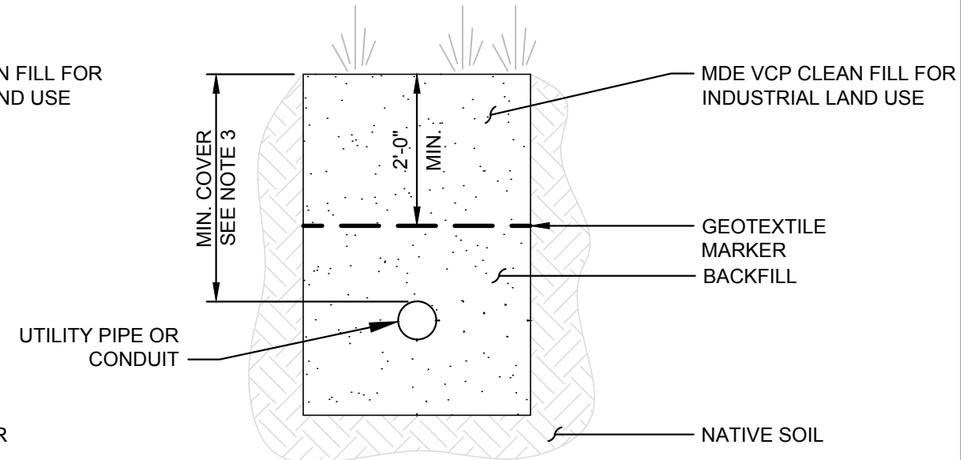
PROFILE : TYPICAL UTILITY TRENCH



SECTION : TYPICAL UTILITY



PROFILE : TYPICAL UTILITY TRENCH
(SEE NOTE 5)



SECTION : TYPICAL UTILITY
(SEE NOTE 5)

ARM Group LLC
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TYPICAL UTILITY
CROSS SECTIONS
Sparrows Point Site
Tradepoint Atlantic

September 2020
1/2" = 1'-0"
160443M

Figure
1

APPENDIX G

Utility Excavation NAPL Contingency Plan

Revision 4 – June 19, 2017

Introduction:

Proposed underground utilities and excavations necessary for the redevelopment of the Tradepoint Atlantic property may encounter areas of petroleum and/or Oil & Grease contamination in soil. The assessment of total petroleum hydrocarbons (TPH) diesel range organics (DRO), gasoline range organics (GRO), Oil & Grease, and/or non-aqueous phase liquid (NAPL) completed as part of each Phase II Investigation includes the following:

- Each soil boring with evidence of NAPL (i.e., containing a sheen or free oil in the soil core), whether located near utilities or not, is investigated via the installation of a piezometer to assess mobility to groundwater. If measureable NAPL is present in the initial piezometer, additional soil borings and shallow temporary piezometers are installed surrounding the initial detection to delineate the impacts. Each piezometer installed to delineate the presence or absence of NAPL is checked with an oil-water interface probe immediately after installation, 48 hours after installation, and at least 30 days after installation.
- TPH-DRO/GRO and Oil & Grease data, once received, are assessed in their magnitude and location respective to subsurface utilities, stormwater conveyances, and surface waters.
- Locations that exhibit elevated detections of TPH/Oil & Grease or evidence of NAPL, that are within reasonable proximity (i.e. 25 feet) to subsurface utilities or stormwater conveyances and/or within reasonable proximity (i.e. 100 feet) to surface waters, are identified for further delineation and selective removal (if warranted).

Any NAPL identified in soil borings or piezometers during the Phase II Investigation would be noted on relevant logs and identified in Response and Development Work Plans for construction planning purposes. Despite these planning efforts, unidentified pockets of contamination (including NAPL) may still be encountered during construction. This contingency plan provides the procedures to be utilized during construction work to properly address response and construction techniques if any materials impacted with NAPL are encountered.

Objectives:

The purpose of this plan is to describe procedures to be followed in the event that NAPL is encountered in utility trenches or other excavations during development of the Tradepoint Atlantic property. The specific objectives of this plan and the procedures outlined herein are:

1. To ensure identification and proper management of Oil & Grease and petroleum-contaminated soils.
2. To ensure proper worker protection for working in areas of Oil & Grease and petroleum contamination.
3. To ensure that the installation of new utilities does not create new preferential flow paths for the migration of free-phase hydrocarbons (Oil & Grease, TPH-DRO/GRO, etc.) or soil vapors.

Identification of Oil & Grease and Petroleum Contaminated Soil:

An Environmental Professional (EP) will be on-site to determine if soils show evidence of the presence of Oil & Grease or TPH present as NAPL during installation of utility trenches or other excavation activities completed during development. Oil & Grease or petroleum-contaminated soils can be identified by the presence of free oil, oil staining, a petroleum odor, or any combination of these conditions. Free oil (NAPL) is liquid oil which could potentially be drained or otherwise extracted from the soil, and is the focus of this contingency plan, although severe staining accompanied by odors should be addressed via the same contingency measures provided herein (based on the judgement of the EP). The appearance of oil staining is not always consistent, but varies depending on the nature of the oil, the soil type, and the age of the release. Staining associated with old petroleum contamination often has a greenish hue, but may also be brown or black. The olfactory sense is the most sensitive instrument for identifying petroleum contamination in the field. Therefore, a petroleum odor may be noted although there is no visible sign of oil or staining. In some instances, decaying organic matter can produce an odor similar to petroleum, but this is rare.

If NAPL is encountered during construction, the extent of impacts shall be delineated by excavating trenches or installing four soil borings (two in each direction) perpendicular to the utility alignment or excavation to examine the soil for physical evidence of NAPL. Perpendicular transects will be investigated every 50 feet along the section of the utility trench or excavation where there is physical evidence of NAPL. Each transect will extend to a distance of 10 feet from the edge of the utility trench or excavation. This represents the maximum distance which would require mandatory excavation to mitigate potential migration risks (see below).

NAPL delineation will be guided primarily by screening observations from the perpendicular borings or trenches, and samples will be collected to test for extractable Oil & Grease or petroleum-contaminated soil using the Oil Sticks™ test kit. This test kit provides a determination of whether hydrocarbons are present in soil and extractable (i.e. could mobilize as a NAPL). Oil Sticks™ change from a pale blue to a deep blue color when they come in contact with free product. This instantaneous change in color occurs even when miniscule amounts of product come in contact with the strip. The sensitivity of Oil Sticks™ to determine the presence/absence of oil is reported by the manufacturer to be about 1,000 to 2,000 mg/kg. The

field test is performed by placing approximately 3 tablespoons of soil in a clean sample cup and adding enough water to cover the sample. After stirring the sample and waiting ~1 minute, the Oil Sticks™ test strip should be swished through the water, making sure to touch the strip to the sides of the cup where product may collect at the interface (meniscus) between the cup, water, and air. If the strip turns deep blue, or deep blue spots appear, oil or hydrocarbon is present. However, the MDE has observed that the Oil Sticks™ method may produce inconsistent results. Therefore, documentation of all screening methods is necessary during boring/trenching work. This documentation shall include an accurate record of visual and olfactory screening, along with a narrative with photographs. Field screening will be aided by photoionization detector (PID) results, and Oil Sticks™ samples should be biased to target elevated PID readings, if any. The agencies have requested that all soil samples prepared for the Oil Sticks™ field test be photographed for evidence of sheen/residue on the cup sides. Detailed records are required to be submitted with the project-specific Completion Report.

If petroleum or Oil & Grease impacts are identified in Site soils based on use of the Oil Sticks™ test kit or other field screening methods, disposal requirements will be determined using the quantitative PetroFLAG™ hydrocarbon analysis system or fixed laboratory analysis (see following section). The PetroFLAG™ hydrocarbon analysis system is a broad spectrum field test kit suitable for TPH contamination regardless of the source or state of degradation (Dexsil Corporation). PetroFLAG™ field test kits do not distinguish between aromatic and aliphatic hydrocarbons, but quantify all fuels, oils, and greases as TPH. Dilutions can be used to determine concentrations of TPH/Oil & Grease above the normal calibration range. Dexsil notes that positive results for TPH may occur if naturally occurring waxes and oils, such as vegetable oils, are present in the sample. Additional detail regarding the procedure for the PetroFLAG™ kit is given in **Attachment 1**.

Soil Excavation, Staging, Sampling and Disposal:

The EP will monitor all utility trenching and excavation activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of NAPL contamination that may be different than what was already characterized. Excavated material that is visibly stained or that exhibits a sustained PID reading of greater than 10 ppm will be segregated and containerized or placed in a stockpile on polyethylene or impervious surface until the material can be analyzed using the PetroFLAG™ test kit to characterize the material for appropriate disposal. If a PetroFLAG™ test kit is not available to the contractor, or if the contractor prefers to use fixed laboratory analysis, samples may be characterized via submittal to a laboratory for TPH/Oil & Grease analysis. However, any excavated material containing NAPL (i.e., containing free oil) cannot be characterized for waste disposal using the PetroFLAG™ test kit and must instead be characterized via fixed laboratory analysis, as described in the final paragraph of this section. In addition, any hydrocarbon contaminated soil discovered during construction activities that was not previously

characterized must also be analyzed for PCBs prior to removal and transport to an appropriate disposal facility. If excavated and stockpiled, such materials will be covered with a plastic tarp so that the entire stockpile is encapsulated, and anchored to prevent the elements from affecting the integrity of the containment. The MDE will be notified if such materials are encountered during utility work.

Soil exhibiting physical evidence of NAPL contamination or elevated TPH/Oil & Grease with detections in the low percentage range, which is located within 10 feet of a proposed new utility or subsurface structure (i.e., foundation, sump, electrical vault, underground tank, etc.), will be excavated and segregated for disposal at the on-site nonhazardous landfill (Greys Landfill) or an off-site facility pending the completion of any required PCB analytical testing. Impacted soil which is located greater than 10 feet away from the proposed utility or subsurface structure may be left in place and undisturbed. The extent of the excavation will be determined in the field following visual/olfactory screening supplemented by the PID and Oil Sticks™ test kit, but soil disposal requirements will be determined with the PetroFLAG™ test kit (since the Oil Sticks™ method is not quantitative) or via fixed laboratory analysis for TPH/Oil & Grease (if preferred by the contractor or if the PetroFLAG™ test kit is unavailable to the contractor).

Any recovered NAPL will be collected for off-site disposal. As required by the appropriate and MDE approved facility, samples impacted by NAPL (i.e., containing free oil) will be collected for profiling/waste characterization and submitted to a fixed laboratory, as mentioned above, for the following analyses: metals, VOCs, TPH-DRO/GRO, and/or additional analysis required by the selected disposal facility. Upon receipt of any additional characterization analytical results, the MDE will be notified of the proposed disposal facility. Non-impacted material with no evidence of NAPL (i.e. soils that may contain measureable concentrations of TPH/Oil & Grease but below percentage levels) may be placed on the Site in areas to be paved or capped as long as all other requirements specified in the Response and Development Work Plan (or similar governing document) are met.

Initial Reporting:

If evidence of NAPL in soil or groundwater is encountered during excavation, it will be reported to the MDE within two hours. Information regarding the location and characteristics of any NAPL contaminated soil will be documented as follows:

- Location (exact stationing);
- Extent of contamination (horizontally and vertically – prepare a sketch including dimensions);
- Relative degree of contamination (i.e. free oil with strong odor vs. staining); and
- Visual documentation (take photographs and complete a photograph log)

Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of Oil & Grease or petroleum contamination shall be leak proof and water tight. All joints will be adequately sealed or gasketed, and pipes or conduits will be properly bedded and placed to prevent leakage. All trench backfill will meet the MDE definition of clean fill, or otherwise be approved by the MDE. Pipe bedding will be installed to minimize the potential for accumulation of water and concentrated infiltration. This can be achieved by using a relatively small amount of low-permeability pipe bedding; open-graded stone will be avoided or only used in thicknesses of 6 inches or less. Bedding must be properly placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs will be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

If required, each trench plug will be constructed with a 2-foot-thick clay plug or 1-foot-thick flowable fill or concrete plug, perpendicular to the pipe, which extends at least 1 foot in all directions beyond the permeable pipe bedding. The plug acts as an anti-seep collar, and will extend above the top of the pipe. Installation of each trench plug will follow the completion of the trench excavation, installation of granular pipe bedding (because dense-graded aggregate or soil or other pipe bedding is difficult to properly compact below the haunches of the pipe), and seating of the pipe. The trench plug will then be installed by digging out a 1-foot trench below and around the pipe corridor, and placing clay, flowable fill, or concrete to construct the plug. A specification drawing for installation of the trench plug has been provided as **Figure 1**.

Attachment 1 - PetroFLAG™ Procedure

PetroFLAG™ field test kits use a proprietary turbidimetric reaction to determine the TPH concentration of solvent extracted samples (USEPA). Calibration standards provided with the unit are used to perform a two-point calibration for the PetroFLAG™. A blank and a 1,000 ppm standard are run by the analyzer unit to create an internal calibration curve.

Analysis of a soil sample is performed using three simple steps: extraction, filtration, and analysis. The PetroFLAG™ analysis is performed as follows:

- Place a 10 gram soil sample in a test tube.
- Add extraction solvent to the tube.
- Shake the tube intermittently for four minutes.
- Filter the extract into a vial that contains development solution
- Allow the solution to react for 10 minutes.

The filtration step is important because the PetroFLAG™ analyzer measures the turbidity or "optical density" of the final solution. Approximately 25 samples can be analyzed per hour. The vial of developed solution is placed in the meter, and the instrument produces a quantitative reading that reveals the concentration of hydrocarbons in the soil sample. The PetroFLAG™ method quantifies all fuels, oils, and greases as TPH between 15 and 2000 ppm (Dexsil Corporation). A 10x dilution of the filtered extraction solvent will be completed to allow for quantification of soil concentrations in excess of 10,000 ppm. The specially designed PetroFLAG™ analyzer allows the user to select, in the field, the response factor that is appropriate for the suspected contaminant at each site. Vegetable-based oils have been shown to exhibit a response factor of 18% (EPA Method 9074). Using the selected response factor, the analyzer compensates for the relative response of each analyte and displays the correct concentration in parts per million (ppm).

References:

U.S. Environmental Protection Agency (EPA). Contaminated Site Clean-up Information (Clu-IN): Test Kits. Office of Superfund Remediation and Technology Innovation. http://www.clu-in.net/characterization/technologies/color.cfm

Dexsil Corporation. 2016. PetroFLAG Analyzer System (PF-MTR-01). http://www.dexsil.com/products/detail.php?product_id=23

EPA SW-846 Method Number 9074 - Turbidimetric Screening Procedure for Total Recoverable Hydrocarbons in Soil

GENERAL NOTES:

1. ALL PIPES OR CONDUIT PASSING THROUGH AREAS OF PETROLEUM CONTAMINATION SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

3. ANTI-SEEP COLLARS FROM THE PIPE MANUFACTURER, THAT ARE PRODUCED SPECIFICALLY FOR THE PURPOSE OF PREVENTING SEEPAGE AROUND THE PIPE, ARE ACCEPTABLE IF INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND ONLY WITH PRIOR APPROVAL BY TPA.

4. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

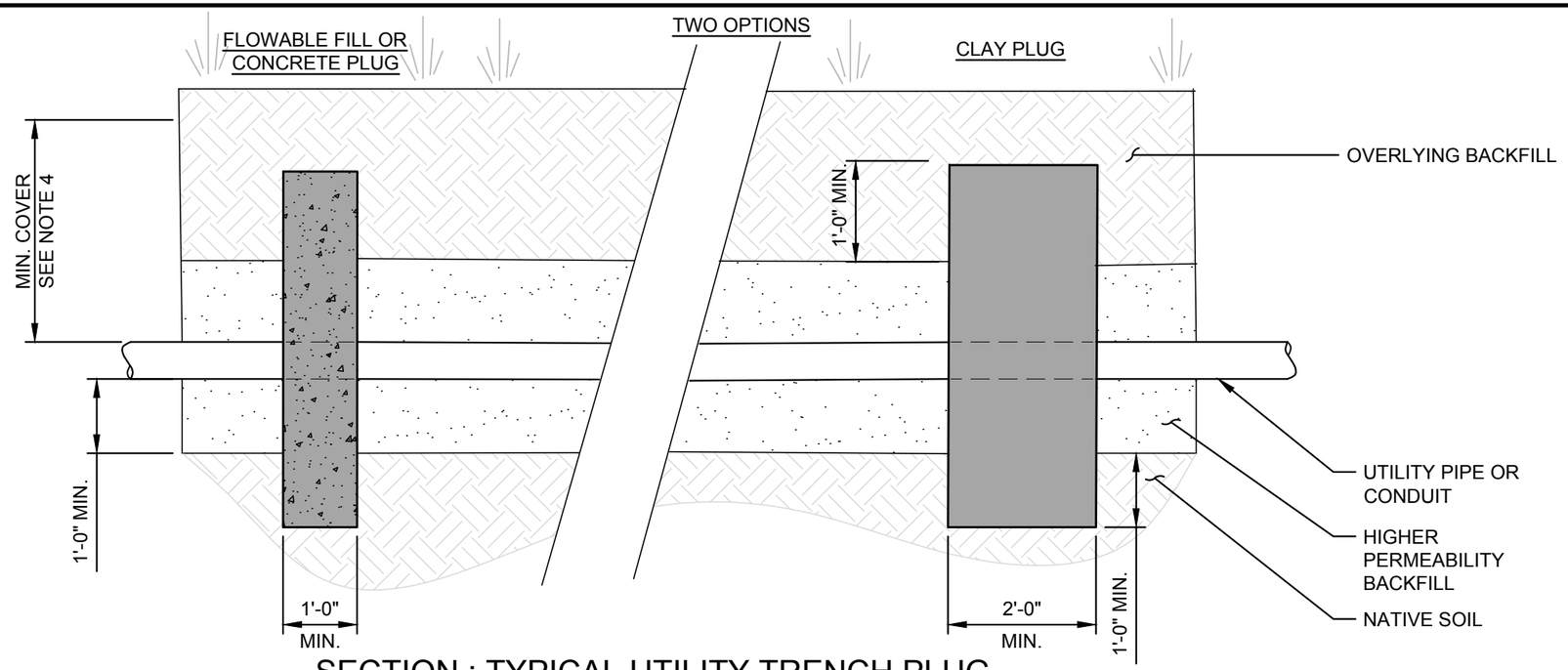
5. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

6. FOR ADDITIONAL REQUIREMENTS, INCLUDING THE USE OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE AND INSTALLATION OF GEOTEXTILE MARKER FABRIC, REFER TO NOTE 5 ON THE TYPICAL UTILITY CROSS SECTIONS.

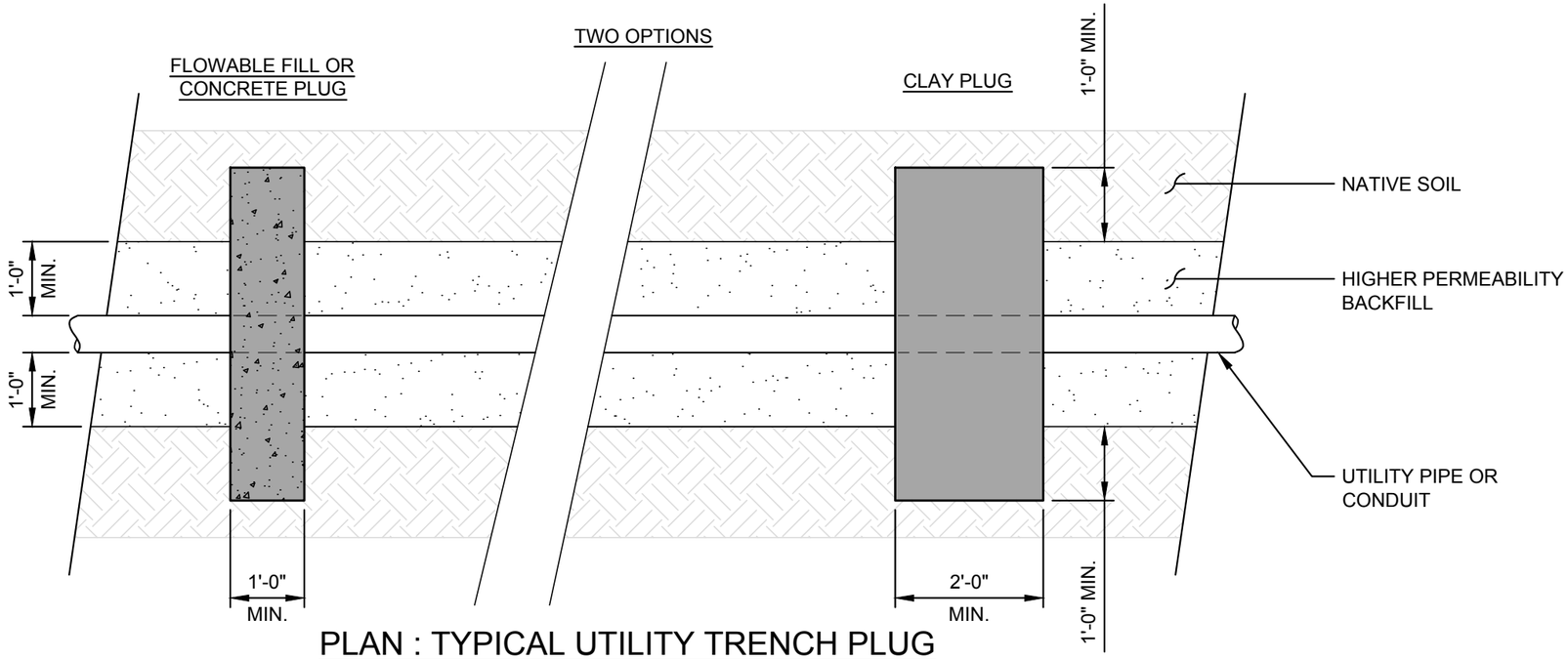
7. ALL UTILITIES INSTALLED THROUGH AREAS CONTAINING NAPL OR ELEVATED CHEMICAL IMPACTS WITH THE POTENTIAL TO TRANSMIT VAPORS ALONG PREFERENTIAL FLOW PATHWAYS SHALL BE EITHER 1) BACKFILLED WITH LOW PERMEABILITY BACKFILL MATERIAL (LESS THAN OR EQUAL TO THE PERMEABILITY OF THE EXISTING SUBGRADE), OR 2) INSTALLED WITH TRENCH PLUGS ALONG THE ALIGNMENT IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN AND THE FOLLOWING NOTES:

   A.) UTILITY TRENCH PLUGS SHALL BE INSTALLED AT 100-FOOT (MAX.) INTERVALS THROUGH ALL AREAS OF NAPL CONTAMINATION.

   B.) UTILITY TRENCH PLUGS SHALL EXTEND A MINIMUM OF 1-FOOT IN ALL DIRECTIONS BEYOND ANY HIGHER PERMEABILITY BACKFILL MATERIALS (I.E., MATERIALS EXCEEDING THE PERMEABILITY OF THE EXISTING SUBGRADE).



SECTION : TYPICAL UTILITY TRENCH PLUG



PLAN : TYPICAL UTILITY TRENCH PLUG

ARM Group LLC
Engineers and Scientists

UTILITY TRENCH PLUG
Sparrows Point Site
Tradepoint Atlantic

September 2020	Figure
Not to Scale	1
160443M	