

RESPONSE AND DEVELOPMENT WORK PLAN

AREA B: SUB-PARCEL B13-2
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:



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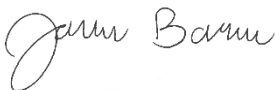
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Revision 0 – November 25, 2024

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1.0 INTRODUCTION

ARM Group LLC, on behalf of Tradepoint Atlantic (TPA), has prepared this Response and Development Work Plan (RADWP) for a portion of the TPA property that has been designated as Area B: Sub-Parcel B13-2 (the Site). TPA submitted a letter (dated November 14, 2024; **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 B13-2 consists of approximately 88.1 acres located within Parcel B13 of the approximately 3,100-acre former steel plant property.

Sub-Parcel B13-2 (refer to **Figure 2**) is slated to be paved for future use as a laydown area and bulk material storage. Associated stormwater lines and stormwater pond are also proposed. The planned development activities will generally include grading, paving of parking areas and roadways, and installation of utilities. Preliminary grading has already been conducted at the Site as proposed in the Sub-Parcel B13-2 Grading Plan (dated October 24, 2023), which was approved by the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA), collectively the Agencies, on March 18, 2024. Subsequent site use will involve workers loading and unloading materials from the area. Outside of the main development area designated as Sub-Parcel B13-2, temporary construction zones (not intended for permanent occupancy) with a total area of 1.76 acres within the limit of disturbance (LOD) will be utilized for utility installation. These external construction worker areas are shown on **Figure 2**. Approximately 19.6 acres of the Site is comprised of an existing paved area. Modifications to this area are not proposed as part of this RADWP, however it is included within the overall Site in the event that future development/disturbance is proposed to be completed in this area.

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

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

Sub-Parcel B13-2 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from the USEPA on September 12, 2014. Based on this agreement, the USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.

An application to enter the full TPA property (3,100 acres) into the MDE Voluntary Cleanup Program (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.

In consultation with the MDE, TPA 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 TPA 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 B13-2 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, TPA 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 TPA's VCP application.

Alternatively, TPA 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 an 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 TPA 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 in 2016; 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.

A portion of Parcel B13 has already been developed as part of the B13-1 Ørsted RADWP (Revision 1, dated March 13, 2023). The remainder of Parcel B13 will be addressed in separate development plans in accordance with the requirements of the ACO, which will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Sub-Parcel B13-2 development project consists of approximately 88.1 acres comprising the southwestern portion of Parcel B13 (**Figure 1**). The development will include paving and completion of a stormwater pond (**Figure 2**). Outside of the main development area designated as Sub-Parcel B13-2, temporary external construction worker areas (not intended for permanent occupancy) with a total area of approximately 1.76 acres within the construction LOD will be utilized to install roadway 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 TPA property.

Prior to grading activities, ground surface elevations at the Site was approximately 10 feet above mean sea level (amsl), with the majority of the Site being relatively flat. Following grading activities, the majority of the Site elevation ranged from 9 to 15 feet amsl. According to Figure B-2 of the property Stormwater Pollution Prevention Plan (Revision 10, dated July 15, 2023), surface water runoff from the Site flows through gravel filter berms to the west and south, which discharges to the Patapsco River.

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.

Parcel B13 was formerly occupied by the Ore Yard Material Handling Area, Bedding Plant Material Handling area, and Ore Pier. Any former buildings on Parcel B13 have been demolished. Descriptions of the facilities and processes that were completed in Parcel B13 are provided below:

Ore Yard Material Handling:

Raw materials were transported to the Sparrows Point facility by ship, truck, and rail and unloaded at the Ore Pier, A Pier, and car dumper. The raw materials were then transported by truck or conveyors to the Ore Yard for storage. The Ore Yard was divided into seven distinct storage areas (A, B, C, D, E, F, and G yards). Material stored in the Ore Yard included, but was not limited to, iron ore, ore fines, sinter, lime, limestone, and coke breeze. The B yard was used for coke storage and miscellaneous materials. The A yard (also a coke-storage area) was leased to and operated by Kinder Morgan. Raw materials were conveyed from the central unloading station to one of the

yards via one of three main conveyors. The three main conveyors discharged to several distributing conveyors that fed individual piles in the yard. The raw material from the yard was sent either to the Bedding Plant or the Blast Furnace stockhouse by a series of conveyors. Transitions between conveyors were enclosed or were located inside buildings for dust control and reclamation.

Bedding Plant Material Handling:

The Bedding Plant was a pre-processing operation to blend revert and recyclable materials from the iron and steel making operations so it could be reused at the blast furnace. Fines produced from screening coke, ore, sinter, and limestone along with mill scale and other recyclable iron-bearing materials comprised the majority of the mix. The plant stockpiled each component of the mix in bins. Using belt scales and weigh feeders, material from each of the bins was measured, blended and conveyed to one of two stockpiles in proportioned amounts. When the Sinter Plant required feed material, a reclaiming machine moved through the piles to recover the blended material and convey it to the Sinter Plant. Transition points between conveyors were enclosed or inside buildings.

2.3 SITE GRADING ACTIVITIES

Preliminary grading activities, including associated cut and grading activities, were conducted to bring the Site grade from approximately 10 feet amsl to between 9 and 15 feet amsl (based on final Site elevation). All work was completed in accordance with the Sub-Parcel B13-2 Grading Plan (Revision 0, October 24, 2023). All Site preparation and grading activities will be included in the Development Completion Report.

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos 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 TPA property which presented potential risks to the environment. These Recognized Environmental Conditions (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 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 Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure (January 1998).

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. The following REC was identified within the Sub-Parcel B13-2 development area: Southern Slag Pile Demolition Debris (REC 18, Finding 262). There were no additional SWMUs or AOCs identified as sampling targets, and no additional units were identified from the DCC report Table 3-1.

3.2 PHASE II INVESTIGATION RESULTS – SUB-PARCEL B13-2

Phase II Investigations specific to soil and groundwater conditions were performed for the property area including Sub-Parcel B13-2 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 B13 (Revision 0) dated May 25, 2016

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 B13 (Revision 0) dated April 19, 2017

This RADWP summarizes the relevant soil and groundwater findings from these Phase II Investigations with respect to the proposed development of Sub-Parcel B13-2.

3.2.1 Soil Investigation Findings

Based on the scope of development for Sub-Parcel B13-2, 91 soil samples collected from 38 soil sample locations were included in this evaluation of Sub-Parcel B13-2. The 38 sample locations are shown on **Figure 3**, and the samples obtained from these borings provided relevant analytical data for discussion of on-site conditions. Two borings are included from Parcel B5 due to utility connections that extend to the north, however these borings are only relevant to the Construction Worker SLRA. Please note that Sub-Parcel B13-2 is located on the southwest portion of Parcel B13, in an area that both historically and currently consists of large storage cells used for bulk storage of materials. Therefore, while significant slag reclamation has occurred in the central and eastern portions of Parcel B13 that have reduced the ground surface elevation, the base elevations at Sub-Parcel B13-2 have not changed since the Phase II investigation was conducted.

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, total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO), 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). 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 (Revision 4, dated May 31, 2022), 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** and **Figure S2** present the soil sample results that exceeded the organic and inorganic PALs among these soil borings, respectively. PAL exceedances were limited to four SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene), two PCB mixtures (Aroclor 1242 and total PCBs), and three inorganics (arsenic, manganese, and thallium).

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

3.2.2 Groundwater Investigation Findings

A total of seven shallow monitoring wells provide relevant analytical data for the proposed Sub-Parcel B13-2 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 TPA property; however, groundwater may be encountered in the sub-parcel during some construction tasks. If groundwater is encountered, the appropriate health and safety plans and management procedures shall be followed to limit exposure 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. Groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL metals, hexavalent chromium, total cyanide, TPH-DRO, and TPH-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.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP (Revision 4, dated May 31, 2022), 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, and **Figure GW1** presents groundwater results that exceeded the PALs. PAL exceedances in the Phase II Investigation in the vicinity of the proposed development project consisted of three SVOCs (benz[a]anthracene, naphthalene, and pentachlorophenol), TPH-GRO, TPH-DRO, Oil & Grease, and two dissolved metals (hexavalent chromium and vanadium).

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 (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 $1E-5$, however, the non-cancer VI Hazard Index (HI) value of 1 was exceeded at sample locations B13-001-PZ, B13-006-PZ, and B13-042-PZ for cyanide. No permanent structures are proposed as part of this RADWP, so there are no VI risks associated with site development. The VI risk evaluation is summarized in **Table 5**.

Lead, PCBs, and TPH/Oil & Grease are subject to special requirements as designated by the agencies: lead results above 10,000 mg/kg are subject to additional delineation (and possible

excavation), PCB results above 50 mg/kg are subject to delineation and excavation, and TPH/Oil & Grease results above 6,200 mg/kg should be evaluated for the potential presence and mobility of NAPL in any future development planning:

- There were no locations where detections of lead exceeded 10,000 mg/kg.
- There were no locations where detections of PCBs exceeded 50 mg/kg.
- There were no locations where detections of TPH/Oil & Grease exceeded 6,200 mg/kg.

No visual observations of NAPL were noted at any locations for the Site. Additionally, no NAPL was detected in any monitoring wells within or proximate to the proposed development area.

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): The Composite Worker SLRA was evaluated using a single Exposure Unit (EU1) with an area of 88.1 acres. EU1 corresponds with the proposed development area. The Construction Worker SLRA was evaluated using a slightly expanded EU (EU1-EXP), covering 89.9 acres in total which includes the 1.76 acres of additional construction worker areas incorporated within the LOD to include the facility utility installation outside of the sub-parcel. Soil boring data from locations B5-122-SB, B5-167-SB, B13-006-SB, B13-007-SB, B13-012-SB, B13-013-SB, B13-016-SB, B13-017-SB, and B13-076-SB are included in EU1-EXP but not in EU1.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, COPC screening was completed assuming a Target Risk of $1E-6$ and 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%; and
- 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 1242 and Aroclor 1248) 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 1 feet bgs), subsurface (>1 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 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 $1\text{E-}6$ and a non-cancer Hazard Quotient (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 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 EU1-EXP that would result in risk ratios equivalent to a cumulative cancer risk of $1\text{E-}5$ 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 95 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the TPA 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 the site-wide EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU were 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 (Based on the *Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities* (USEPA, January 17, 2024)) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 micrograms lead per deciliter of blood (ug/dL). The ALM calculation generates a soil lead concentration of 1,050 mg/kg, which represents the concentrations such that there would be no more than a 5% probability that fetuses exposed to lead would exceed a blood lead of 5 µg/dL. If the arithmetic mean concentrations for the EU were below 1,052 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). No soil sample results exceeded the PAL for TPH or Oil & Grease. Contingency measures to address the potential presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

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 TPA property will be used at a portion of the Site (approximately 6.79 acres designated B13-2 Asphalt Cap); therefore, regardless of the findings of the Composite Worker baseline assessment, this portion of the Site will be subject to surface engineering controls (i.e., capping).

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 B13-2 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which have been implemented at the Site (covered by the Sub-Parcel B13-2 Grading Plan dated October 24, 2023; which was developed for preparatory grading work associated with the project), 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 (88.1 acres)	Surface Soil	none	4E-6
		Subsurface Soil	none	5E-6
		Pooled Soil	none	3E-6

Based on the risk ratios for Sub-Parcel B13-2, capping is not necessary to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios. None of the cancer risk values exceeded 1E-5 and none of the non-carcinogenic HI values exceeded 1. However, slag aggregate will be used as the fill material and pavement subbase for a portion of the Site. Therefore, environmental capping will be required to be protective of future Composite Workers for this portion, as described below.

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 EU1-EXP that would result in risk ratios equivalent to a cumulative cancer risk of $1\text{E-}5$ or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected duration (95 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	EU1-EXP (89.9 acres) (95 exposure days)	Surface Soil	none	$2\text{E-}7$
		Subsurface Soil	none	$3\text{E-}7$
		Pooled Soil	none	$2\text{E-}7$

Using the selected exposure duration for the site-wide EU1-EXP (95 days), the carcinogenic risks were all less than $1\text{E-}5$, 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 95 days were to be exceeded for an individual worker.

Development activities may exceed the allowable duration. In such an event, Construction Worker risks would be required to be mitigated, warranting additional site-specific health and safety requirements to be protective of workers. 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

Based on the risk ratios for Sub-Parcel B13-2, environmental capping is not necessary to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios. However, slag aggregate will be used as the fill material and pavement subbase for a portion of the Site (refer to ‘B13-2 Asphalt Cap’ in **Figure 5**, approximately 6.79 acres). Therefore, an environmental cap is required for this portion of the development area to mitigate potential Composite Worker risks. Portions of Sub-Parcel B13-2 will be paved, but not considered an environmental cap, and therefore does not require evaluation of RCRA criteria.

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 (for the portion of the Site that is proposed to be capped) 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 the Site. 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 the Site where processed slag aggregate has been placed. 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, the 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 the Site. 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 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 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 for the portion of the Site where slag aggregate has been brought in (B13-2 Asphalt Cap) 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 the Site.

4.0 PROPOSED SITE DEVELOPMENT PLAN

TPA is proposing paving at Sub-Parcel B13-2. The proposed development will include permanent improvements on approximately 88.1 acres located within Parcel B13. The proposed future use of Sub-Parcel B13-2 is Tier 3 – Industrial. The remainder of Parcel B13 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 1.76 acres will be utilized to install roadway 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. One portion of the Site (6.79 acres) will have an environmental cap as part of the VCP capping remedy (due to the use of slag fill), while the remainder of the Site (81.3 acres) will be mainly paved but does not require an environmental cap.

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 95-day exposure frequency for the site-wide EU1-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).

Development activities at the Site are not expected to exceed the allowable duration; however additional site-specific health and safety requirements will be implemented as a conservatism to be protective of workers. 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**. Detailed development plan drawings are included as **Appendix D**. The development of the Site will involve the tasks listed below. Documentation of the outlined tasks and procedures will be provided in a Sub-Parcel B13-2 Development Completion Report.

4.1 DEVELOPMENT PHASE

4.1.1 Erosion and Sediment Control Installation

Erosion and sediment controls were installed in April 2024 as part of the Francis Scott Key Memorial Bridge emergency response support activities, prior to the commencement of grading work in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

4.1.2 Grading and Site Preparation

Preliminary grading commenced at the Site in April 2024, and is covered by the Sub-Parcel B13-2 Grading Plan dated October 24, 2023 and approved by the Agencies on March 18, 2024. Grading activities include both cut and fill within the Sub-Parcel B13-2 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. Processed slag aggregate sourced from the TPA property will be used as fill within the ‘B13-2 Asphalt Cap’ portion of the Site. Other materials approved by the Agencies 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 for the Sparrows Point Facility (Jenkins Environmental, Inc., August 17, 2021). This work will be coordinated with the Agencies accordingly. No excess material will leave the 3,100-acre property without prior approval from Agencies.

4.1.3 Installation of Underground Utilities

The infrastructure associated with the development of Sub-Parcel B13-2 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.

4.1.4 Paving

As shown on **Figure 5** a significant portion of the Site will be covered with paving. However, only a portion of this area will be considered a VCP environmental cap. This includes the B13-2 Asphalt

Cap. The final locations of the slag material brought onsite will be surveyed formally and the metes and bounds of the final areas will be included in the completion report.

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**. The entirety of the B13-2 Asphalt Cap 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.

4.1.5 Stormwater Management

New stormwater infrastructure will be installed throughout the Site and will discharge to north and south of the Site. As shown on **Figure 6**, the site-wide shallow groundwater elevations range from approximately 0.84 feet amsl to 0.17 feet amsl (in the east). This is approximately 9 feet below the final graded surface of the Site (of 10 feet amsl). Utility excavations are expected to reach depths of approximately 4 feet amsl. This is approximately 6 feet below the final grade surface of the Site. Based on the shallow groundwater elevation measurements collected during the site-wide groundwater elevation investigation, excavations may encounter groundwater. Water removed for dewatering will be managed as described in Section 5.2.

The stormwater management systems for each parcel are reviewed and approved by Baltimore County for each individual development project at the TPA property.

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 B13-2. 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 minor PAL exceedances were identified in soil samples across the Site. The PALs are set based on the 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/Oil & Grease (6,200 mg/kg). NAPL was not detected on the water table in any 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 95-day exposure frequency for the site-wide EU1-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). Development activities at the Site are not expected exceed the allowable duration of 95 days, however Construction Worker risks will 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 not required to be protective of future adult Composite Workers. TPA has used processed slag aggregate as fill material and pavement subbase for a portion of the Site (approximately 6.79 acres designated as B13-2 Asphalt Cap, as shown on **Figure 5**). 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

In accordance with the Sub-Parcel B13-2 Grading Plan (dated October 24, 2023), erosion and sediment controls were installed prior to commencing grading work in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The erosion and sediment controls were approved by the Agencies. In addition, the following measures are being taken to prevent soil from exiting the Site:

- Stabilized construction entrance placed at site entrance.
- A dry street sweeper used as necessary on adjacent roads, with the swept dust collected and properly managed.
- Accumulated sediment removed from silt fence, and sediment traps if applicable, is being 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.

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. 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 there are no visual indications of potential contamination and no elevated PID detections, material removed from excavations/trenching can be re-used as backfill on-site. 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 to minimize potential exposures and erosion when not in use. Materials stockpiled due to evidence of contamination will be sampled in accordance with reuse and/or waste disposal requirements and transported to an appropriate permitted disposal facility. Analysis of segregated soils for any use other than disposal must be submitted to the Agencies for approval.

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 shall be placed on a polyethylene or equivalent tarp to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill under surface engineering controls at this Site or on other areas of the TPA property depending on the analytical results.

Any soil that is generated from excavations/trenching that is not proposed (or suitable) for reuse within the subject parcel will be sampled to determine the suitability of the material for disposal. Soil material that is determined to be non-hazardous may be taken to an appropriate non-hazardous landfill (which may include Greys Landfill if approved by TPA) for proper disposal. 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. A summary of sampling including a description of the material, estimated volume, and sampling parameters will be

submitted to the Agencies. 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 TPA property will be used as the fill material for a portion of this Site (B13-2 Asphalt Cap) as shown on **Figure 5**. The placement of processed slag aggregate or materials other than approved clean fill will necessitate that the B13-2 Asphalt Cap 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 the Site 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.

All over-excavated utility trenches will be backfilled with material approved by the Agencies for industrial use. Backfill may include material removed from utility trenches unless such materials are identified by the EP as unsuitable due to elevated PID readings or other indications of potential contamination. As with structural fill, processed slag aggregate and other materials approved for industrial use can be used as backfill in utility trenches on the Site if the area will be covered by a VCP cap. Utility backfill which will extend into the cap (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. A general utility detail drawing is provided as **Appendix F**. Material imported to the Site will be screened according to Agency guidance for suitability.

5.1.5 Dust Control

General construction operations, including grading, 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 TPA 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 in dust and windblown particulates, dust monitoring will be performed during dust-generating activities.

The EP will be responsible for the Site dust monitoring program. This will consist of both monitoring for visible dust as well as real-time dust monitoring. If sustained visible dust is observed, the General Contractor will implement dust suppression methods to address dust levels at the Site. Such methods may include an increase in the frequency of water trucks spraying vehicle routes, covering of material piles with plastic sheeting, or decreasing drop heights of material from excavation equipment.

Real-time dust monitoring will be implemented using Met One Instruments, Inc. E-Sampler dust monitors or equivalent real-time air monitoring devices will be utilized. Continuous dust monitoring will be performed in the work area as well as perimeter monitors at upwind and

downwind locations 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 may be adjusted if there is a substantial shift in prevailing wind direction.

The action level for determining the need for implementing additional dust suppression methodologies is 3.0 milligrams per cubic meter (mg/m^3). The lowest of the site-specific dust action levels, Occupational Safety and Health Administration Permissible Exposure Limit, and American Conference of Governmental Industrial Hygienists Threshold Limit Value was selected. If sustained dust concentrations exceed the action level ($3.0 \text{ mg}/\text{m}^3$) at monitoring locations as a result of conditions occurring at the Site, operations will be temporarily stopped until additional dust suppression can be implemented. Operations may resume once monitoring indicates that dust concentrations are below the action level.

Once all dust-generating activities are complete, the dust monitoring program may be discontinued.

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 B13-2 development.

5.2.1 Groundwater PAL Exceedances

Groundwater samples were collected during the preceding Phase II Investigation from monitoring wells within and 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 are summarized on **Figure GW1**. As noted above, there were several locations with cyanide vapor intrusion exceedances, however, because there will be no permanent structures at the Site, there are no concerns related to potential VI risks/hazards.

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 as well as during ground intrusive work such as the installation of underground utilities or within excavations/trenches. **Figure 6** displays the groundwater elevations underlying the Site for the shallow aquifer zone, based on prior investigation data. The site-wide shallow groundwater elevations are less than 1 foot amsl (approximately 9 feet below the final graded surface). Utility excavations are expected to reach depths of approximately 4 feet amsl (approximately 6 feet below

the final graded surface). Excavations may encounter groundwater. 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 managed via one of the following options:

- Transported to be treated at the HCWWTP, following any pretreatment necessary and discharged in accordance with NPDES Permit No. 90-DP-0064; Special Conditions; A.1, A.4, or A.6 (whichever is currently in effect); Effluent Limitations and Monitoring Requirements;
- Discharged to the Baltimore County sanitary sewer system;
- Discharged in accordance with the requirements of the General Permit for Stormwater Associated with Construction Activity (20-CP);
- Discharged locally in accordance with the requirements of Special Condition AF, Section 2, Mobile Dewatering Collection and Treatment Unit of NPDES Permit No. 90-DP-0064; or
- Off-site disposal.

The Agencies will be notified which option is selected prior to the generation of groundwater. If water is sent to the HCWWTP via the Tin Mill Canal, trucking, or direct discharge to a drainage system that flows to the HCWWTP, applicable outfall dewatering fluids will be evaluated pursuant to the HCWWTP Constituent Threshold Limits for Dewatering Activities related to Remediation, Development, and Capping Protocol listed below. Water discharged to the Tin Mill Canal will also be pumped through a filter bag, weir frac tank, or equivalent to remove suspended solids prior to discharge.

The EP will inspect water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (e.g., sheen, odor, discoloration, presence of product), the water may also be sampled to confirm conditions. If the results of the analyses are above the threshold levels listed below, groundwater at the Site will be further evaluated to confirm acceptable treatment by 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.

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

Documentation of water testing and the selected disposal option will be reported to the Agencies in the Development Completion Report. Associated permits or permit modifications related to dewatering will also be provided in the Development Completion Report.

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 may elect to adopt the property-wide HASP or may prepare their own HASP that provides a level of protection that is at least as much as that provided by the attached HASP.

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 95 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 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).
- 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 VCP in the NFA and COC.

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 pursuant to the Sitewide Groundwater Corrective Measures Study. 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; and
- 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 was acquired as part of this development project. Erosion and Sediment Control Plans were 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:

<u>Task</u>	<u>Proposed Completion Date</u>
Anticipated RADWP Approval	January 2025
<i>Development:</i>	
Installation of Erosion and Sediment Controls	Complete
Site Preparation / Grading	Complete
Utility Installations	January 2025 (start) July 2025 (completion)
Substantial Completion	August 2025
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	December 2025
Request for NFA from the Agencies	December 2025
Recordation of institutional controls in	Within 30 days of receiving the

the land records office of Baltimore
County

approval of NFA from the Agencies

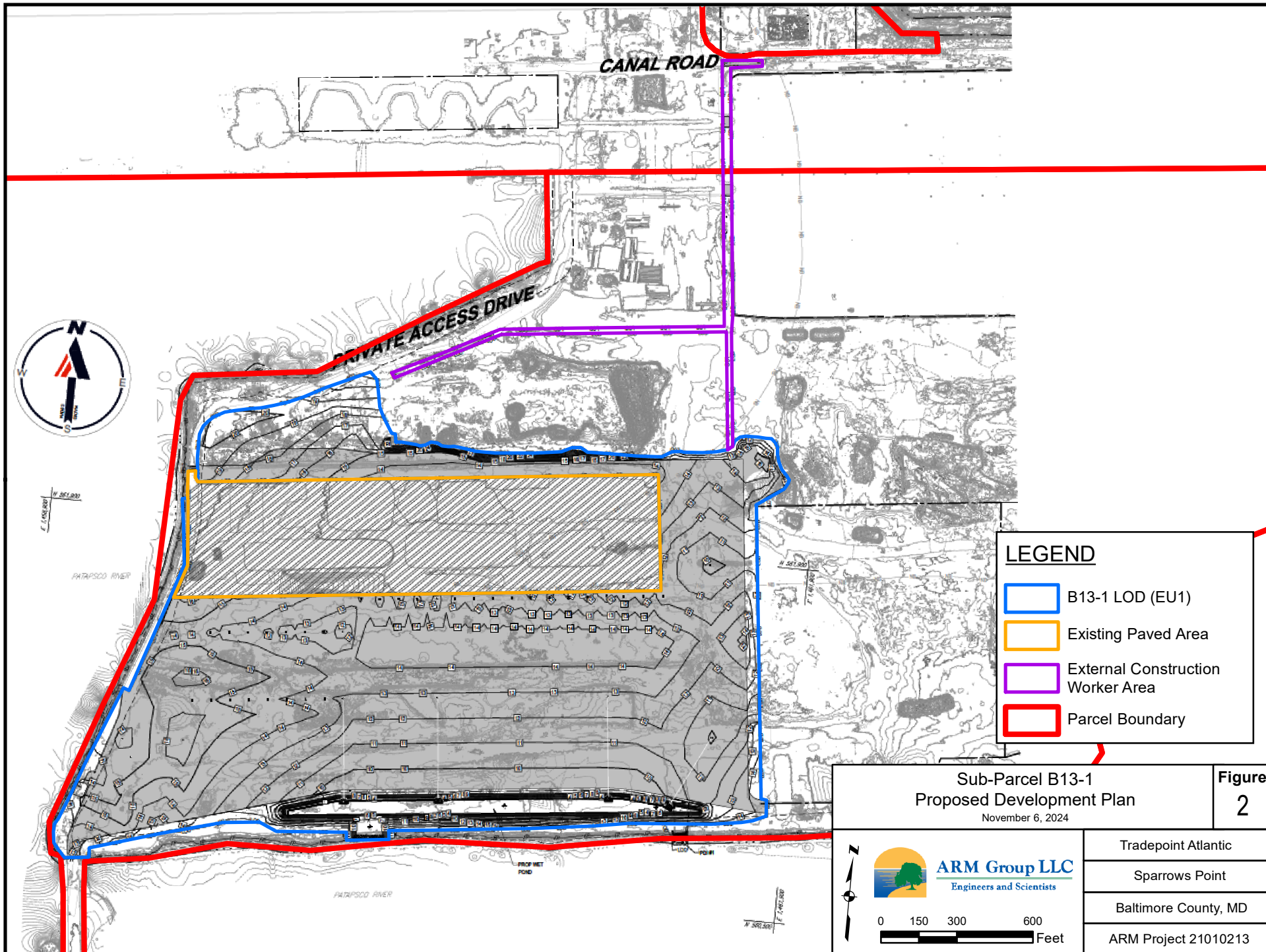
Submit proof of recordation with
Baltimore County

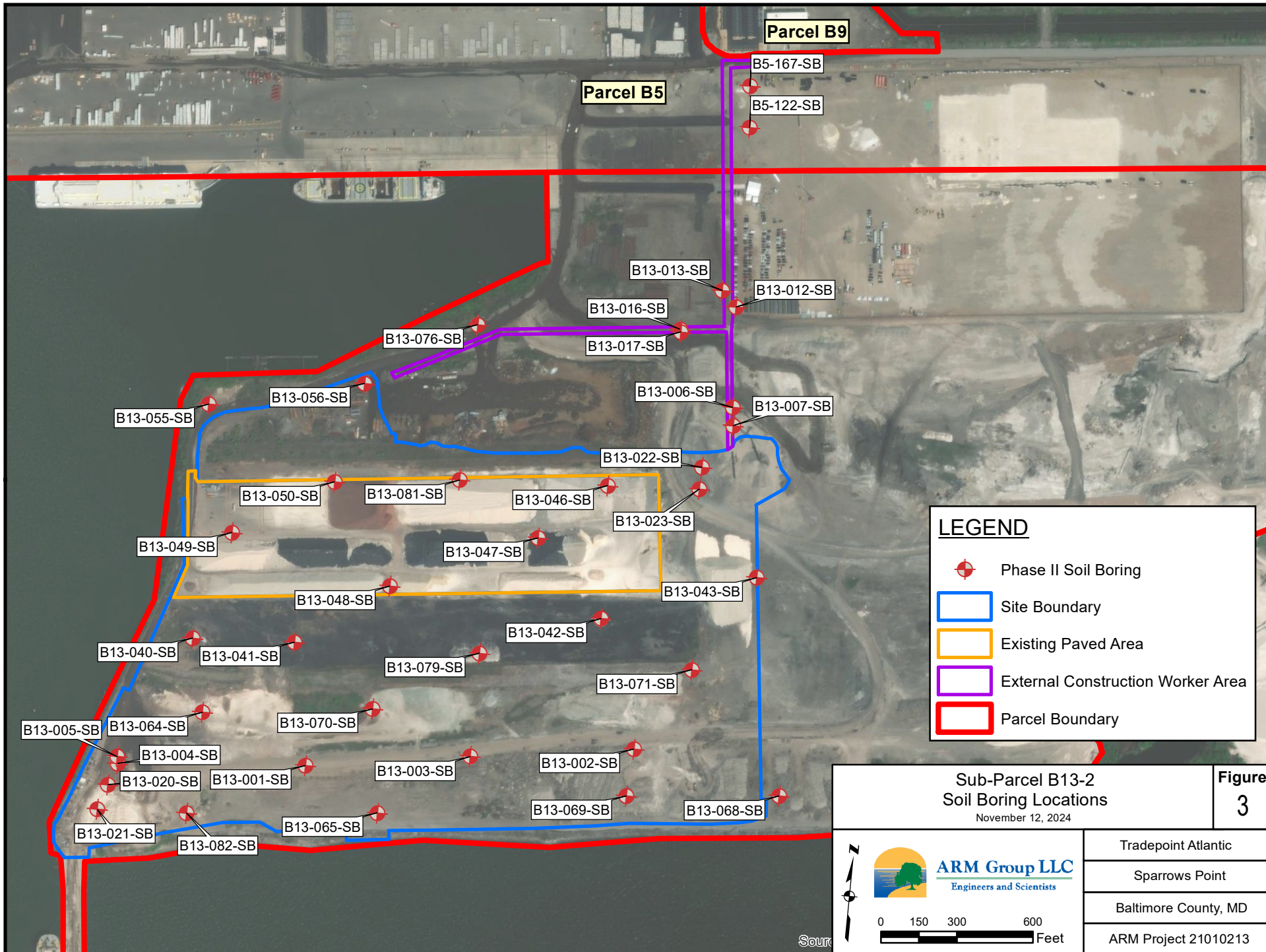
Upon receipt from Baltimore County

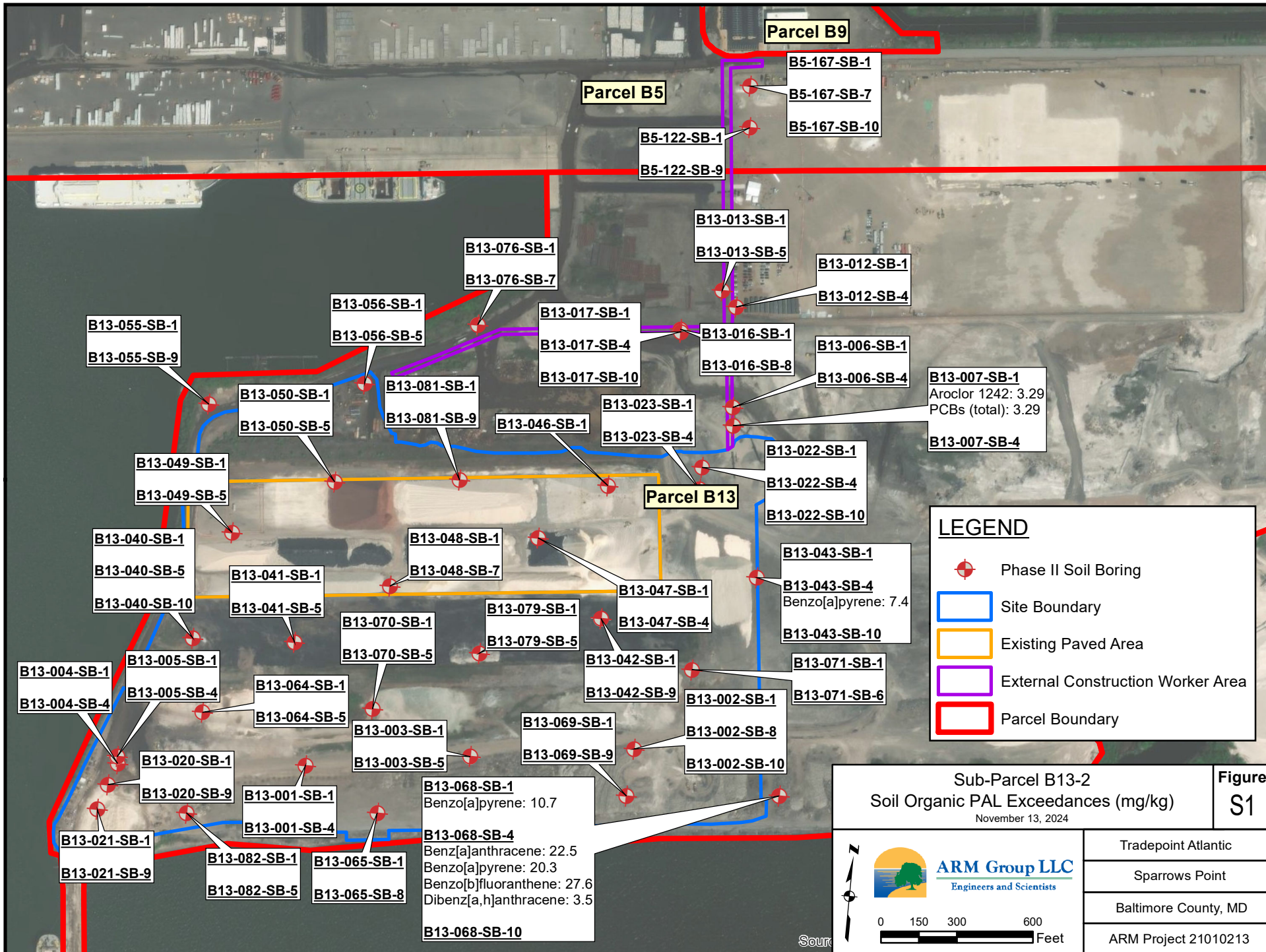
*Notice of Completion of Remedial Actions will be prepared by Professional Engineer registered in Maryland and submitted with the Development Completion Report to certify that the work is consistent with the requirements of this RADWP and the Site is suitable for occupancy and use.

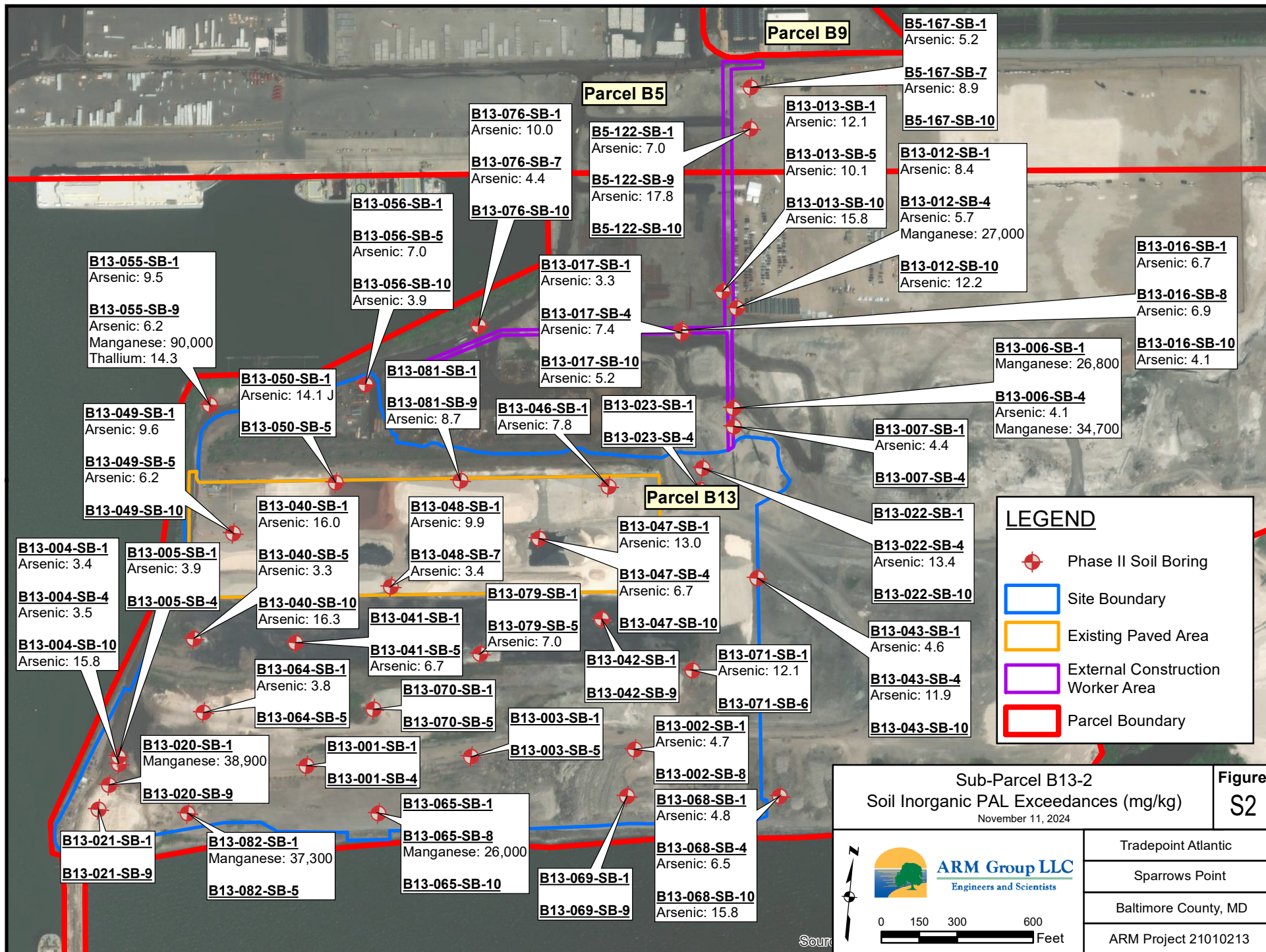
FIGURES

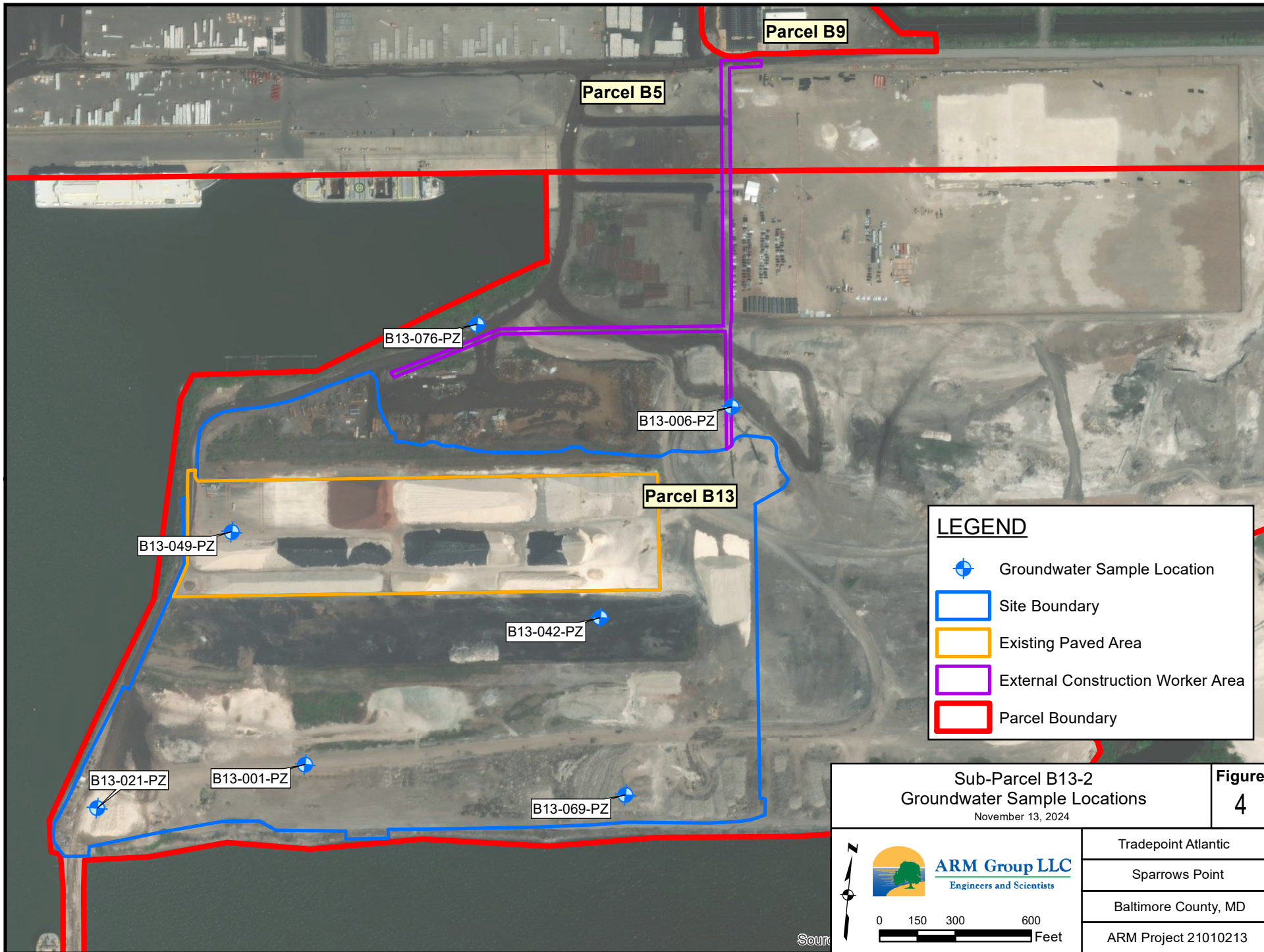








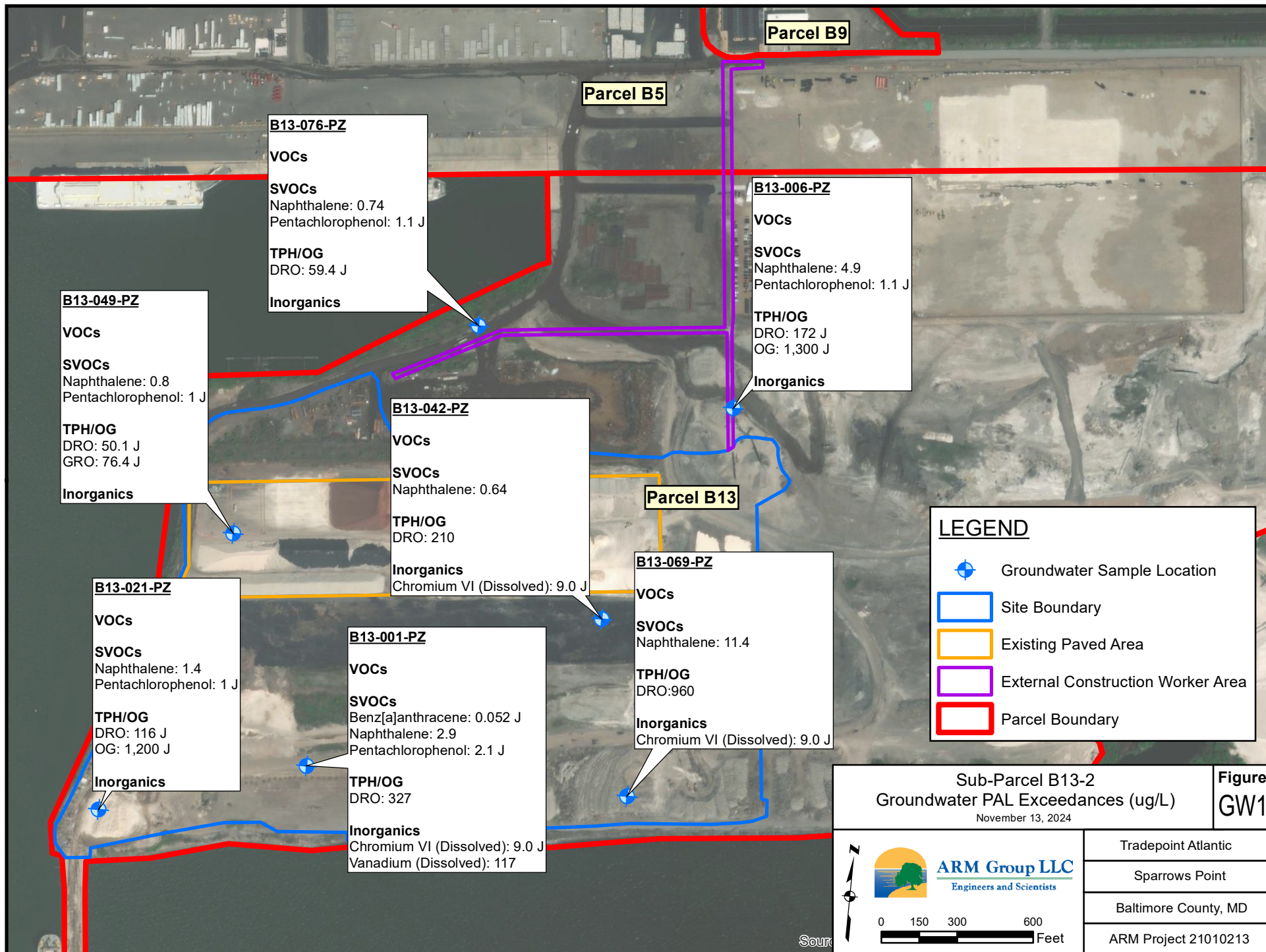


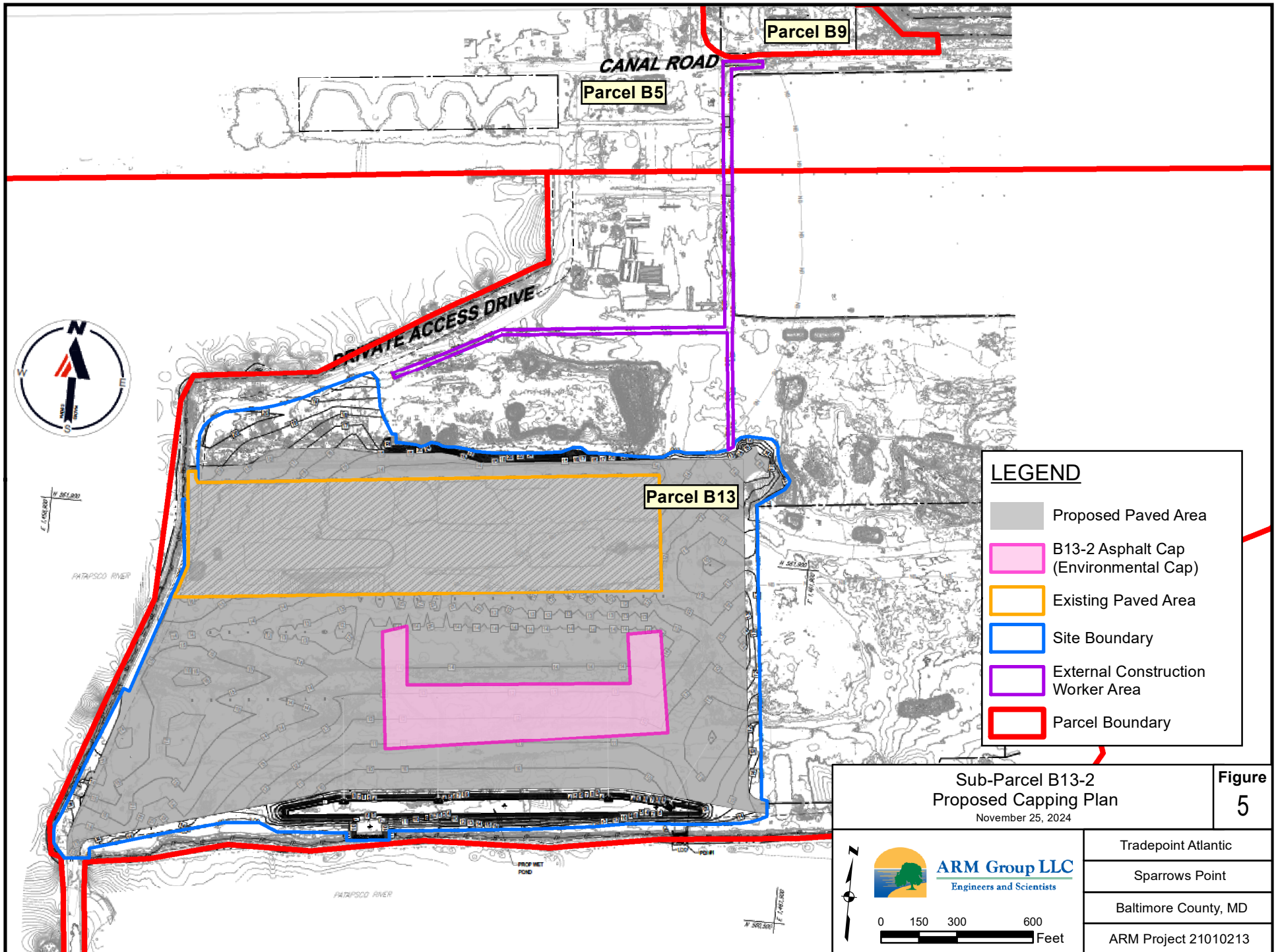


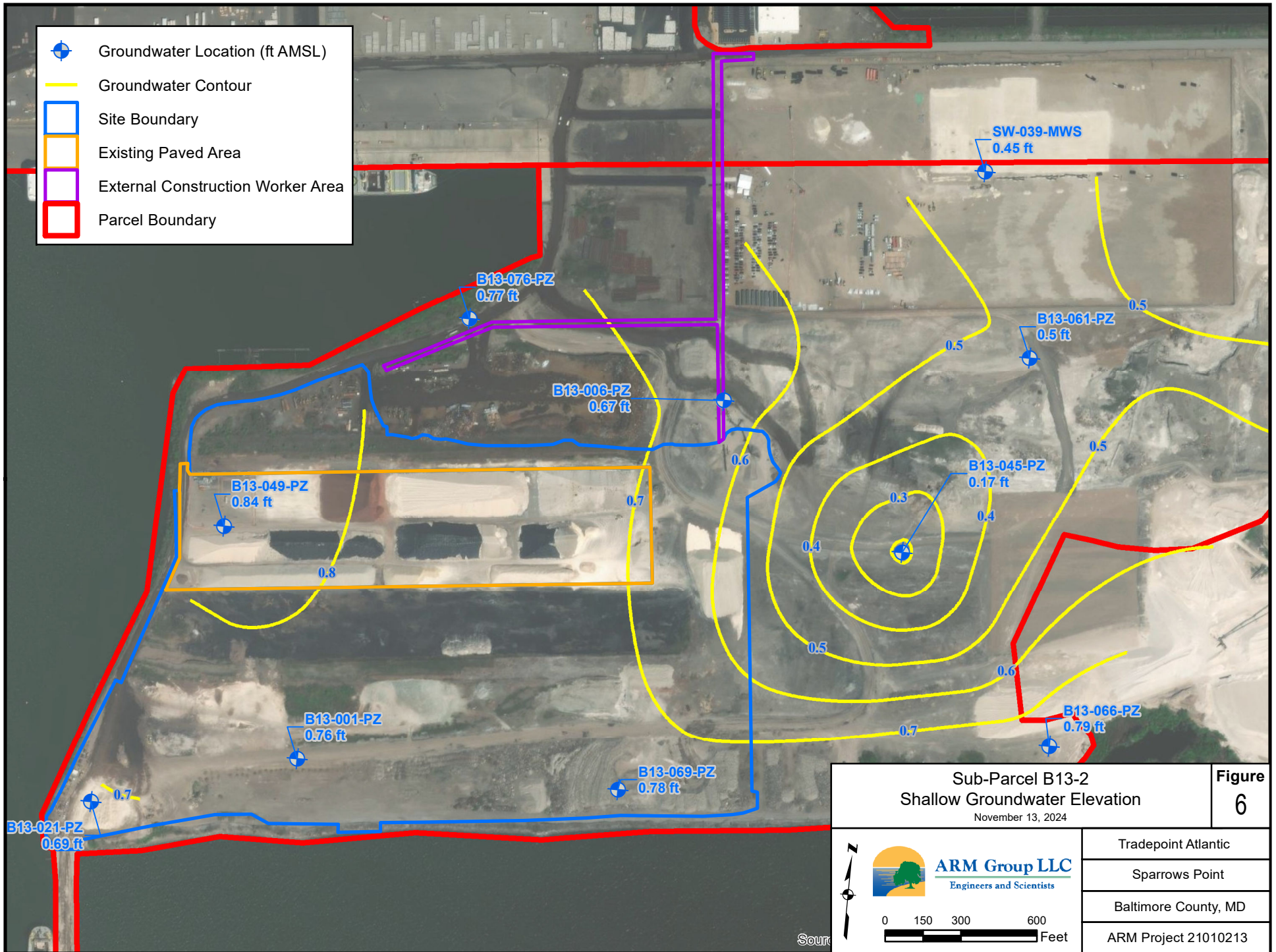
LEGEND

- Groundwater Sample Location
- Site Boundary
- Existing Paved Area
- External Construction Worker Area
- Parcel Boundary

Sub-Parcel B13-2 Groundwater Sample Locations November 13, 2024		Figure 4
 ARM Group LLC Engineers and Scientists	Tradepoint Atlantic	
	Sparrows Point	
	Baltimore County, MD	
0 150 300 600 Feet		ARM Project 21010213







TABLES

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-001-SB-1	B13-001-SB-4	B13-002-SB-1*	B13-002-SB-8*	B13-002-SB-10	B13-003-SB-1	B13-003-SB-5	B13-004-SB-1	B13-004-SB-4	B13-005-SB-1	B13-005-SB-4	B13-006-SB-1*
			8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016
Volatile Organic Compounds														
2-Butanone (MEK)	mg/kg	190,000	0.014 U	0.01 U	0.009 U	0.01 U	N/A	N/A	N/A	N/A	N/A	N/A	0.012 U	0.013 U
2-Hexanone	mg/kg	1,300	0.014 U	0.01 U	0.009 U	0.01 U	N/A	N/A	N/A	N/A	N/A	N/A	0.012 U	0.013 U
Acetone	mg/kg	670,000	0.074 J	0.011 J	0.0057 J	0.006 J	N/A	N/A	N/A	N/A	N/A	N/A	0.011 J	0.0089 J
Benzene	mg/kg	5.1	0.0069 U	0.0051 U	0.0045 U	0.0051 U	N/A	N/A	N/A	N/A	N/A	N/A	0.0061 U	0.0065 U
Ethylbenzene	mg/kg	25	0.0069 U	0.0051 U	0.0045 U	0.0051 U	N/A	N/A	N/A	N/A	N/A	N/A	0.0061 U	0.0065 U
Isopropylbenzene	mg/kg	9,900	0.0069 U	0.0051 U	0.0045 U	0.0051 U	N/A	N/A	N/A	N/A	N/A	N/A	0.0061 U	0.0065 U
Methylene Chloride	mg/kg	1,000	0.0069 U	0.0051 U	0.0045 U	0.0051 U	N/A	N/A	N/A	N/A	N/A	N/A	0.0061 U	0.0065 U
Toluene	mg/kg	47,000	0.0068 J	0.0051 U	0.0045 U	0.0051 U	N/A	N/A	N/A	N/A	N/A	N/A	0.0061 U	0.0065 U
Xylenes	mg/kg	2,800	0.015 J	0.015 U	0.014 U	0.015 U	N/A	N/A	N/A	N/A	N/A	N/A	0.018 U	0.02 U
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.017 J	0.017 J	0.036 J	0.016 J	N/A	0.073 U	0.073 U	0.014 J	0.072 U	0.072 U	0.074 U	0.069 J
2,4-Dimethylphenol	mg/kg	16,000	0.073 UJ	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
2-Chloronaphthalene	mg/kg	60,000	0.073 U	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
2-Methylnaphthalene	mg/kg	3,000	0.038	0.041	0.088	0.048	N/A	0.049	0.021	0.042	0.0058 J	0.024 J	0.0077	0.34
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 UJ	0.15 U	0.14 U	0.15 U	N/A	0.15 U	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.019 J
Acenaphthene	mg/kg	45,000	0.023	0.018	0.049	0.082	N/A	0.012	0.0053 J	0.0071 U	0.00056 J	0.0049 J	0.0016 J	0.025 J
Acenaphthylene	mg/kg	45,000	0.035	0.03	0.052	0.058	N/A	0.0087	0.0072 J	0.0018 J	0.0098	0.01 J	0.0052 J	0.12
Acetophenone	mg/kg	120,000	0.073 U	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
Anthracene	mg/kg	230,000	0.075	0.061	0.25	0.47	N/A	0.029	0.024	0.0042 J	0.0094	0.023 J	0.008	0.35
Benz[a]anthracene	mg/kg	21	0.29	0.22	0.86	1.4	N/A	0.073	0.061	0.0096	0.051	0.25 J	0.028	0.84
Benzaldehyde	mg/kg	120,000	0.073 R	0.075 R	0.071 U	0.073 U	N/A	0.073 R	0.073 R	0.069 R	0.072 R	0.072 R	0.074 R	0.017 J
Benzo[a]pyrene	mg/kg	2.1	0.31	0.25	0.67	1.1	0.81 J	0.069	0.055	0.011 J	0.043	0.41 J	0.024	0.79
Benzo[b]fluoranthene	mg/kg	21	0.45	0.37	1.1	1.8	N/A	0.18	0.095	0.027 J	0.071	0.53 J	0.058	1.7
Benzo[g,h,i]perylene	mg/kg		0.14	0.1	0.19	0.23	N/A	0.046	0.035	0.0064 J	0.024	0.26 J	0.016	0.41
Benzo[k]fluoranthene	mg/kg	210	0.16	0.14	0.43	1.7	N/A	0.14	0.032	0.024 J	0.027	0.2 J	0.053	1.3
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.073 U	0.075 U	0.071 U	0.073 U	N/A	0.027 B	0.073 UJ	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
Carbazole	mg/kg		0.035 J	0.028 J	0.09	0.16	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.14
Chrysene	mg/kg	2,100	0.28	0.23	0.79	1.2	N/A	0.089	0.077	0.018	0.048	0.29 J	0.031	0.85
Dibenz[a,h]anthracene	mg/kg	2.1	0.055	0.038	0.085	0.12	N/A	0.015	0.011	0.0016 J	0.0089	0.076 J	0.0056 J	0.12
Diethylphthalate	mg/kg	660,000	0.073 U	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
Di-n-butylphthalate	mg/kg	82,000	0.073 U	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
Fluoranthene	mg/kg	30,000	0.53	0.41	1.6	2.7	N/A	0.14	0.11	0.014	0.093	0.3 J	0.059	2.1
Fluorene	mg/kg	30,000	0.018	0.013	0.044	0.091	N/A	0.0095	0.0058 J	0.0015 J	0.0012 J	0.0037 J	0.0012 J	0.055 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.14	0.11	0.22	0.29	N/A	0.043	0.031	0.0049 J	0.026	0.23 J	0.015	0.36
Naphthalene	mg/kg	8.6	0.18	0.28	0.17	0.13	N/A	0.066	0.033	0.027	0.018	0.026 J	0.026	0.98
N-Nitrosodiphenylamine	mg/kg	470	0.073 U	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
Phenanthrene	mg/kg		0.26	0.22	0.8	1.3	N/A	0.11	0.097	0.03	0.029	0.1 J	0.026	1.4
Phenol	mg/kg	250,000	0.073 UJ	0.075 U	0.071 U	0.073 U	N/A	0.073 U	0.073 U	0.069 U	0.072 U	0.072 U	0.074 U	0.073 U
Pyrene	mg/kg	23,000	0.49	0.4	1.4	2.3	N/A	0.13	0.1	0.014	0.071	0.29 J	0.049	1.9
PCBs														
Aroclor 1242	mg/kg	0.97	0.0569 U	N/A	0.0527 U	N/A	N/A	0.056 U	N/A	0.0481 J	N/A	0.179	N/A	0.0563 U
Aroclor 1248	mg/kg	0.94	0.0569 U	N/A	0.0527 U	N/A	N/A	0.056 U	N/A	0.0537 U	N/A	0.0544 U	N/A	0.0563 U
Aroclor 1254	mg/kg	0.97	0.0569 U	N/A	0.0527 U	N/A	N/A	0.056 U	N/A	0.0537 U	N/A	0.0544 U	N/A	0.0849
Aroclor 1268	mg/kg		0.0569 U	N/A	0.0527 U	N/A	N/A	0.056 U	N/A	0.0537 U	N/A	0.0544 U	N/A	0.0563 U
PCBs (total)	mg/kg	0.97	0.0569 U	N/A	0.0527 U	N/A	N/A	0.056 U	N/A	0.0481 J	N/A	0.179	N/A	0.0849
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	51 J	70.9 J	54.2	37	N/A	36.8 J	40.1 J	127 J	12.1 J	39 J	24.6 J	59
Gasoline Range Organics	mg/kg	6,200	11.1 U	12.1 U	10.3 U	11.1 U	N/A	18 U	11.9 U	6.4 U	16.2 U	9.2 U	13.7 U	11.8 U
Oil & Grease	mg/kg	6,200	666	494	276	351	N/A	337	429	1,520	411	412	545	339

Bold indicates detection

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

* Indicates non-validated data

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-006-SB-4*	B13-007-SB-1*	B13-007-SB-4*	B13-012-SB-1	B13-012-SB-4	B13-013-SB-1	B13-013-SB-5	B13-016-SB-1*	B13-016-SB-8*	B13-017-SB-1*	B13-017-SB-4*	B13-017-SB-10*
			8/24/2016	8/24/2016	8/24/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/29/2016	8/26/2016	8/26/2016	8/25/2016	8/25/2016
Volatile Organic Compounds														
2-Butanone (MEK)	mg/kg	190,000	0.0086 U	0.009 U	N/A	N/A	0.0075 U	N/A	0.0057 J	N/A	N/A	N/A	0.012 U	N/A
2-Hexanone	mg/kg	1,300	0.0086 U	0.009 U	N/A	N/A	0.0075 U	N/A	0.0091 U	N/A	N/A	N/A	0.012 U	N/A
Acetone	mg/kg	670,000	0.0074 J	0.0053 J	N/A	N/A	0.0045 J	N/A	0.017 J	N/A	N/A	N/A	0.0083 B	N/A
Benzene	mg/kg	5.1	0.0043 U	0.0045 U	N/A	N/A	0.0038 U	N/A	0.0046 U	N/A	N/A	N/A	0.0059 U	N/A
Ethylbenzene	mg/kg	25	0.0043 U	0.0045 U	N/A	N/A	0.0038 U	N/A	0.0046 U	N/A	N/A	N/A	0.0059 U	N/A
Isopropylbenzene	mg/kg	9,900	0.0043 U	0.0045 U	N/A	N/A	0.0038 UJ	N/A	0.0046 UJ	N/A	N/A	N/A	0.0059 U	N/A
Methylene Chloride	mg/kg	1,000	0.0043 U	0.0045 U	N/A	N/A	0.0038 U	N/A	0.0046 U	N/A	N/A	N/A	0.0059 U	N/A
Toluene	mg/kg	47,000	0.0043 U	0.0045 U	N/A	N/A	0.0038 U	N/A	0.0046 U	N/A	N/A	N/A	0.0059 U	N/A
Xylenes	mg/kg	2,800	0.013 U	0.013 U	N/A	N/A	0.011 U	N/A	0.014 U	N/A	N/A	N/A	0.018 U	N/A
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.074 U	0.019 J	0.071 U	0.072 U	0.027 J	0.071 U	0.072 U	0.049 J	0.076 U	0.017 J	0.019 J	N/A
2,4-Dimethylphenol	mg/kg	16,000	0.074 U	0.07 U	0.071 U	0.072 R	0.073 R	0.071 U	0.072 U	0.073 U	0.076 U	0.07 U	0.08 U	N/A
2-Chloronaphthalene	mg/kg	60,000	0.074 U	0.07 U	0.071 U	0.072 U	0.073 U	0.071 U	0.072 U	0.043 J	0.076 U	0.07 U	0.08 U	N/A
2-Methylnaphthalene	mg/kg	3,000	0.013	0.06 J	0.0042 J	0.028	0.075	0.027	0.053	0.18	0.02	0.019	0.092	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	0.14 U	0.14 U	0.14 R	0.14 R	0.14 U	0.14 U	0.027 J	0.15 U	0.14 U	0.16 U	N/A
Acenaphthene	mg/kg	45,000	0.0075 U	0.0091 J	0.001 J	0.0023 J	0.0093	0.0037 J	0.0036 J	0.032	0.004 J	0.0031 J	0.01	N/A
Acenaphthylene	mg/kg	45,000	0.024	0.0086 J	0.0066 J	0.0048 J	0.021	0.018	0.015	0.11	0.014	0.017	0.075	N/A
Acetophenone	mg/kg	120,000	0.074 U	0.02 J	0.071 U	0.072 U	0.073 U	0.071 U	0.072 U	0.073 U	0.076 U	0.07 U	0.08 U	N/A
Anthracene	mg/kg	230,000	0.017	0.019 J	0.0055 J	0.023	0.078	0.044	0.016	0.23	0.025	0.011	0.14	N/A
Benz[a]anthracene	mg/kg	21	0.088	0.038 J	0.023	0.042	0.13	0.12	0.044	0.4	0.096	0.047	0.51	N/A
Benzaldehyde	mg/kg	120,000	0.074 U	0.03 J	0.071 U	0.024 J	0.073 R	0.071 R	0.072 R	0.073 U	0.076 U	0.016 J	0.08 U	N/A
Benzo[a]pyrene	mg/kg	2.1	0.072	0.038 J	0.019	0.039	0.091 J	0.12	0.048	0.43	0.1	0.075	0.46	0.025
Benzo[b]fluoranthene	mg/kg	21	0.36	0.12	0.079	0.13	0.28 J	0.32	0.14	1.1	0.21	0.16	0.96	N/A
Benzo[g,h,i]perylene	mg/kg		0.038	0.015 J	0.0081	0.013	0.028 J	0.037	0.018	0.27	0.055	0.061	0.27	N/A
Benzo[k]fluoranthene	mg/kg	210	0.26	0.091	0.058	0.097	0.21 J	0.24	0.11	1	0.19	0.11	0.7	N/A
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.024 J	0.58	0.071 U	0.072 UJ	0.073 UJ	0.02 B	0.15 J	0.11	0.076 U	0.07 U	0.08 U	N/A
Carbazole	mg/kg		0.64	0.057 J	0.071 U	0.072 U	0.025 J	0.071 U	0.072 UJ	0.069 J	0.076 U	0.07 U	0.058 J	N/A
Chrysene	mg/kg	2,100	0.11	0.07 J	0.026	0.072	0.16	0.11	0.066	0.53	0.1	0.058	0.48	N/A
Dibenz[a,h]anthracene	mg/kg	2.1	0.015	0.071 U	0.0032 J	0.0057 J	0.011 J	0.014	0.0061 J	0.12	0.022	0.017	0.09	N/A
Diethylphthalate	mg/kg	660,000	0.074 U	0.07 U	0.071 U	0.072 U	0.073 U	0.071 U	0.072 U	0.073 U	0.076 U	0.07 U	0.08 U	N/A
Di-n-butylphthalate	mg/kg	82,000	0.074 U	0.07 U	0.071 U	0.072 U	0.073 U	0.071 U	0.072 UJ	0.059 B	0.076 U	0.07 U	0.08 U	N/A
Fluoranthene	mg/kg	30,000	0.13	0.077	0.026	0.12	0.4	0.24	0.088	0.63	0.18	0.054	1	N/A
Fluorene	mg/kg	30,000	0.0075 U	0.0063 J	0.00088 J	0.004 J	0.011	0.0098	0.0075	0.032	0.0067 J	0.0023 J	0.025	N/A
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.043	0.011 J	0.0085	0.012 J	0.022 J	0.035 J	0.013 J	0.28	0.053	0.046	0.25	N/A
Naphthalene	mg/kg	8.6	0.019	0.041 J	0.0064 J	0.056	0.12	0.061	0.066	0.43	0.025	0.031	0.22	N/A
N-Nitrosodiphenylamine	mg/kg	470	0.074 U	0.07 U	0.071 U	0.072 U	0.073 U	0.071 U	0.072 UJ	0.073 U	0.076 U	0.07 U	0.08 U	N/A
Phenanthrene	mg/kg		0.044	0.11	0.0088	0.13	0.36	0.15	0.089	0.56	0.1	0.045	0.63	N/A
Phenol	mg/kg	250,000	0.074 U	0.07 U	0.071 U	0.072 R	0.073 R	0.071 U	0.072 U	0.023 J	0.076 U	0.07 U	0.08 U	N/A
Pyrene	mg/kg	23,000	0.12	0.06 J	0.024	0.093	0.31	0.19	0.068	0.6	0.15	0.056	0.81	N/A
PCBs														
Aroclor 1242	mg/kg	0.97	N/A	3.29	N/A	0.061 U	N/A	0.0604 U	N/A	0.0533 U	N/A	0.0549 U	N/A	N/A
Aroclor 1248	mg/kg	0.94	N/A	0.109 U	N/A	0.061 U	N/A	0.0604 U	N/A	0.0533 U	N/A	0.0549 U	N/A	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.109 U	N/A	0.061 U	N/A	0.0604 U	N/A	0.0533 U	N/A	0.0549 U	N/A	N/A
Aroclor 1268	mg/kg		N/A	0.109 U	N/A	0.061 U	N/A	0.0604 U	N/A	0.0533 U	N/A	0.0549 U	N/A	N/A
PCBs (total)	mg/kg	0.97	N/A	3.29	N/A	0.061 U	N/A	0.0604 U	N/A	0.0533 U	N/A	0.0549 U	N/A	N/A
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	106	213	7.1 U	43.9 J	80.8 J	26 J	47.6 J	86.3	18.1	15.2	34.1	N/A
Gasoline Range Organics	mg/kg	6,200	9.3 U	10.7 U	15.2 U	8.3 U	8.2 U	8.3 U	8.6 J	11.4 U	8.6 U	9.4 U	12.8 U	N/A
Oil & Grease	mg/kg	6,200	353	3,060	471	482	676	686	2,460	442	303	258	349	N/A

Bold indicates detection

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

* Indicates non-validated dat

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-020-SB-1	B13-020-SB-9	B13-021-SB-1	B13-021-SB-9	B13-022-SB-1*	B13-022-SB-4*	B13-022-SB-10	B13-023-SB-1*	B13-023-SB-4*	B13-040-SB-1	B13-040-SB-5	B13-040-SB-10
			8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016
Volatile Organic Compounds														
2-Butanone (MEK)	mg/kg	190,000	N/A	0.01 U	N/A	0.014 U	0.0045 J	0.011 U	N/A	N/A	0.015 U	N/A	N/A	N/A
2-Hexanone	mg/kg	1,300	N/A	0.01 U	N/A	0.014 U	0.014 U	0.011 U	N/A	N/A	0.015 U	N/A	N/A	N/A
Acetone	mg/kg	670,000	N/A	0.0087 J	N/A	0.013 J	0.022	0.015	N/A	N/A	0.0082 J	N/A	N/A	N/A
Benzene	mg/kg	5.1	N/A	0.005 U	N/A	0.0068 U	0.0071 U	0.0053 U	N/A	N/A	0.0075 U	N/A	N/A	N/A
Ethylbenzene	mg/kg	25	N/A	0.005 U	N/A	0.0068 U	0.0071 U	0.0053 U	N/A	N/A	0.0075 U	N/A	N/A	N/A
Isopropylbenzene	mg/kg	9,900	N/A	0.005 U	N/A	0.0068 U	0.0071 U	0.0053 U	N/A	N/A	0.0075 U	N/A	N/A	N/A
Methylene Chloride	mg/kg	1,000	N/A	0.005 UJ	N/A	0.0068 UJ	0.0071 U	0.0053 U	N/A	N/A	0.0075 U	N/A	N/A	N/A
Toluene	mg/kg	47,000	N/A	0.005 U	N/A	0.0068 U	0.0071 U	0.0053 U	N/A	N/A	0.0075 U	N/A	N/A	N/A
Xylenes	mg/kg	2,800	N/A	0.015 U	N/A	0.02 U	0.021 U	0.016 U	N/A	N/A	0.022 U	N/A	N/A	N/A
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.079 U	0.072 U	0.071 U	0.074 U	0.72 U	0.74 U	N/A	0.069 U	0.072 U	0.025 J	0.027 J	N/A
2,4-Dimethylphenol	mg/kg	16,000	0.079 R	0.072 U	0.071 R	0.074 U	0.072 U	0.034 J	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
2-Chloronaphthalene	mg/kg	60,000	0.079 U	0.072 U	0.071 U	0.074 U	0.72 U	0.74 U	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
2-Methylnaphthalene	mg/kg	3,000	0.028	0.002 J	0.024	0.0036 J	0.071 U	0.12	N/A	0.1	0.0072 U	0.12	0.089	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.16 R	0.14 U	0.14 R	0.15 U	0.14 U	0.15 U	N/A	0.14 U	0.14 U	0.14 U	0.14 U	N/A
Acenaphthene	mg/kg	45,000	0.0023 J	0.00075 J	0.0015 J	0.0022 J	0.071 U	0.075 U	N/A	0.0056 J	0.0072 U	0.014	0.014	N/A
Acenaphthylene	mg/kg	45,000	0.003 J	0.00073 J	0.0025 J	0.00067 J	0.15	0.19	N/A	0.009	0.0017 J	0.036	0.042	N/A
Acetophenone	mg/kg	120,000	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.074 U	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
Anthracene	mg/kg	230,000	0.014	0.0022 J	0.0087	0.0037 J	0.071 U	0.27	N/A	0.026	0.0013 J	0.05	0.075	N/A
Benz[a]anthracene	mg/kg	21	0.035	0.02	0.024	0.013	0.031 J	0.1	N/A	0.085	0.007 J	0.16	0.26	N/A
Benzaldehyde	mg/kg	120,000	0.027 J	0.072 R	0.071 R	0.074 R	0.072 U	0.074 U	N/A	0.069 U	0.072 U	0.072 R	0.071 R	N/A
Benzo[a]pyrene	mg/kg	2.1	0.027	0.015	0.022	0.018	0.024 J	0.084	N/A	0.086	0.0058 J	0.16	0.25	0.95 J
Benzo[b]fluoranthene	mg/kg	21	0.068	0.042	0.052	0.031	0.066 J	0.2	N/A	0.22	0.014	0.35	0.54	N/A
Benzo[g,h,i]perylene	mg/kg		0.016	0.0062 J	0.011	0.0098	0.026 J	0.066 J	N/A	0.021	0.0021 J	0.093	0.13	N/A
Benzo[k]fluoranthene	mg/kg	210	0.062	0.038	0.047	0.028	0.05 J	0.17	N/A	0.2	0.013	0.32	0.15	N/A
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.074 U	N/A	0.1	0.072 U	0.072 UJ	0.071 UJ	N/A
Carbazole	mg/kg		0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.74 U	N/A	0.069 U	0.072 U	0.072 U	0.022 J	N/A
Chrysene	mg/kg	2,100	0.042	0.024	0.032	0.013	0.017 J	0.12	N/A	0.15	0.0058 J	0.17	0.33	N/A
Dibenz[a,h]anthracene	mg/kg	2.1	0.0056 J	0.0026 J	0.0044 J	0.0031 J	0.071 U	0.022 J	N/A	0.012	0.0072 U	0.034	0.048	N/A
Diethylphthalate	mg/kg	660,000	0.079 U	0.072 U	0.071 U	0.074 U	0.72 U	0.74 U	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
Di-n-butylphthalate	mg/kg	82,000	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.37 J	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
Fluoranthene	mg/kg	30,000	0.099	0.036	0.064	0.027	0.027 J	0.22	N/A	0.12	0.011	0.29	0.44	N/A
Fluorene	mg/kg	30,000	0.0038 J	0.0073 U	0.002 J	0.0011 J	0.071 U	0.075 U	N/A	0.011	0.0072 U	0.021	0.017	N/A
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.014	0.0065 J	0.01	0.009	0.021 J	0.053 J	N/A	0.021	0.0023 J	0.09	0.13	N/A
Naphthalene	mg/kg	8.6	0.03	0.0028 B	0.02	0.0071 B	0.019 J	0.2	N/A	0.045	0.0019 J	0.48	0.1	N/A
N-Nitrosodiphenylamine	mg/kg	470	0.079 U	0.072 U	0.071 U	0.074 U	0.072 U	0.74 U	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
Phenanthrene	mg/kg		0.082	0.011	0.058	0.014	0.071 U	0.38	N/A	0.14	0.004 J	0.14	0.25	N/A
Phenol	mg/kg	250,000	0.079 R	0.072 U	0.071 R	0.074 U	0.072 U	0.074 U	N/A	0.069 U	0.072 U	0.072 U	0.071 U	N/A
Pyrene	mg/kg	23,000	0.078	0.052	0.048	0.021	0.044 J	0.19	N/A	0.12	0.0086	0.28	0.41	N/A
PCBs														
Aroclor 1242	mg/kg	0.97	0.0562 U	N/A	0.0545 U	N/A	0.0534 U	N/A	N/A	0.0534 U	N/A	0.0543 U	N/A	N/A
Aroclor 1248	mg/kg	0.94	0.0562 U	N/A	0.0545 U	N/A	0.0534 U	N/A	N/A	0.0534 U	N/A	0.0543 U	N/A	N/A
Aroclor 1254	mg/kg	0.97	0.0562 U	N/A	0.0545 U	N/A	0.0534 U	N/A	N/A	0.0534 U	N/A	0.0543 U	N/A	N/A
Aroclor 1268	mg/kg		0.0562 U	N/A	0.0545 U	N/A	0.0534 U	N/A	N/A	0.0534 U	N/A	0.0543 U	N/A	N/A
PCBs (total)	mg/kg	0.97	0.0562 U	N/A	0.0545 U	N/A	0.0534 U	N/A	N/A	0.0534 U	N/A	0.0543 U	N/A	N/A
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	28.2 J	13.6 J	61.6 J	30.7 J	3,680	2,450	4.4 J	49.1	3.3 J	33.3 J	33.8 J	N/A
Gasoline Range Organics	mg/kg	6,200	14.9 U	10.8 U	14.5 U	16.7 U	14.3 U	11.7 U	N/A	8.5 U	15.1 U	12.4 U	9.6 U	N/A
Oil & Grease	mg/kg	6,200	381	325	316	315	4,350	4,620	N/A	473	290	340	388	N/A

Bold indicates detection

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

* Indicates non-validated dat

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-041-SB-1	B13-041-SB-4	B13-042-SB-1	B13-042-SB-9	B13-043-SB-1*	B13-043-SB-4*	B13-043-SB-10	B13-046-SB-1*	B13-047-SB-1*	B13-047-SB-4*	B13-048-SB-1	B13-048-SB-7
			8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/26/2016	8/26/2016	8/26/2016	8/24/2016
Volatile Organic Compounds														
2-Butanone (MEK)	mg/kg	190,000	N/A	0.013 U	N/A	0.011 U	N/A	0.011 U	N/A	N/A	N/A	0.16 U	0.009 U	0.0091 U
2-Hexanone	mg/kg	1,300	N/A	0.013 U	N/A	0.011 U	N/A	0.0023 J	N/A	N/A	N/A	0.16 U	0.009 U	0.0091 U
Acetone	mg/kg	670,000	N/A	0.012 B	N/A	0.012 B	N/A	0.013 B	N/A	N/A	N/A	0.16 U	0.0067 B	0.011 B
Benzene	mg/kg	5.1	N/A	0.0065 U	N/A	0.0055 U	N/A	0.011	N/A	N/A	N/A	0.081 U	0.0045 U	0.0013 J
Ethylbenzene	mg/kg	25	N/A	0.0065 U	N/A	0.0055 U	N/A	0.0063	N/A	N/A	N/A	0.081 U	0.0045 U	0.0046 U
Isopropylbenzene	mg/kg	9,900	N/A	0.0065 U	N/A	0.0055 U	N/A	0.0053 U	N/A	N/A	N/A	0.081 U	0.0045 U	0.0046 U
Methylene Chloride	mg/kg	1,000	N/A	0.0065 UJ	N/A	0.0055 UJ	N/A	0.0053 U	N/A	N/A	N/A	0.081 U	0.0045 UJ	0.0046 UJ
Toluene	mg/kg	47,000	N/A	0.0065 U	N/A	0.0055 U	N/A	0.021	N/A	N/A	N/A	0.081 U	0.0045 U	0.0022 B
Xylenes	mg/kg	2,800	N/A	0.019 U	N/A	0.016 U	N/A	0.0066 J	N/A	N/A	N/A	0.24 U	0.013 U	0.014 U
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.075 U	0.018 J	0.071 U	0.019 J	0.069 U	0.14	N/A	0.015 J	0.071 U	0.073 U	0.069 U	0.074 U
2,4-Dimethylphenol	mg/kg	16,000	0.075 R	0.076 R	0.071 R	0.072 R	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 UJ	0.074 U
2-Chloronaphthalene	mg/kg	60,000	0.075 U	0.076 U	0.071 U	0.072 U	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 U
2-Methylnaphthalene	mg/kg	3,000	0.021	0.021 J	0.025 J	0.023	0.043	0.12	0.0071 U	0.015	0.0032 J	0.0074 U	0.02 J	0.0075 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 R	0.15 R	0.14 R	0.14 R	0.14 U	0.14 U	N/A	0.14 U	0.14 U	0.15 U	0.14 UJ	0.15 U
Acenaphthene	mg/kg	45,000	0.0028 J	0.0034 J	0.0012 J	0.0097	0.0039 J	0.44	0.00058 J	0.00077 J	0.00052 J	0.0074 U	0.011	0.0075 U
Acenaphthylene	mg/kg	45,000	0.0032 J	0.0028 J	0.0014 J	0.017	0.0045 J	0.12	0.0017 J	0.007 U	0.0031 J	0.0074 U	0.0032 J	0.0075 U
Acetophenone	mg/kg	120,000	0.075 U	0.076 U	0.071 U	0.072 U	0.069 U	0.052 J	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 U
Anthracene	mg/kg	230,000	0.012	0.013	0.0064 J	0.038	0.02	3.1	0.00096 J	0.0039 J	0.0028 J	0.0074 U	0.019	0.0075 U
Benz[a]anthracene	mg/kg	21	0.034	0.055	0.011	0.26	0.033	7.7	0.0021 J	0.0092	0.013	0.0074 U	0.071	0.0014 J
Benzaldehyde	mg/kg	120,000	0.045 J	0.076 R	0.071 R	0.072 R	0.069 U	0.024 J	N/A	0.07 U	0.071 U	0.073 U	0.069 R	0.074 R
Benzo[a]pyrene	mg/kg	2.1	0.028	0.034	0.012	0.43	0.033	7.4	0.0011 J	0.0087	0.013	0.0074 U	0.087	0.0075 U
Benzo[b]fluoranthene	mg/kg	21	0.06	0.089	0.028 J	0.79	0.1	10.4	0.0031 J	0.02	0.027	0.0074 U	0.23	0.0011 J
Benzo[g,h,i]perylene	mg/kg		0.02	0.026	0.01	0.27	0.018	4.5	0.0071 U	0.012	0.011	0.0074 U	0.096	0.0075 U
Benzo[k]fluoranthene	mg/kg	210	0.022	0.081	0.021	0.22	0.095	3.8	0.0022 J	0.017	0.024	0.0074 U	0.17	0.0075 U
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.075 UJ	0.076 U	0.071 UJ	0.072 UJ	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 UJ
Carbazole	mg/kg		0.075 U	0.076 U	0.071 U	0.028 J	0.069 U	2.2	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 U
Chrysene	mg/kg	2,100	0.049	0.061	0.02	0.4	0.054	7.6	0.0014 J	0.02	0.016	0.0074 U	0.082	0.00083 J
Dibenz[a,h]anthracene	mg/kg	2.1	0.0064 J	0.0088	0.0031 J	0.077	0.0072	1.2	0.0071 U	0.0038 J	0.0027 J	0.0074 U	0.027	0.0075 U
Diethylphthalate	mg/kg	660,000	0.075 U	0.076 U	0.071 U	0.072 U	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 U
Di-n-butylphthalate	mg/kg	82,000	0.075 U	0.076 U	0.071 U	0.072 U	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 U
Fluoranthene	mg/kg	30,000	0.095	0.11	0.026	0.45	0.068	16.2	0.0028 J	0.018	0.024	0.0074 U	0.13	0.0018 J
Fluorene	mg/kg	30,000	0.0033 J	0.006 J	0.0016 J	0.0033 J	0.0095	0.54	0.0071 U	0.0027 J	0.0069 U	0.0074 U	0.0042 J	0.0075 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.018	0.02	0.0066 J	0.25	0.015	4	0.0071 U	0.006 J	0.0088	0.0074 U	0.081	0.0075 U
Naphthalene	mg/kg	8.6	0.042	0.084 J	0.02 J	0.073	0.034	0.37	0.0021 J	0.012	0.011	0.0074 U	0.035	0.0075 U
N-Nitrosodiphenylamine	mg/kg	470	0.075 U	0.076 U	0.071 U	0.072 U	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 U	0.074 U
Phenanthrene	mg/kg		0.073	0.077	0.035 J	0.29	0.1	6.9	0.0028 J	0.037	0.0099	0.00057 J	0.1	0.0022 J
Phenol	mg/kg	250,000	0.075 R	0.076 R	0.071 R	0.072 R	0.069 U	0.072 U	N/A	0.07 U	0.071 U	0.073 U	0.069 UJ	0.074 U
Pyrene	mg/kg	23,000	0.075	0.091	0.023	0.39	0.054	15.1	0.0019 J	0.017	0.02	0.0074 U	0.1	0.0013 J
PCBs														
Aroclor 1242	mg/kg	0.97	0.0551 U	N/A	0.0565 U	N/A	0.0523 U	N/A	N/A	0.0466 J	0.062 U	N/A	0.0522 U	N/A
Aroclor 1248	mg/kg	0.94	0.0551 U	N/A	0.0565 U	N/A	0.0523 U	N/A	N/A	0.0529 U	0.062 U	N/A	0.0522 U	N/A
Aroclor 1254	mg/kg	0.97	0.0551 U	N/A	0.0565 U	N/A	0.0523 U	N/A	N/A	0.0529 U	0.062 U	N/A	0.0522 U	N/A
Aroclor 1268	mg/kg		0.0551 U	N/A	0.0565 U	N/A	0.0523 U	N/A	N/A	0.0529 U	0.062 U	N/A	0.0522 U	N/A
PCBs (total)	mg/kg	0.97	0.0551 U	N/A	0.0565 U	N/A	0.0523 U	N/A	N/A	0.0466 J	0.062 U	N/A	0.0522 U	N/A
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	19.7 J	33.9 J	22.2 J	94.3 J	17.5	119	N/A	15.1	6.2 J	5.3 J	43.8 J	3.4 J
Gasoline Range Organics	mg/kg	6,200	13.4 U	10 U	9.2 U	10.2 U	9.4 U	11.1 U	N/A	6.4 U	10.9 U	16 U	10 U	9.1 U
Oil & Grease	mg/kg	6,200	305	349	140	1,580	120	1,030	N/A	256	218	272	445	484

Bold indicates detection

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

* Indicates non-validated dat

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-049-SB-1	B13-049-SB-5	B13-050-SB-1	B13-050-SB-5	B13-055-SB-1*	B13-055-SB-9*	B13-056-SB-1*	B13-056-SB-5*	B13-064-SB-1	B13-064-SB-5	B13-065-SB-1	B13-065-SB-8
			8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/26/2016	8/26/2016	8/26/2016	8/26/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016
Volatile Organic Compounds														
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	N/A	N/A	0.01 U	N/A	0.013 U	0.009 U	N/A	N/A	0.0056 J
2-Hexanone	mg/kg	1,300	N/A	N/A	N/A	N/A	N/A	0.01 U	N/A	0.013 U	0.009 U	N/A	N/A	0.0092 U
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	N/A	0.0098 B	N/A	0.023 B	0.0084 J	N/A	N/A	0.28
Benzene	mg/kg	5.1	N/A	N/A	N/A	N/A	N/A	0.0025 J	N/A	0.029	0.0045 U	N/A	N/A	0.0046 U
Ethylbenzene	mg/kg	25	N/A	N/A	N/A	N/A	N/A	0.0039 J	N/A	0.004 J	0.0045 U	N/A	N/A	0.0046 U
Isopropylbenzene	mg/kg	9,900	N/A	N/A	N/A	N/A	N/A	0.0051 U	N/A	0.0063 U	0.0045 U	N/A	N/A	0.0046 U
Methylene Chloride	mg/kg	1,000	N/A	N/A	N/A	N/A	N/A	0.0051 U	N/A	0.0063 U	0.0045 U	N/A	N/A	0.0046 UJ
Toluene	mg/kg	47,000	N/A	N/A	N/A	N/A	N/A	0.0068	N/A	0.019	0.0045 U	N/A	N/A	0.0046 U
Xylenes	mg/kg	2,800	N/A	N/A	N/A	N/A	N/A	0.015 U	N/A	0.019 U	0.013 U	N/A	N/A	0.014 U
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.072 U	0.074 U	0.067 U	0.071 U	0.43	0.068 U	0.02 J	0.074 U	0.075 U	0.072 U	0.05 J	0.048 J
2,4-Dimethylphenol	mg/kg	16,000	0.072 UJ	0.074 U	0.067 UJ	0.071 U	0.069 U	0.068 U	0.073 U	0.074 U	0.075 U	0.072 U	0.072 R	0.074 R
2-Chloronaphthalene	mg/kg	60,000	0.072 U	0.074 U	0.067 U	0.071 U	0.069 U	0.068 U	0.11	0.074 U	0.075 U	0.072 U	0.072 U	0.074 U
2-Methylnaphthalene	mg/kg	3,000	0.0065 J	0.0053 J	0.017	0.0071 U	1	0.0019 J	0.15	0.0087	0.015	0.0074 U	0.12	0.076
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 UJ	0.15 U	0.13 UJ	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U	0.15 U	0.14 U	0.14 R	0.15 R
Acenaphthene	mg/kg	45,000	0.0024 J	0.0006 J	0.002 J	0.0071 U	0.043	0.0015 J	0.0098	0.00057 J	0.00081 J	0.0074 U	0.029	0.014
Acenaphthylene	mg/kg	45,000	0.0029 J	0.0039 J	0.00071 J	0.0071 U	0.0051 J	0.007 U	0.026	0.0014 J	0.00078 J	0.0074 U	0.15	0.032
Acetophenone	mg/kg	120,000	0.072 U	0.074 U	0.067 U	0.071 U	0.12	0.068 U	0.073 U	0.074 U	0.075 U	0.072 U	0.072 U	0.074 U
Anthracene	mg/kg	230,000	0.022	0.0044 J	0.0046 J	0.0071 U	0.05	0.007 U	0.081	0.0053 J	0.0031 J	0.0074 U	0.28	0.11
Benz[a]anthracene	mg/kg	21	0.39	0.032	0.014 J	0.0071 U	0.076	0.007 U	0.25	0.0051 J	0.011	0.0074 U	0.79	0.17
Benzaldehyde	mg/kg	120,000	0.072 R	0.074 R	0.067 R	0.071 R	0.13	0.068 U	0.073 U	0.074 U	0.075 R	0.072 R	0.072 R	0.074 R
Benzo[a]pyrene	mg/kg	2.1	0.31	0.041	0.011	0.0071 U	0.049	0.007 U	0.34	0.0033 J	0.011	0.0074 U	0.69	0.15
Benzo[b]fluoranthene	mg/kg	21	0.76	0.099	0.039	0.0071 U	0.12	0.007 U	0.25	0.0081	0.018	0.00054 J	1.2	0.23
Benzo[g,h,i]perylene	mg/kg		0.13	0.021	0.011 J	0.0071 U	0.048	0.007 U	0.27	0.0032 J	0.0082	0.0074 U	0.27	0.058
Benzo[k]fluoranthene	mg/kg	210	0.69	0.04	0.035 J	0.0071 U	0.11	0.007 U	0.22	0.0072 J	0.0071 J	0.0074 U	0.41	0.1
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.51 J	0.074 U	0.067 UJ	0.071 U	0.069 U	0.068 U	0.073 U	0.074 U	0.075 U	0.072 U	0.072 U	0.074 U
Carbazole	mg/kg		0.089	0.074 U	0.067 U	0.071 U	0.059 J	0.068 U	0.05 J	0.074 U	0.075 U	0.072 U	0.097	0.057 J
Chrysene	mg/kg	2,100	0.45	0.091	0.032 J	0.0071 U	0.26	0.007 U	0.31	0.0079	0.014	0.0074 U	0.77	0.17
Dibenz[a,h]anthracene	mg/kg	2.1	0.046	0.0063 J	0.0046 J	0.0071 U	0.027	0.007 U	0.12	0.0014 J	0.0026 J	0.0074 U	0.11	0.021
Diethylphthalate	mg/kg	660,000	0.072 U	0.074 U	0.067 U	0.071 U	0.069 U	0.068 U	0.073 U	0.074 U	0.086	0.054 B	0.072 U	0.074 U
Di-n-butylphthalate	mg/kg	82,000	0.072 U	0.074 U	0.067 U	0.071 U	0.069 U	0.068 U	0.073 U	0.074 U	0.075 U	0.072 U	0.072 U	0.074 U
Fluoranthene	mg/kg	30,000	0.93	0.22	0.032 J	0.0071 U	0.15	0.00066 J	0.14	0.01	0.021	0.0007 J	1.4	0.57
Fluorene	mg/kg	30,000	0.0032 J	0.0076 U	0.0035 J	0.0071 U	0.042	0.00077 J	0.022	0.0017 J	0.0013 J	0.0074 U	0.031	0.02
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.13	0.022	0.0078 J	0.0071 U	0.022	0.007 U	0.11	0.0024 J	0.0069 J	0.0074 U	0.3	0.06
Naphthalene	mg/kg	8.6	0.0081 J	0.006 B	0.046 J	0.0071 U	0.65	0.0034 J	0.12	0.012	0.012	0.0074 U	0.43	0.35
N-Nitrosodiphenylamine	mg/kg	470	0.072 U	0.074 U	0.067 U	0.071 U	0.063 J	0.068 U	0.073 U	0.074 U	0.075 U	0.072 U	0.072 U	0.074 U
Phenanthrene	mg/kg		0.12	0.052	0.048 J	0.00068 J	0.97	0.0013 J	0.28	0.019	0.022	0.0011 J	1.1	0.5
Phenol	mg/kg	250,000	0.072 UJ	0.074 U	0.067 UJ	0.071 U	0.069 U	0.068 U	0.073 U	0.074 U	0.075 U	0.072 U	0.072 R	0.074 R
Pyrene	mg/kg	23,000	0.81	0.17	0.031 J	0.0071 U	0.15	0.007 U	0.25	0.0081	0.017	0.0074 U	1.1	0.4
PCBs														
Aroclor 1242	mg/kg	0.97	0.0543 U	N/A	0.0513 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0542 U	N/A	0.0562 U	N/A
Aroclor 1248	mg/kg	0.94	0.128	N/A	0.0513 U	N/A	0.1	N/A	0.0543 U	N/A	0.0542 U	N/A	0.0562 U	N/A
Aroclor 1254	mg/kg	0.97	0.0543 U	N/A	0.0513 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0542 U	N/A	0.0562 U	N/A
Aroclor 1268	mg/kg		0.0543 U	N/A	0.0513 U	N/A	0.0537 U	N/A	0.0543 U	N/A	0.0542 U	N/A	0.0562 U	N/A
PCBs (total)	mg/kg	0.97	0.128	N/A	0.0513 U	N/A	0.1	N/A	0.0543 U	N/A	0.0542 U	N/A	0.0562 U	N/A
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	36.5 J	6.6 J	9.1 J	7.1 UJ	185	5.6 J	32	16.3	16.1 J	10.3 J	41.4 J	24.8 J
Gasoline Range Organics	mg/kg	6,200	10.1 U	15.2 U	6.7 U	13.8 U	8.9 J	9.7 J	15.7 U	9.4 U	9.1 U	17 U	9.9 U	11.1 U
Oil & Grease	mg/kg	6,200	663	374	283	631	369	215	739	297	378	446	427	378

Bold indicates detection

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

* Indicates non-validated dat

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-068-SB-1	B13-068-SB-4	B13-068-SB-10*	B13-069-SB-1	B13-069-SB-9	B13-070-SB-1	B13-070-SB-5	B13-071-SB-1*	B13-071-SB-6*	B13-076-SB-1*	B13-076-SB-7*	B13-079-SB-1
			9/1/2016	9/1/2016	9/1/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/26/2016	8/26/2016
Volatile Organic Compounds														
2-Butanone (MEK)	mg/kg	190,000	N/A	0.0095 U	N/A	N/A	0.0094 U	N/A	0.012 U	0.0071 U	0.0086 U	0.012	0.018 U	N/A
2-Hexanone	mg/kg	1,300	N/A	0.0095 U	N/A	N/A	0.0094 U	N/A	0.012 U	0.0071 U	0.0086 U	0.0064 U	0.018 U	N/A
Acetone	mg/kg	670,000	N/A	0.006 B	N/A	N/A	0.0076 J	N/A	0.01 J	0.022	0.013	0.02 B	0.03	N/A
Benzene	mg/kg	5.1	N/A	0.0048 U	N/A	N/A	0.0047 U	N/A	0.0023 J	0.0017 J	0.0043 U	0.0014 J	0.0088 U	N/A
Ethylbenzene	mg/kg	25	N/A	0.0048 U	N/A	N/A	0.0047 U	N/A	0.0059 U	0.0036 U	0.0043 U	0.0024 J	0.012	N/A
Isopropylbenzene	mg/kg	9,900	N/A	0.0048 U	N/A	N/A	0.0047 U	N/A	0.0059 U	0.0036 U	0.0043 U	0.0032 U	0.0088 U	N/A
Methylene Chloride	mg/kg	1,000	N/A	0.0048 U	N/A	N/A	0.0047 UJ	N/A	0.0059 U	0.0036 U	0.0043 U	0.0032 U	0.0088 U	N/A
Toluene	mg/kg	47,000	N/A	0.0048 U	N/A	N/A	0.0047 U	N/A	0.0023 J	0.0023 J	0.0043 U	0.0011 J	0.0088 U	N/A
Xylenes	mg/kg	2,800	N/A	0.014 U	N/A	N/A	0.014 U	N/A	0.018 U	0.011 U	0.013 U	0.014	0.076	N/A
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.32 J	0.34 J	N/A	0.071 U	0.023 J	0.091 U	0.071 U	0.073 U	0.073 U	0.042 J	0.062 J	0.017 J
2,4-Dimethylphenol	mg/kg	16,000	0.071 U	0.075 U	N/A	0.071 R	0.072 R	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.053 J	0.075 R
2-Chloronaphthalene	mg/kg	60,000	0.071 U	0.075 U	N/A	0.071 U	0.072 U	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 U
2-Methylnaphthalene	mg/kg	3,000	0.88	2.2 UJ	N/A	0.017	0.037	0.0091 U	0.02	0.0044 J	0.0038 J	0.074	0.12	0.009 J
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 U	0.021 J	N/A	0.14 R	0.14 R	0.18 U	0.14 U	0.15 U	0.15 U	0.14 U	0.03 J	0.15 R
Acenaphthene	mg/kg	45,000	2.5	13.8	N/A	0.0062 J	0.0096	0.0091 U	0.018	0.0073 U	0.00068 J	0.0064 J	0.0056 J	0.0031 J
Acenaphthylene	mg/kg	45,000	0.24	0.75	N/A	0.0081	0.011	0.0091 U	0.003 J	0.0073 U	0.0074 U	0.0079	0.0057 J	0.0014 J
Acetophenone	mg/kg	120,000	0.071 U	0.028 B	N/A	0.071 U	0.072 U	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 U
Anthracene	mg/kg	230,000	5.5	14.9	N/A	0.023	0.042	0.0091 U	0.013	0.00098 J	0.0028 J	0.04	0.021	0.015
Benz[a]anthracene	mg/kg	21	11.8	22.5	0.33	0.071	0.083	0.0025 J	0.13	0.0031 J	0.0052 J	0.077	0.034	0.036
Benzaldehyde	mg/kg	120,000	0.022 J	0.041 J	N/A	0.071 R	0.072 R	0.091 R	0.071 R	0.073 U	0.073 U	0.071 U	0.15	0.023 J
Benzo[a]pyrene	mg/kg	2.1	10.7	20.3	0.3	0.06	0.075	0.0018 J	0.25	0.0015 J	0.0035 J	0.054	0.025	0.032
Benzo[b]fluoranthene	mg/kg	21	13.4	27.6	0.4	0.1	0.19	0.004 J	0.29	0.0043 J	0.0082	0.16	0.05	0.082
Benzo[g,h,i]perylene	mg/kg		6	10.1	N/A	0.026	0.024	0.0013 J	0.13	0.0073 U	0.0013 J	0.058	0.02	0.027
Benzo[k]fluoranthene	mg/kg	210	5.9	9.7	0.17	0.044	0.17	0.0029 J	0.12	0.0039 J	0.0074	0.14	0.044	0.074
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.41 J	0.23 J	N/A	0.071 U	0.072 UJ	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 UJ
Carbazole	mg/kg		0.69 J	0.41 J	N/A	0.071 U	0.072 U	0.091 U	0.071 U	0.073 U	0.073 U	0.019 J	0.034 J	0.075 U
Chrysene	mg/kg	2,100	11.8	23.4	N/A	0.079	0.093	0.0019 J	0.15	0.0028 J	0.0055 J	0.12	0.046	0.052
Dibenz[a,h]anthracene	mg/kg	2.1	1.9	3.5	0.061	0.0069 J	0.0099	0.0091 U	0.042	0.0073 U	0.0074 U	0.019	0.0054 J	0.0076 J
Diethylphthalate	mg/kg	660,000	0.071 U	0.075 U	N/A	0.071 U	0.072 U	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 U
Di-n-butylphthalate	mg/kg	82,000	0.071 U	0.075 U	N/A	0.071 U	0.072 U	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 U
Fluoranthene	mg/kg	30,000	27.5	62	N/A	0.15	0.22	0.0025 J	0.13	0.0056 J	0.014	0.16	0.074	0.099
Fluorene	mg/kg	30,000	1.8	11.1	N/A	0.0059 J	0.0057 J	0.0091 U	0.0048 J	0.00064 J	0.0012 J	0.0073	0.006 J	0.0031 J
Indeno[1,2,3-c,d]pyrene	mg/kg	21	5.3	9.1	0.17	0.026	0.026	0.0091 U	0.12	0.0073 U	0.0011 J	0.048	0.014	0.021
Naphthalene	mg/kg	8.6	0.26	0.54 UJ	N/A	0.04	0.11	0.0032 B	0.029	0.004 J	0.0054 J	0.065	0.075	0.009 J
N-Nitrosodiphenylamine	mg/kg	470	0.071 U	0.075 U	N/A	0.071 U	0.072 U	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 U
Phenanthrene	mg/kg		12.4	54.3	N/A	0.076	0.15	0.0035 J	0.055	0.0068 J	0.013	0.19	0.14	0.058
Phenol	mg/kg	250,000	0.029 J	0.1	N/A	0.071 R	0.072 R	0.091 U	0.071 U	0.073 U	0.073 U	0.071 U	0.088 U	0.075 R
Pyrene	mg/kg	23,000	23.3	49	N/A	0.13	0.17	0.0024 J	0.13	0.0042 J	0.01	0.13	0.068	0.099
PCBs														
Aroclor 1242	mg/kg	0.97	0.0546 U	N/A	N/A	0.056 U	N/A	0.0515 U	N/A	0.0543 U	N/A	0.0522 U	N/A	0.0608 U
Aroclor 1248	mg/kg	0.94	0.0546 U	N/A	N/A	0.056 U	N/A	0.0515 U	N/A	0.0543 U	N/A	0.0522 U	N/A	0.0608 U
Aroclor 1254	mg/kg	0.97	0.236	N/A	N/A	0.056 U	N/A	0.0515 U	N/A	0.0543 U	N/A	0.0522 U	N/A	0.0608 U
Aroclor 1268	mg/kg		0.723	N/A	N/A	0.056 U	N/A	0.0515 U	N/A	0.0543 U	N/A	0.0522 U	N/A	0.0608 U
PCBs (total)	mg/kg	0.97	0.959	N/A	N/A	0.056 U	N/A	0.0515 U	N/A	0.0543 U	N/A	0.0522 U	N/A	0.0608 U
TPH/Oil & Grease														
Diesel Range Organics	mg/kg	6,200	325 J	294 J	N/A	20 J	25.2 J	5.3 J	46.1 J	4.6 J	6.3 J	70.1	174	16.8 J
Gasoline Range Organics	mg/kg	6,200	10.4 U	11.4 U	N/A	10.6 U	8.9 U	10.9 U	11.7 U	10.7 U	9.5 U	22.4	26.7	12.1 U
Oil & Grease	mg/kg	6,200	1,190	2,030	N/A	560	796	1,270	803	115	595	247	332	1,720

Bold indicates detection

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

* Indicates non-validated dat

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 1 - Sub-Parcel B13-2
Summary of Organics Detected in Soil

Parameter	Units	PAL	B13-079-SB-5	B13-081-SB-1*	B13-081-SB-9*	B13-082-SB-1	B13-082-SB-5	B5-122-SB-1*	B5-122-SB-9*	B5-167-SB-1*	B5-167-SB-7*	B5-167-SB-10*
			8/24/2016	8/26/2016	8/26/2016	8/23/2016	8/23/2016	12/23/2015	12/23/2015	12/23/2015	12/23/2015	12/23/2015
Volatile Organic Compounds												
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	0.13 U	N/A	N/A	0.0095 U	0.011 U	0.012 U	0.011 U	N/A
2-Hexanone	mg/kg	1,300	N/A	N/A	0.13 U	N/A	N/A	0.0095 U	0.011 U	0.012 U	0.011 U	N/A
Acetone	mg/kg	670,000	N/A	N/A	0.13 U	N/A	N/A	0.046	0.16	0.015	0.026	N/A
Benzene	mg/kg	5.1	N/A	N/A	0.022 J	N/A	N/A	0.0048 U	0.041	0.006 U	0.0054 U	N/A
Ethylbenzene	mg/kg	25	N/A	N/A	0.021 J	N/A	N/A	0.0048 U	0.025	0.006 U	0.0054 U	N/A
Isopropylbenzene	mg/kg	9,900	N/A	N/A	0.067 U	N/A	N/A	0.0048 U	0.0053 J	0.006 U	0.0054 U	N/A
Methylene Chloride	mg/kg	1,000	N/A	N/A	0.067 U	N/A	N/A	0.0048 U	0.0053 U	0.006 U	0.011	N/A
Toluene	mg/kg	47,000	N/A	N/A	0.033 J	N/A	N/A	0.0048 U	0.039	0.006 U	0.0054 U	N/A
Xylenes	mg/kg	2,800	N/A	N/A	0.2 U	N/A	N/A	0.014 U	0.019	0.018 U	0.016 U	N/A
Semi-Volatile Organic Compounds^												
1,1-Biphenyl	mg/kg	200	0.023 J	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
2,4-Dimethylphenol	mg/kg	16,000	0.079 R	0.071 U	0.073 U	0.07 UJ	0.071 R	7.4 U	7.6 U	7.2 U	7.9 U	N/A
2-Chloronaphthalene	mg/kg	60,000	0.079 U	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
2-Methylnaphthalene	mg/kg	3,000	0.054	0.0071 U	0.0072 U	0.0032 J	0.0024 J	0.033	0.011	0.014	0.12	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.16 R	0.14 U	0.15 U	0.14 UJ	0.14 R	14.9 U	15.3 U	14.3 U	15.7 U	N/A
Acenaphthene	mg/kg	45,000	0.021	0.0071 U	0.0072 U	0.00093 J	0.0073 U	0.0025 J	0.0023 J	0.0014 J	0.055	N/A
Acenaphthylene	mg/kg	45,000	0.02	0.0071 U	0.0072 U	0.0069 U	0.0073 U	0.0028 J	0.0027 J	0.0017 J	0.12	N/A
Acetophenone	mg/kg	120,000	0.079 U	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Anthracene	mg/kg	230,000	0.051	0.0071 U	0.0072 U	0.0032 J	0.0073 U	0.0097	0.0058 J	0.0088	0.15	N/A
Benz[a]anthracene	mg/kg	21	0.19	0.0019 J	0.0072 U	0.0067 J	0.0012 J	0.031	0.022	0.015	0.32	N/A
Benzaldehyde	mg/kg	120,000	0.079 R	0.071 U	0.073 U	0.07 R	0.071 R	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Benzo[a]pyrene	mg/kg	2.1	0.21	0.0071 U	0.0072 U	0.0048 J	0.0073 U	0.025	0.026	0.014	0.5	0.0027 J
Benzo[b]fluoranthene	mg/kg	21	0.46	0.0017 J	0.0072 U	0.025	0.00061 J	0.069	0.064	0.052	1.2	N/A
Benzo[g,h,i]perylene	mg/kg		0.11	0.0071 U	0.0072 U	0.0046 J	0.0073 U	0.024	0.024	0.028	0.28	N/A
Benzo[k]fluoranthene	mg/kg	210	0.41	0.0015 J	0.0072 U	0.023	0.0073 U	0.058	0.052	0.043	0.96	N/A
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.028 B	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Carbazole	mg/kg		0.028 J	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Chrysene	mg/kg	2,100	0.21	0.0014 J	0.0072 U	0.018	0.0011 J	0.043	0.033	0.025	0.42	N/A
Dibenz[a,h]anthracene	mg/kg	2.1	0.034	0.0071 U	0.0072 U	0.0013 J	0.0073 U	0.0053 J	0.007 J	0.0048 J	0.11	N/A
Diethylphthalate	mg/kg	660,000	0.079 U	0.024 J	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Di-n-butylphthalate	mg/kg	82,000	0.079 U	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Fluoranthene	mg/kg	30,000	0.31	0.0022 J	0.00065 J	0.016	0.0015 B	0.087	0.03	0.039	0.61	N/A
Fluorene	mg/kg	30,000	0.017	0.0071 U	0.0072 U	0.0013 J	0.0073 U	0.0021 J	0.0033 J	0.0048 J	0.043	N/A
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.1	0.0071 U	0.0072 U	0.0045 J	0.0073 U	0.017	0.02	0.021	0.28	N/A
Naphthalene	mg/kg	8.6	0.14	0.0071 U	0.0072 U	0.0037 B	0.0078	0.067	0.011	0.02	0.13	N/A
N-Nitrosodiphenylamine	mg/kg	470	0.079 U	0.071 U	0.073 U	0.07 U	0.071 U	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Phenanthrene	mg/kg		0.16	0.0025 J	0.0013 J	0.011	0.019	0.081	0.033	0.05	0.27	N/A
Phenol	mg/kg	250,000	0.079 R	0.071 U	0.073 U	0.07 UJ	0.071 R	7.4 U	7.6 U	7.2 U	7.9 U	N/A
Pyrene	mg/kg	23,000	0.38	0.0021 J	0.0072 U	0.019	0.00083 J	0.069	0.025	0.024	0.63	N/A
PCBs												
Aroclor 1242	mg/kg	0.97	N/A	0.0523 U	N/A	0.0535 U	N/A	0.53	N/A	0.018 U	N/A	N/A
Aroclor 1248	mg/kg	0.94	N/A	0.0523 U	N/A	0.0535 U	N/A	0.19 U	N/A	0.018 U	N/A	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.0523 U	N/A	0.0535 U	N/A	0.19 U	N/A	0.018 U	N/A	N/A
Aroclor 1268	mg/kg		N/A	0.0523 U	N/A	0.0535 U	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	mg/kg	0.97	N/A	0.0523 U	N/A	0.0535 U	N/A	0.53 J	N/A	0.13 U	N/A	N/A
TPH/Oil & Grease												
Diesel Range Organics	mg/kg	6,200	108 J	3.2 J	7.4	7.5 J	5.2 J	49.8	27	12.6	87.2	N/A
Gasoline Range Organics	mg/kg	6,200	11 U	10.4 U	16.8 U	11.2 U	11.5 U	9.1 U	50.7	13.6	11.9 U	N/A
Oil & Grease	mg/kg	6,200	994	418	474	234	325	N/A	N/A	N/A	N/A	N/A

Bold indicates detection

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

* Indicates non-validated dat

^ PAH compounds were analyzed via SIM

N/A: This parameter was not analyzed for this sample.

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.

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

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

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.

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-001-SB-1	B13-001-SB-4	B13-002-SB-1*	B13-002-SB-8*	B13-003-SB-1	B13-003-SB-5	B13-004-SB-1	B13-004-SB-4	B13-004-SB-10
			8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/23/2016	8/23/2016	8/23/2016
Metals											
Aluminum	mg/kg	1,100,000	26,800	21,000	21,100	29,500	35,400	37,500	18,100	39,600	N/A
Antimony	mg/kg	470	2.7 UJ	2.7 UJ	2.6 U	2.8 U	2.8 UJ	2.7 UJ	2.6 UJ	2.6 UJ	N/A
Arsenic	mg/kg	3	2.5	2.3 U	4.7	2.3 U	2.2 J	2.3 U	3.4	3.5	1.9
Barium	mg/kg	220,000	322 J	249 J	286	563	389	467	160 J	675 J	N/A
Beryllium	mg/kg	2,300	3.3	2.4	2.2	2.9	4.5	5.1	3.4	4.5	N/A
Cadmium	mg/kg	100	0.66 B	0.86 B	0.47 B	0.45 B	0.57 B	0.38 B	0.52 B	0.37 B	N/A
Chromium	mg/kg	1,800,000	298 J	487 J	448	480	172	115	68.5 J	76.9 J	N/A
Chromium VI	mg/kg	6.3	0.4 B	0.27 B	0.48 B	0.39 B	0.31 B	0.36 B	0.33 B	0.3 B	N/A
Cobalt	mg/kg	350	10.9 J	12.2 J	6.1	5.8	4.9	5	2.4 J	2.9 J	N/A
Copper	mg/kg	47,000	34 J	39.6 J	36.9	22.9	13.5	10.2	7.9 J	20.5 J	N/A
Iron	mg/kg	820,000	98,200	129,000	138,000	83,900	59,300	41,300	84,700	21,400	N/A
Lead	mg/kg	800	42.3 J	82.4 J	19.4	17.3	20.7	11.3	28.8 J	12.4 J	N/A
Manganese	mg/kg	26,000	7,220	13,900	11,900	20,900	7,710	4,980	3,580	8,400	N/A
Mercury	mg/kg	350	0.0031 J-	0.03 J-	0.0049 J	0.0021 J	0.0031 J	0.0057 J	0.0046 J-	0.11 UJ	N/A
Nickel	mg/kg	22,000	96 J	90.9 J	42.2	31	27.7	67.1	11.1 J	4.2 J	N/A
Selenium	mg/kg	5,800	2.2 B	2.7 B	3.4 U	3.7 U	3.4 B	3.6 U	2.8 B	4.4	N/A
Silver	mg/kg	5,800	2.7 U	2.7 U	2.6 U	2.8 U	2.8 U	2.7 U	2.6 U	2.6 U	N/A
Thallium	mg/kg	12	9.1 UJ	9 UJ	8.5 U	9.2 U	9.2 U	9 U	8.7 UJ	8.5 UJ	N/A
Vanadium	mg/kg	5,800	479	598	442	2,200	309	172	39.6	433	N/A
Zinc	mg/kg	350,000	126 J	288 J	66.4	46.1	50.7 J	19.6 J	47.9 J	19.2 J	N/A
Other											
Cyanide, Total	mg/kg	150	1.2	0.78	1.2	0.56 J	0.97 J-	0.7 J-	1.1	0.6	N/A

Bold indicates detection

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

N/A: This parameter was not analyzed for this sample.

* Indicates non-validated data

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

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

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

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

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

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

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-005-SB-1	B13-005-SB-4	B13-006-SB-1*	B13-006-SB-4*	B13-007-SB-1*	B13-007-SB-4*	B13-012-SB-1	B13-012-SB-4	B13-012-SB-10*	B13-013-SB-1
			8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/29/2016	8/29/2016	8/29/2016
Metals												
Aluminum	mg/kg	1,100,000	11,700	38,000	19,000	9,290	14,400	36,200	5,980	16,600	N/A	7,800
Antimony	mg/kg	470	2.6 UJ	2.7 UJ	2.8 U	2.8 U	2.6 U	2.7 U	2.4 UJ	2.3 UJ	N/A	2.7 UJ
Arsenic	mg/kg	3	3.9	2.2 U	2.3 U	4.1	4.4	2.2 U	8.4	5.7	12.2	12.1
Barium	mg/kg	220,000	185 J	548 J	53	132	190	362	45.2 J	62.1 J	N/A	92.8 J
Beryllium	mg/kg	2,300	0.89	4.7	0.49 J	0.35 J	1.9	4.1	0.66 J	0.27 J	N/A	0.88 J
Cadmium	mg/kg	100	3.4	0.48 B	0.8 B	0.77 B	5.8	0.48 B	0.44 J	0.39 J	N/A	0.62 J
Chromium	mg/kg	1,800,000	705 J	180 J	1,090	837	117	43.1	287	1,430	N/A	228
Chromium VI	mg/kg	6.3	0.39 B	0.35 B	1.3 B	0.64 B	0.51 B	0.38 B	0.74 B	0.74 B	N/A	0.69 B
Cobalt	mg/kg	350	5.6 J	4.6 J	2.8 J	34.2	6.7	1 J	4.2	6.3	N/A	11.2
Copper	mg/kg	47,000	60.8 J	13.8 J	30	99.1	35.6	11	55.3 J	35.6 J	N/A	117 J
Iron	mg/kg	820,000	169,000	44,500	172,000	162,000	122,000	16,400	153,000	247,000	N/A	236,000
Lead	mg/kg	800	126 J	33.3 J	37.8	47.8	183	4.9	33	6.9	N/A	127
Manganese	mg/kg	26,000	18,600	9,650	26,800	34,700	4,800	4,280	6,470	27,000	7,830	3,490
Mercury	mg/kg	350	0.025 J-	0.0022 J-	0.02 J	0.024 J	0.028 J	0.11 U	0.031 J	0.014 J	N/A	0.04 J
Nickel	mg/kg	22,000	31.2 J	12.1 J	20.4	20.5	50.2	6.1 J	67 J	35.4 J	N/A	193 J
Selenium	mg/kg	5,800	3.5 U	6.3	3.7 U	3.7 U	3.5 U	5.2	3.2 U	3 U	N/A	2.2 J
Silver	mg/kg	5,800	2.6 U	2.7 U	2.8 U	2.8 U	2.6 U	2.7 U	1.6 J	3.6	N/A	2.9
Thallium	mg/kg	12	8.8 UJ	9 UJ	9.2 U	9.2 U	8.8 U	8.8 U	8 U	4.7 J	N/A	9 U
Vanadium	mg/kg	5,800	1,270	685	491	2,190	103	133	208	346	N/A	96.1
Zinc	mg/kg	350,000	892 J	81.4 J	122	104	259	13.2	84.5 J	17.7 J	N/A	118 J
Other												
Cyanide, Total	mg/kg	150	3.4	0.77	0.57	0.59	0.49 J	0.36 J	0.83 J+	0.47 B	N/A	1.2 J+

Bold indicates detection

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

N/A: This parameter was not analyzed for this sample.

* Indicates non-validated data

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

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

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-013-SB-5	B13-013-SB-10*	B13-016-SB-1*	B13-016-SB-8*	B13-016-SB-10*	B13-017-SB-1*	B13-017-SB-4*	B13-017-SB-10*
			8/29/2016	8/29/2016	8/26/2016	8/26/2016	8/26/2016	8/25/2016	8/25/2016	8/25/2016
Metals										
Aluminum	mg/kg	1,100,000	4,370	N/A	19,200	28,000	N/A	38,900	22,400	N/A
Antimony	mg/kg	470	2.2 UJ	N/A	2.7	2.8 U	N/A	2.5 U	2.8 U	N/A
Arsenic	mg/kg	3	10.1	15.8	6.7	6.9	4.1	3.3	7.4	5.2
Barium	mg/kg	220,000	34.7 J	N/A	227	314	N/A	308	364	N/A
Beryllium	mg/kg	2,300	0.41 J	N/A	3.3	3.3	N/A	5.6	1.8	N/A
Cadmium	mg/kg	100	0.67 J	N/A	0.55 B	0.88 B	N/A	0.41 B	0.65 B	N/A
Chromium	mg/kg	1,800,000	367	N/A	101	135	N/A	13.2	215	N/A
Chromium VI	mg/kg	6.3	0.29 B	N/A	0.39 B	0.31 B	N/A	0.51 B	0.33 B	N/A
Cobalt	mg/kg	350	8.9	N/A	6.1	14	N/A	3.7 J	19.4	N/A
Copper	mg/kg	47,000	129 J	N/A	37.8	45.1	N/A	8.1	36.8	N/A
Iron	mg/kg	820,000	182,000	N/A	86,200	53,400	N/A	20,500	90,100	N/A
Lead	mg/kg	800	75.1	N/A	56.6	145	N/A	22.6	66.8	N/A
Manganese	mg/kg	26,000	1,860	N/A	3,330	4,400	N/A	3,000	14,600	N/A
Mercury	mg/kg	350	0.13	N/A	0.027 J	0.12 U	N/A	0.0026 B	0.042 J	N/A
Nickel	mg/kg	22,000	185 J	N/A	30.3	78.5	N/A	4.3 J	134	N/A
Selenium	mg/kg	5,800	2.9 U	N/A	3.6 U	3.7 U	N/A	3.3 U	3.8 U	N/A
Silver	mg/kg	5,800	3	N/A	2.7 U	2.8 U	N/A	2.5 U	1.7 J	N/A
Thallium	mg/kg	12	7.3 U	N/A	9.1 U	9.3 U	N/A	8.2 U	9.4 U	N/A
Vanadium	mg/kg	5,800	38.5	N/A	182	164	N/A	36.4	206	N/A
Zinc	mg/kg	350,000	103 J	N/A	134	181	N/A	49.8	138	N/A
Other										
Cyanide, Total	mg/kg	150	1 J+	N/A	2.1	2.4	N/A	0.37 J	1.6	N/A

Bold indicates detection
Values in red indicate a detection exceedance of the Project Action Limit (PAL)
N/A: This parameter was not analyzed for this sample.
* Indicates non-validated data

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

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-020-SB-1	B13-020-SB-9	B13-021-SB-1	B13-021-SB-9	B13-022-SB-1*	B13-022-SB-4*	B13-022-SB-10	B13-023-SB-1*	B13-023-SB-4*
			8/23/2016	8/23/2016	8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016
Metals											
Aluminum	mg/kg	1,100,000	30,500	42,000	24,300	40,600	38,900	22,600	N/A	6,620	50,300
Antimony	mg/kg	470	2.9 UJ	2.7 UJ	2.6 UJ	2.8 UJ	2.6 U	2.6 U	N/A	2.5 U	2.7 U
Arsenic	mg/kg	3	2.5 UJ	2.3 UJ	2.2 UJ	2.5 J	2.2 U	13.4	1.9	2.6	2.3 U
Barium	mg/kg	220,000	177 J	381 J	232 J	363 J	563	241	N/A	96.7	623
Beryllium	mg/kg	2,300	1	5.8	3.8	6.4	4.7	2.8	N/A	0.68 J	5
Cadmium	mg/kg	100	0.71 B	0.42 B	0.54 B	0.26 B	0.32 B	0.53 B	N/A	0.81 B	0.41 B
Chromium	mg/kg	1,800,000	1,260	204	135	23.2	21.1	129	N/A	155	17.5
Chromium VI	mg/kg	6.3	0.33 B	0.26 B	0.3 B	0.31 B	0.31 B	0.4 B	N/A	0.38 B	0.31 B
Cobalt	mg/kg	350	0.3 J	28.1	1.7 J	2.1 J	1.4 J	11.3	N/A	3.4 J	2.4 J
Copper	mg/kg	47,000	7.9	9.9	74.2	4.8	6.2	51.2	N/A	27.1	8
Iron	mg/kg	820,000	128,000 J	33,000 J	45,100 J	17,200 J	13,900	120,000	N/A	82,500	16,800
Lead	mg/kg	800	13	7.7	11	6.6	4.3	38.5	N/A	45.4	2.3 U
Manganese	mg/kg	26,000	38,900	3,310	8,050	2,440	5,820	4,350	N/A	4,100	7,440
Mercury	mg/kg	350	0.0044 J	0.1 U	0.01 J	0.1 U	0.0049 J	0.005 J	N/A	0.015 J	0.11 U
Nickel	mg/kg	22,000	10.9 J	159 J	12.6 J	7 J	3.5 J	57.1	N/A	31.5	6.4 J
Selenium	mg/kg	5,800	3.9 U	4.3	2.5 J	2.6 J	3.5 U	2.1 J	N/A	3.4 U	3.7 U
Silver	mg/kg	5,800	2.9 UJ	2.7 UJ	2.6 UJ	2.8 UJ	2.6 U	2.6 U	N/A	2.5 U	2.7 U
Thallium	mg/kg	12	9.8 UJ	9 UJ	8.8 UJ	9.2 UJ	8.7 U	8.7 U	N/A	8.5 U	9.1 U
Vanadium	mg/kg	5,800	357	101	161	37	26.7	196	N/A	96.6	50.9
Zinc	mg/kg	350,000	70.8 J	18.1 J	34.2 J	9.4 J	11.9	97.3	N/A	208	4.3 B
Other											
Cyanide, Total	mg/kg	150	4.5	0.71	0.49 J	0.84	0.94	0.32 J	N/A	1.2	0.62

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J: The positive result reported for this analyte is a quantitative estimate.
J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte.

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-040-SB-1	B13-040-SB-5	B13-040-SB-10	B13-041-SB-1	B13-041-SB-4	B13-042-SB-1	B13-042-SB-9	B13-043-SB-1*	B13-043-SB-4*
			8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016
Metals											
Aluminum	mg/kg	1,100,000	18,300	16,800	N/A	25,300	23,600	9,370	33,600	3,160	22,000
Antimony	mg/kg	470	2.6 UJ	2.7 UJ	N/A	2.8 UJ	2.9 UJ	2.5 UJ	2.6 UJ	2.6 U	2.6 U
Arsenic	mg/kg	3	16	3.3	16.3	2.4 U	6.7	2.1 U	2.2 U	4.6	11.9
Barium	mg/kg	220,000	277	250	N/A	267	258	42.6	521	60.2	640
Beryllium	mg/kg	2,300	2.5	1.8	N/A	2.4	2.3	0.4 J	3.3	0.47 J	1.7
Cadmium	mg/kg	100	0.37 B	0.62 B	N/A	0.64 B	0.64 B	0.48 B	0.59 B	0.34 B	3.1
Chromium	mg/kg	1,800,000	141	209	N/A	408	444	427	428	80.6	476
Chromium VI	mg/kg	6.3	0.34 B	0.47 B	N/A	0.36 B	0.36 B	1.9 J-	0.47 B	0.3 B	0.49 B
Cobalt	mg/kg	350	7.6	7	N/A	40.4	45.2	2.7 J	5	6.2	15.6
Copper	mg/kg	47,000	46.2	27.7	N/A	23.9	32	7.9	34.7	14.3	83.1
Iron	mg/kg	820,000	78,300	91,600	N/A	125,000	142,000	145,000	102,000	112,000	147,000
Lead	mg/kg	800	36.6	52.1	N/A	9.9	9.6	6.6	20.4	6.8	713
Manganese	mg/kg	26,000	7,330	17,300	N/A	13,100	14,900	10,900	15,300	3,220	20,400
Mercury	mg/kg	350	0.11 U	0.014 J	N/A	0.0066 J	0.0065 J	0.0065 J	0.005 J	0.014 J	0.004 J
Nickel	mg/kg	22,000	50.2	88.8	N/A	32.2	26.7	17.9	28.3	44.5	34.7
Selenium	mg/kg	5,800	3.5 U	3.6 U	N/A	2.4 B	3.9 U	3.4 U	2.5 B	3.5 U	2 B
Silver	mg/kg	5,800	2.6 U	2.7 U	N/A	2.8 U	2.9 U	2.5 U	2.6 U	2.6 U	2.6 U
Thallium	mg/kg	12	8.8 U	9.1 U	N/A	9.4 U	9.7 U	8.4 U	8.7 U	8.8 U	8.5 U
Vanadium	mg/kg	5,800	297	479	N/A	308	366	270	1,690	56.9	3,240
Zinc	mg/kg	350,000	69.2 J	55.2 J	N/A	88.1 J	83.1 J	87.6 J	54.1 J	54.6	1,300
Other											
Cyanide, Total	mg/kg	150	1.1 J-	0.67 J-	N/A	0.79 J-	0.36 J	0.19 J-	1.3 J-	0.39 J	5.3

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

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

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

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-043-SB-10	B13-046-SB-1*	B13-047-SB-1*	B13-047-SB-4*	B13-047-SB-10*	B13-048-SB-1	B13-048-SB-7	B13-049-SB-1	B13-049-SB-5
			8/24/2016	8/26/2016	8/26/2016	8/26/2016	8/26/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016
Metals											
Aluminum	mg/kg	1,100,000	N/A	4,070	18,800	36,500	N/A	4,550	40,900	25,900	33,900
Antimony	mg/kg	470	N/A	2.3 U	2.7 U	2.8 U	N/A	1.7 J	2.7 UJ	2.6 UJ	2.7 UJ
Arsenic	mg/kg	3	1.9 U	7.8	13	6.7	2.2 U	9.9	3.4	9.6	6.2
Barium	mg/kg	220,000	N/A	81.1	496	671	N/A	52.6	620	510	897
Beryllium	mg/kg	2,300	N/A	0.55 J	2.1	4.4	N/A	0.59 J	4	2.4	3.4
Cadmium	mg/kg	100	N/A	0.36 B	0.3 B	0.37 B	N/A	0.22 B	0.34 B	0.77 B	0.5 B
Chromium	mg/kg	1,800,000	N/A	115	53.6	65.4	N/A	91.1	99.3	124	198
Chromium VI	mg/kg	6.3	N/A	0.72 B	0.46 B	0.31 B	N/A	0.37 B	0.36 B	2.5 J-	0.35 B
Cobalt	mg/kg	350	N/A	14.6	3.5 J	10.8	N/A	12.7	13.3	6.8	11.6
Copper	mg/kg	47,000	N/A	20.5	16.9	22	N/A	32.5	37.7	33.3	45.7
Iron	mg/kg	820,000	N/A	187,000	165,000	65,200	N/A	172,000	44,100	83,500	81,000
Lead	mg/kg	800	N/A	7.1	6	2.4 U	N/A	19.3	4.8	445	37.1
Manganese	mg/kg	26,000	N/A	3,680	5,130	6,860	N/A	2,720	8,350	6,430	11,900
Mercury	mg/kg	350	N/A	0.0072 J	0.098 U	0.11 U	N/A	0.019 J	0.11 U	0.0025 J	0.0031 J
Nickel	mg/kg	22,000	N/A	272	16.4	18.3	N/A	29.2	60.6	19.6	18.7
Selenium	mg/kg	5,800	N/A	3.1 U	3.6 U	3.8 U	N/A	3.4 U	3.6 U	2.6 B	3.6 B
Silver	mg/kg	5,800	N/A	2.7	1.3 J	2.8 U	N/A	2.5 U	2.7 U	2.6 U	2.7 U
Thallium	mg/kg	12	N/A	7.7 U	9 U	8.6 J	N/A	8.4 U	9 U	8.6 U	9 U
Vanadium	mg/kg	5,800	N/A	65.2	158	648	N/A	207	562	241	627
Zinc	mg/kg	350,000	N/A	33.5	37.8	4.7 U	N/A	42.5 J	3.5 B	193 J	11.7 J
Other											
Cyanide, Total	mg/kg	150	N/A	0.14 J	0.62	1.9	N/A	0.095 J	1 J-	1.3 J-	0.96 J-

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J-: The positive result reported for this analyte is a quantitative estimate but may be biased low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte.

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-049-SB-10	B13-050-SB-1	B13-050-SB-5	B13-055-SB-1*	B13-055-SB-9*	B13-056-SB-1*	B13-056-SB-5*	B13-056-SB-10*	B13-064-SB-1
			8/24/2016	8/24/2016	8/24/2016	8/26/2016	8/26/2016	8/26/2016	8/26/2016	8/26/2016	8/26/2016
Metals											
Aluminum	mg/kg	1,100,000	N/A	4,890	36,000	10,700	9,210	2,520	36,500	N/A	26,300
Antimony	mg/kg	470	N/A	2.2 J	2.6 UJ	2.1 U	2.6 U	2.4 U	2.1 U	N/A	2.7 UJ
Arsenic	mg/kg	3	2 U	14.1 J	2.2 U	9.5	6.2	2 U	7	3.9	3.8
Barium	mg/kg	220,000	N/A	63.2	614	122	239	31.1	377	N/A	292 J
Beryllium	mg/kg	2,300	N/A	0.62 J	2.9	0.92	1.5	0.8 U	4.1	N/A	3.1
Cadmium	mg/kg	100	N/A	0.2 B	0.36 B	0.36 B	0.64 B	0.4 B	0.87 B	N/A	0.51 B
Chromium	mg/kg	1,800,000	N/A	36.1 J	27.1	771	829	220	173	N/A	237 J
Chromium VI	mg/kg	6.3	N/A	0.28 B	0.3 B	0.2 B	0.29 B	0.35 B	0.35 B	N/A	0.4 B
Cobalt	mg/kg	350	N/A	18.1	1.4 J	4.6	3.5 J	37.9	15.7	N/A	12.7 J
Copper	mg/kg	47,000	N/A	28.3	2.6 J	70.3	130	10.9	125	N/A	44.1 J
Iron	mg/kg	820,000	N/A	170,000	11,500	268,000	139,000	46,500	78,700	N/A	111,000
Lead	mg/kg	800	N/A	23.5 J	2.4	27.5	14.7	2.8	75.6	N/A	39.9 J
Manganese	mg/kg	26,000	N/A	5,900	8,880	19,300	90,000	4,020	11,900	N/A	6,940
Mercury	mg/kg	350	N/A	0.021 J	0.11 U	0.0044 J	0.099 U	0.11 U	0.11 U	N/A	0.0036 J-
Nickel	mg/kg	22,000	N/A	39.5 J	1.7 J	44.7	29.8	865	34.9	N/A	25.1 J
Selenium	mg/kg	5,800	N/A	3.2 U	3.5 U	2.8 U	3.5 U	3.2 U	2.6 B	N/A	4.8
Silver	mg/kg	5,800	N/A	2.4 U	2.6 U	2.1 U	2.6 U	2.4 U	2.1 U	N/A	2.7 U
Thallium	mg/kg	12	N/A	8 U	8.7 U	5.8 J	14.3	3.5 J	6.9 J	N/A	8.8 UJ
Vanadium	mg/kg	5,800	N/A	48.9 J	317	459	1,230	264	438	N/A	517
Zinc	mg/kg	350,000	N/A	76.1 J	4.3 UJ	133	32.7	23.5	221	N/A	29.2 J
Other											
Cyanide, Total	mg/kg	150	N/A	1.3 J-	0.046 J	0.46 J	1.9	0.58 U	3.6	N/A	0.5 J

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

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-064-SB-5	B13-065-SB-1	B13-065-SB-8	B13-065-SB-10*	B13-068-SB-1	B13-068-SB-4	B13-068-SB-10*	B13-069-SB-1	B13-069-SB-9
			8/23/2016	8/23/2016	8/23/2016	8/23/2016	9/1/2016	9/1/2016	9/1/2016	8/23/2016	8/23/2016
Metals											
Aluminum	mg/kg	1,100,000	41,800	13,300	7,220	N/A	21,300	16,100	N/A	30,700	8,720
Antimony	mg/kg	470	2.7 UJ	2.6 UJ	2.6 UJ	N/A	2.7 UJ	2.7 UJ	N/A	2.7 UJ	2.8 UJ
Arsenic	mg/kg	3	2.2 U	2.2 UJ	2.2 UJ	N/A	4.8	6.5	2.9	2.3 UJ	2.1 J
Barium	mg/kg	220,000	343 J	266 J	261 J	N/A	256 J	187 J	N/A	447 J	227 J
Beryllium	mg/kg	2,300	6.5	1.3	0.22 J	N/A	2.5	2.1	N/A	3.9	0.29 J
Cadmium	mg/kg	100	0.24 B	0.97 B	0.89 B	N/A	1.2 B	1.1 B	N/A	0.47 B	0.68 B
Chromium	mg/kg	1,800,000	10.4 J	1,160	1,390	N/A	373	336	N/A	266	1,460
Chromium VI	mg/kg	6.3	0.31 B	0.26 B	0.31 B	N/A	0.47 J-	0.51 J-	N/A	0.3 B	0.31 B
Cobalt	mg/kg	350	0.8 J	3.7 J	1.3 J	N/A	5.3	6	N/A	20.6	2.4 J
Copper	mg/kg	47,000	1.8 J	35.6	23.6	N/A	67.6 J	80.5 J	N/A	21.7	42.5
Iron	mg/kg	820,000	9,090	164,000 J	269,000 J	N/A	165,000 J	135,000 J	N/A	73,100 J	212,000 J
Lead	mg/kg	800	4 J	89.7	17.2	N/A	104 J	156 J	N/A	15.5	28.1
Manganese	mg/kg	26,000	2,510	24,100	26,000	9,320	9,680	8,430	N/A	8,220	25,800
Mercury	mg/kg	350	0.11 UJ	0.018 J	0.012 J	N/A	0.43 J-	0.46 J-	N/A	0.1 U	0.0085 J
Nickel	mg/kg	22,000	1.1 J	36.7 J	22.1 J	N/A	58.7	62.3	N/A	166 J	26.6 J
Selenium	mg/kg	5,800	3.4 B	3.5 U	3.5 U	N/A	3.6 U	3.6 U	N/A	3.2 J	3.7 U
Silver	mg/kg	5,800	2.7 U	2.6 UJ	2.6 UJ	N/A	0.92 J	0.95 J	N/A	2.7 UJ	2.8 UJ
Thallium	mg/kg	12	8.9 UJ	8.8 UJ	8.8 UJ	N/A	9.1 U	9.1 U	N/A	9.1 UJ	9.3 UJ
Vanadium	mg/kg	5,800	48	745	759	N/A	239	219	N/A	457	642
Zinc	mg/kg	350,000	6 J	141 J	96.2 J	N/A	638 J	424 J	N/A	38.2 J	106 J
Other											
Cyanide, Total	mg/kg	150	0.24 J	2.3	0.61 J	N/A	2.9 J-	2.6 J-	N/A	1.1 J-	0.61 J-

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Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-070-SB-1	B13-070-SB-5	B13-071-SB-1*	B13-071-SB-6*	B13-076-SB-1*	B13-076-SB-7*	B13-076-SB-10*	B13-079-SB-1	B13-079-SB-5
			8/23/2016	8/23/2016	8/24/2016	8/24/2016	8/26/2016	8/26/2016	8/26/2016	8/26/2016	8/24/2016
Metals											
Aluminum	mg/kg	1,100,000	2,810	35,000	34,100	34,700	8,890	23,700	N/A	27,900	33,800
Antimony	mg/kg	470	3.4 UJ	2.7 UJ	2.6 U	2.6 U	2.9 U	3.2 U	N/A	2.8 UJ	2.8 UJ
Arsenic	mg/kg	3	2.8 U	2.3 U	2.2 U	2.1 U	10	4.4	2.6	2.3 U	7
Barium	mg/kg	220,000	30.6 J	318 J	234	397	99.8	447	N/A	331	555
Beryllium	mg/kg	2,300	1.1 U	3.8	4.9	6.1	1.2	2.5	N/A	4.4	3.7
Cadmium	mg/kg	100	0.42 B	0.5 B	0.4 B	0.37 B	0.64 B	0.35 B	N/A	0.88 B	0.45 B
Chromium	mg/kg	1,800,000	246 J	226 J	9	18.4	270	131	N/A	381	102
Chromium VI	mg/kg	6.3	0.37 B	0.33 B	0.3 B	0.31 B	0.33 B	0.62 B	N/A	0.41 B	0.43 B
Cobalt	mg/kg	350	33.9 J	7.4 J	0.64 J	1.2 J	10.7	15.7	N/A	1.1 J	38.4
Copper	mg/kg	47,000	9.8 J	19.3 J	1.9 J	3.9 J	55.1	37.5	N/A	12.5	58.5
Iron	mg/kg	820,000	35,900	69,900	16,300	11,000	121,000	37,500	N/A	75,000	98,700
Lead	mg/kg	800	5 J	18.5 J	11.6	4.6	52.6	25.1	N/A	65.8	30
Manganese	mg/kg	26,000	718	13,200	2,870	3,540	5,080	4,130	N/A	15,000	8,560
Mercury	mg/kg	350	0.0043 J-	0.0031 J-	0.1 U	0.0022 J	0.51	0.13 U	N/A	0.017 J	0.0099 J
Nickel	mg/kg	22,000	748 J	72.7 J	1.6 J	3.3 J	51.4	125	N/A	7.5 J	36.4
Selenium	mg/kg	5,800	4.5 U	4	2.5 J	2 B	3.9 U	4.2 U	N/A	3.7 U	3.1 B
Silver	mg/kg	5,800	3.4 U	2.7 U	2.6 U	2.6 U	2.9 U	3.2 U	N/A	2.8 U	2.8 U
Thallium	mg/kg	12	11.3 UJ	9 UJ	8.8 U	8.5 U	9.7 U	10.5 U	N/A	9.4 U	9.4 U
Vanadium	mg/kg	5,800	17.5	843	40.7	73.2	233	117	N/A	174	276
Zinc	mg/kg	350,000	19.7 J	44 J	2.6 B	6.7 B	240	54.9	N/A	211 J	54.5 J
Other											
Cyanide, Total	mg/kg	150	0.75 U	0.35 J	0.048 J	0.17 J	2.8	1.8	N/A	4.8 J-	0.86 J-

Bold indicates detection
Values in red indicate a detection exceedance of the Project Action Limit (PAL)
N/A: This parameter was not analyzed for this sample.
* Indicates non-validated data

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

Table 2 - Sub-Parcel B13-2
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B13-081-SB-1*	B13-081-SB-9*	B13-082-SB-1	B13-082-SB-5	B5-122-SB-1*	B5-122-SB-9*	B5-122-SB-10*	B5-167-SB-1*	B5-167-SB-7*	B5-167-SB-10*
			8/26/2016	8/26/2016	8/23/2016	8/23/2016	12/23/2015	12/23/2015	12/23/2015	12/23/2015	12/23/2015	12/23/2015
Metals												
Aluminum	mg/kg	1,100,000	31,500	28,200	6,310	32,000	9,800	26,200	N/A	9,410	30,300	N/A
Antimony	mg/kg	470	2.3 U	2.7 U	2.5 UJ	2.5 UJ	2.3 U	2.6 U	N/A	13.5	2.6 U	N/A
Arsenic	mg/kg	3	1.9 U	8.7	2.1 UJ	2.1 UJ	7	17.8	2.1 U	5.2	8.9	3.1 U
Barium	mg/kg	220,000	827	661	99 J	224 J	269	352	N/A	112	394	N/A
Beryllium	mg/kg	2,300	4.6	2.3	0.36 J	5.8	0.67 J	1.5	N/A	0.74 J	5.4	N/A
Cadmium	mg/kg	100	0.34 B	0.48 B	0.99 B	0.37 B	0.9 J	1.1 J	N/A	2	1.9	N/A
Chromium	mg/kg	1,800,000	17	118	2,040	673	563	1,950	N/A	117	119	N/A
Chromium VI	mg/kg	6.3	0.3 B	0.52 B	1.5 J-	0.25 B	0.81 J	1.2 U	N/A	1.1 U	1.2 U	N/A
Cobalt	mg/kg	350	0.59 J	7.7	6	4.2 U	5.1	66.6	N/A	5.2	13.5	N/A
Copper	mg/kg	47,000	6	24.2	48.2	3.6 J	38.2	188	N/A	59.8	45.8	N/A
Iron	mg/kg	820,000	18,900	78,400	246,000 J	74,900 J	198,000	107,000	N/A	78,000	68,600	N/A
Lead	mg/kg	800	2.5	2.6	6.8	3.4	526	75.4	N/A	493	99.5	N/A
Manganese	mg/kg	26,000	8,400	10,300	37,300	14,200	15,000	13,500	N/A	1,940	4,700	N/A
Mercury	mg/kg	350	0.1 U	0.11 U	0.0021 J	0.1 U	0.038 J	0.0061 J	N/A	0.42	0.025 J	N/A
Nickel	mg/kg	22,000	3.8 B	16.9	72.7 J	3.4 J	41.3	398	N/A	35.8	22.9	N/A
Selenium	mg/kg	5,800	3.1 U	2.7 J	3.3 U	2.3 J	3 U	3.5 U	N/A	9	3.4 U	N/A
Silver	mg/kg	5,800	2.3 U	2.7 U	2.5 UJ	2.5 UJ	2.9	1.6 J	N/A	12.9	2.6 U	N/A
Thallium	mg/kg	12	7.8 U	9.9	8.3 UJ	8.4 UJ	7.6 U	8.7 U	N/A	7.4 U	8.6 U	N/A
Vanadium	mg/kg	5,800	132	754	815	320	327	99.2	N/A	58.9	270	N/A
Zinc	mg/kg	350,000	7.1	8.2	28.4 J	2 B	429	271	N/A	504	380	N/A
Other												
Cyanide, Total	mg/kg	150	0.1 J	0.23 J	0.15 J	0.39 J	1.3	2.1	N/A	1.2	1.1	N/A

Bold indicates detection
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

N/A: This parameter was not analyzed for this sample.

* Indicates non-validated data

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

Table 3 - Sub-Parcel B13-2
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	B13-001-PZ*	B13-006-PZ	B13-021-PZ	B13-042-PZ*	B13-049-PZ	B13-069-PZ*	B13-076-PZ
Volatile Organic Compounds									
2-Butanone (MEK)	µg/L	5,600	10 U	10 U	10 U	10 U	10 U	4.2 J	10 U
Acetone	µg/L	14,000	10 U	10 U	10 U	10 U	10 U	48.6	10 U
Benzene	µg/L	5	0.82 J	1 U	0.57 J	0.9 J	1 U	0.81 J	1 U
Carbon disulfide	µg/L	810	1.4	1.8	1 U	1.8	1.6	1.7	1.3
Toluene	µg/L	1,000	1 U	0.38 B	1.4	0.34 J	0.6 J	0.48 J	0.95 J
Semi-Volatile Organic Compounds^									
1,4-Dioxane	µg/L	0.46	0.09 J	0.15	0.12	0.11	0.1	0.086 J	0.11
2,4-Dimethylphenol	µg/L	360	0.51 J	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	0.37	0.22	0.093 B	0.059 J	0.048 B	1.4	0.1
2-Methylphenol	µg/L	930	0.36 J	1 U	1 U	1 U	1 U	0.31 J	1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	1 J	2.1 U	2 U	2.1 U	2.1 U	1.3 J	2.1 U
Acenaphthene	µg/L	530	0.69	0.085 J	0.15	0.055 J	0.043 J	2.8	0.079 J
Acenaphthylene	µg/L	530	0.081 J	0.028 J	0.015 J	0.019 J	0.029 J	0.29	0.1 U
Acetophenone	µg/L	1,900	1 U	1 U	1 U	1 U	1 U	0.71 J	1 U
Anthracene	µg/L	1,800	0.095 J	0.039 J	0.022 J	0.02 J	0.1 U	0.36	0.018 J
Benz[a]anthracene	µg/L	0.0298	0.052 J	0.1 U	0.1 U	0.1 U	0.1 U	0.029 J	0.1 U
Benzo[a]pyrene	µg/L	0.2	0.059 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	0.067 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[g,h,i]perylene	µg/L		0.045 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	2.5	0.028 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	0.21 J	1 U	1 U	0.94 J	1 U	0.27 J	1 U
Carbazole	µg/L		0.44 J	0.27 J	1 U	0.14 J	1 U	1.5	1 U
Chrysene	µg/L	25	0.038 J	0.1 U	0.1 U	0.1 U	0.0097 J	0.014 J	0.0079 J
Fluoranthene	µg/L	800	0.2	0.084 J	0.032 J	0.077 J	0.084 J	0.35	0.092 J
Fluorene	µg/L	290	0.33	0.079 J	0.061 J	0.063 J	0.041 J	0.88	0.061 J
Indeno[1,2,3-c,d]pyrene	µg/L	0.25	0.04 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	µg/L	0.12	2.9	4.9	1.4	0.64	0.8	11.4	0.74
Pentachlorophenol	µg/L	1	2.1 J	1.1 J	1 J	0.89 J	1 J	0.91 J	1.1 J
Phenanthrene	µg/L		0.61	0.12	0.091 J	0.19	0.093 J	2.5	0.18
Phenol	µg/L	5,800	1 U	0.27 J	1 U	1 U	1 U	19.5	1 U
Pyrene	µg/L	120	0.16	0.068 J	0.021 J	0.052 J	0.055 J	0.21	0.062 J
TPH/Oil & Grease									
Diesel Range Organics	µg/L	47	327	172 J	116 J	210	50.1 J	960	59.4 J
Gasoline Range Organics	µg/L	47	200 U	200 U	200 U	200 U	76.4 J	200 U	200 U
Oil & Grease	µg/L	47	4,770 U	1,300 J	1,200 J	4,800 U	4,820 U	4,770 U	4,820 U

Detections in bold

* indicates non-validated data results

^ PAH compounds were analyzed via SIM

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

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

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

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

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

Table 4 - Sub-Parcel B13-2
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	B13-001-PZ*	B13-006-PZ	B13-021-PZ	B13-042-PZ*	B13-049-PZ	B13-069-PZ*	B13-076-PZ
Metals, Dissolved									
Aluminum, Dissolved	µg/L	20,000	158	90.4	150	159	107	96	343
Barium, Dissolved	µg/L	2,000	48.6	71.3	33.6	46.2	38.1	458	44.5
Chromium VI, Dissolved	µg/L	0.035	9 J	8 B	8 B	9 J	8 B	9 J	8 B
Chromium, Dissolved	µg/L	100	5 U	5 U	1.6 J	1.1 J	1.7 J	1.6 J	1.4 J
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	5 U	5 U	3.3 J	5 U
Manganese, Dissolved	µg/L	430	5 U	6.6	0.94 J	5 U	1 J	1.1 J	1 J
Nickel, Dissolved	µg/L	390	1.7 J	10 U	1.2 B	10 U	1.1 B	16.8	0.87 B
Selenium, Dissolved	µg/L	50	7.9 J	5.2 J	4.1 J	8 U	8 U	5 J	8 U
Vanadium, Dissolved	µg/L	86	117	29.6	34.9	18.5	40.4	1.4 J	4.1 J
Other									
Cyanide	µg/L	200	6.1 J	6.3 J	3.2 J	6.3 J	4.1 J	5.1 J	10 U

Detections in bold

* indicates non-validated data results

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 blank/preparation or field blank.

Table 5 - Sub-Parcel B13-2
Cumulative Vapor Intrusion Criteria Comparison

				B13-001-PZ		B13-006-PZ		B13-021-PZ		B13-042-PZ		B13-049-PZ		B13-069-PZ		B13-076-PZ	
Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	Conc. (ug/L)	Cancer Risk	Conc. (ug/L)	Cancer Risk	Conc. (ug/L)	Cancer Risk	Conc. (ug/L)	Cancer Risk	Conc. (ug/L)	Cancer Risk	Conc. (ug/L)	Cancer Risk	Conc. (ug/L)	Cancer Risk
Cancer Risk																	
1,4-Dioxane	SVOC		130,000	0.09 J	6.9E-12	0.15	1.2E-11	0.12	9.2E-12	0.11	8.5E-12	0.1	7.7E-12	0.086 J	6.6E-12	0.11	8.5E-12
Naphthalene	SVOC		200	2.9	1.5E-07	4.9	2.5E-07	1.4	7.0E-08	0.64	3.2E-08	0.8	4.0E-08	11.4	5.7E-07	0.74	3.7E-08
Benzene	VOC		69	0.82 J	1.2E-07	1 U	0	0.57 J	8.3E-08	0.9 J	1.3E-07	1 U	0	0.81 J	1.2E-07	1 U	0
Cumulative Vapor Intrusion Cancer Risk				3E-07		2E-07		2E-07		2E-07		4E-08		7E-07		4E-08	
Non-Cancer Hazard																	
				Conc. (ug/L)	Non-Cancer HQ	Conc. (ug/L)	Non-Cancer HQ	Conc. (ug/L)	Non-Cancer HQ	Conc. (ug/L)	Non-Cancer HQ	Conc. (ug/L)	Non-Cancer HQ	Conc. (ug/L)	Non-Cancer HQ	Conc. (ug/L)	Non-Cancer HQ
Cyanide	Other	None Specified	3.5	6.1 J	1.7	6.3 J	1.8	3.2 J	0.9	6.3 J	1.8	4.1 J	1.2	5.1 J	1.5	10 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard				2		2		1		2		1		1		0	

Highlighted values indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Conc. = Concentration
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative

**Table 6 - Sub-Parcel B13-2
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	B13-055-SB-1	0.43		0.014	0.07	75	37.33	410	20	no
2,4-Dimethylphenol	105-67-9	B13-076-SB-7	0.053	J	0.034	0.04	60	3.33		1,600	no
2-Butanone (MEK)	78-93-3	B13-076-SB-1	0.012		0.0045	0.007	38	10.53		19,000	no
2-Chloronaphthalene	91-58-7	B13-056-SB-1	0.11		0.043	0.08	75	2.67		6,000	no
2-Hexanone	591-78-6	B13-043-SB-4	0.0023	J	0.0023	0.002	38	2.63		130	no
2-Methylnaphthalene	91-57-6	B13-055-SB-1	1		0.0019	0.07	76	85.53		300	no
Acenaphthene	83-32-9	B13-068-SB-4	13.8		0.00052	0.3	76	81.58		4,500	no
Acenaphthylene	208-96-8	B13-068-SB-4	0.75		0.00067	0.04	76	82.89			no
Acetone	67-64-1	B13-065-SB-8	0.28		0.0045	0.03	38	68.42		67,000	no
Acetophenone	98-86-2	B13-055-SB-1	0.12		0.02	0.06	75	4.00		12,000	no
Aluminum	7429-90-5	B13-023-SB-4	50,300		2,520	22,844	75	100.00		110,000	no
Anthracene	120-12-7	B13-068-SB-4	14.9		0.0010	0.41	76	86.84		23,000	no
Antimony	7440-36-0	B5-167-SB-1	13.5		1.7	5.03	75	5.33		47	no
Aroclor 1242	53469-21-9	B13-007-SB-1	3.29		0.0466	0.82	38	13.16	0.95		YES (C)
Aroclor 1248	12672-29-6	B13-049-SB-1	0.128		0.1	0.11	38	5.26	0.95		no
Aroclor 1254	11097-69-1	B13-068-SB-1	0.236		0.0849	0.16	38	5.26	0.97	1.5	no
Arsenic	7440-38-2	B5-122-SB-9	17.8		1.9	6.96	90	63.33	3	48	YES (C)
Barium	7440-39-3	B13-049-SB-5	897		30.600	312	75	100.00		22,000	no
Benz[a]anthracene	56-55-3	B13-068-SB-4	22.5		0.0012	0.72	77	93.51	21		YES (C)
Benzaldehyde	100-52-7	B13-076-SB-7	0.15		0.016	0.05	39	30.77	820	12,000	no
Benzene	71-43-2	B5-122-SB-9	0.041		0.0013	0.01	38	23.68	5.1	42	no
Benzo[a]pyrene	50-32-8	B13-068-SB-4	20.3		0.0011	0.68	81	90.12	2.1	22	YES (C)
Benzo[b]fluoranthene	205-99-2	B13-068-SB-4	27.6		0.00054	0.97	77	94.81	21		YES (C)
Benzo[g,h,i]perylene	191-24-2	B13-068-SB-4	10.1		0.0013	0.38	76	86.84			no
Benzo[k]fluoranthene	207-08-9	B13-068-SB-4	9.7		0.0015	0.5	77	90.91	210		no
Beryllium	7440-41-7	B13-064-SB-5	6.50		0.22	2.70	75	97.33	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	B13-007-SB-1	0.58		0.024	0.26	75	10.67	160	1,600	no
Cadmium	7440-43-9	B13-007-SB-1	5.8		0.39	1.8	75	14.67	9,300	10	no
Carbazole	86-74-8	B13-043-SB-4	2.2		0.019	0.22	75	30.67			no
Chromium†	7440-47-3	B13-082-SB-1	2,040		9	366	75	100.00		180,000	no
Chromium VI	18540-29-9	B13-049-SB-1	2.5	J-	0.47	1.28	75	8.00	6	350	no

**Table 6 - Sub-Parcel B13-2
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?
Chrysene	218-01-9	B13-068-SB-4	23.4		0.00083	0.8	76	93.42	2100		no
Cobalt	7440-48-4	B5-122-SB-9	66.6		0.3	10.5	75	98.67	1,900	35	YES (NC)
Copper	7440-50-8	B5-122-SB-9	188		1.8	38.200	75	100.00		4,700	no
Cyanide, Total	57-12-5	B13-043-SB-4	5.3		0.046	1.17	75	96.00		120	no
Dibenz[a,h]anthracene	53-70-3	B13-068-SB-4	3.5		0.0013	0.13	77	80.52	2.1		YES (C)
Diethylphthalate	84-66-2	B13-064-SB-1	0.086		0.024	0.06	75	2.67		66,000	no
Di-n-butylphthalate	84-74-2	B13-022-SB-4	0.37	J	0.37	0.37	75	1.33		8,200	no
Ethylbenzene	100-41-4	B5-122-SB-9	0.025		0.0024	0.01	38	18.42	25	2,000	no
Fluoranthene	206-44-0	B13-068-SB-4	62		0.00065	1.70	76	96.05		3,000	no
Fluorene	86-73-7	B13-068-SB-4	11.1		0.00064	0.24	76	78.95		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B13-068-SB-4	9.1		0.0011	0.35	77	85.71	21		no
Iron	7439-89-6	B13-065-SB-8	269,000	J	9,090	103,921	75	100.00		82,000	YES (NC)
Isopropylbenzene	98-82-8	B5-122-SB-9	0.0053	J	0.0053	0.01	38	2.63		990	no
Lead [^]	7439-92-1	B13-043-SB-4	713		2.4	64.7	75	97.33		800	no
Manganese	7439-96-5	B13-055-SB-9	90,000		718	11,568	77	100.00		2,600	YES (NC)
Mercury	7439-97-6	B13-076-SB-1	0.51		0.0021	0.05	75	70.67		35	no
Methylene Chloride	75-09-2	B5-167-SB-7	0.011		0.011	0.01	38	2.63	1000	320	no
Naphthalene	91-20-3	B13-006-SB-1	0.98		0.0019	0.11	76	84.21	8.6	59	no
Nickel	7440-02-0	B13-056-SB-1	865		1.1	72.1	75	98.67	64,000	2,200	no
N-Nitrosodiphenylamine	86-30-6	B13-055-SB-1	0.063	J	0.063	0.063	75	1.33	470		no
PCBs (total)*	1336-36-3	B13-007-SB-1	3.29		0.0466	0.60	38	23.68	0.94		YES (C)
Phenanthrene	85-01-8	B13-068-SB-4	54		0.00057	1.15	76	98.68			no
Phenol	108-95-2	B13-068-SB-4	0.1		0.023	0.05	60	5.00		25,000	no
Pyrene	129-00-0	B13-068-SB-4	49		0.00083	1.46	76	93.42		2,300	no
Selenium	7782-49-2	B5-167-SB-1	9		2.1	3.87	75	20.00		580	no
Silver	7440-22-4	B5-167-SB-1	12.9		0.92	3.01	75	16.00		580	no
Thallium	7440-28-0	B13-055-SB-9	14.3		3.5	7.67	75	9.33		1.2	YES (NC)
Toluene	108-88-3	B5-122-SB-9	0.039		0.0011	0.01	38	23.68		4,700	no
Vanadium	7440-62-2	B13-043-SB-4	3,240		17.5	427	75	100.00		580	YES (NC)
Xylenes	1330-20-7	B13-076-SB-7	0.076		0.0066	0.03	38	13.16		250	no
Zinc	7440-66-6	B13-043-SB-4	1,300		6	143	75	90.67		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

C = Compound was identified as a cancer COPC

TR = Target Risk

NC = Compound was identified as a non-cancer COPC

HQ = Hazard Quotient

*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.

†Chromium was evaluated against the RSL for chromium (III) insoluble salts

**Table 7 - Sub-Parcel B13-2
Assessment of Lead**

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
EU1 (88.1 ac.)	Surface	445.0	42.9
	Sub-Surface	713	50.3
	Pooled	713	46.5

Table 8 - Sub-Parcel B13-2
Soil Exposure Point Concentrations

Parameter	EU1 (88.1 ac.)					
	EPCs - Surface Soils		EPCs - Sub-Surface Soils		EPCs - Pooled Soils	
	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% GROS Adjusted Gamma UCL	8.04	95% GROS Adjusted Gamma UCL	6.03	95% GROS Approximate Gamma UCL	5.47
Cobalt	95% Adjusted Gamma UCL	14.0	95% KM Adjusted Gamma UCL	14.8	95% KM Approximate Gamma UCL	12.6
Iron	95% Student's-t UCL	133,655	95% Student's-t UCL	104,602	95% Student's-t UCL	113,400
Manganese	95% Adjusted Gamma UCL	13,762	95% Adjusted Gamma UCL	18,390	95% Approximate Gamma UCL	14,554
Thallium	Maximum Value	5.80	95% KM (t) UCL	8.24	95% KM (t) UCL	7.25
Vanadium	95% Adjusted Gamma UCL	418	95% Adjusted Gamma UCL	924	95% Approximate Gamma UCL	592
Benz[a]anthracene	95% Chebyshev (Mean, Sd) UCL	2.30	97.5% KM (Chebyshev) UCL	6.01	95% KM (Chebyshev) UCL	2.76
Benzo[a]pyrene	95% KM (Chebyshev) UCL	2.09	97.5% KM (Chebyshev) UCL	5.19	95% KM (Chebyshev) UCL	2.46
Benzo[b]fluoranthene	95% Chebyshev (Mean, Sd) UCL	2.67	97.5% KM (Chebyshev) UCL	7.51	95% KM (Chebyshev) UCL	3.42
Dibenz[a,h]anthracene	95% KM (Chebyshev) UCL	0.37	95% KM (Chebyshev) UCL	0.71	KM H-UCL	0.12
PCBs (total)	95% Student's-t UCL	0.02	N/A	N/A	95% Student's-t UCL	0.02

Bold indicates maximum value

NA = no detections

EU = Exposure Unit

EPC = Exposure Point Concentration

UCL = Upper Confidence Limit

Sd = Standard Deviation

KM = Kaplan-Meier

Table 8 - Sub-Parcel B13-2
Soil Exposure Point Concentrations

Parameter	EU1-EXP (89.9 ac.)					
	EPCs - Surface Soils		EPCs - Sub-Surface Soils		EPCs - Pooled Soils	
	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% KM (t) UCL	6.28	95% GROS Approximate Gamma UCL	6.58	95% GROS Approximate Gamma UCL	5.98
Cobalt	95% Adjusted Gamma UCL	11.7	Gamma Adjusted KM-UCL	17.5	KM H-UCL	15.0
Iron	95% Student's-t UCL	135,293	95% Student's-t UCL	108,200	95% Student's-t UCL	116,681
Manganese	95% H-UCL	13,397	95% Adjusted Gamma UCL	16,919	95% H-UCL	14,046
Thallium	Maximum Value	5.80	95% KM (t) UCL	7.85	95% KM (t) UCL	6.66
Vanadium	95% Adjusted Gamma UCL	360	95% Adjusted Gamma UCL	802	95% Approximate Gamma UCL	523
Benz[a]anthracene	95% Chebyshev (Mean, Sd) UCL	1.80	97.5% KM (Chebyshev) UCL	4.66	KM H-UCL	0.88
Benzo[a]pyrene	95% KM (Chebyshev) UCL	1.64	97.5% KM (Chebyshev) UCL	3.90	KM H-UCL	0.98
Benzo[b]fluoranthene	95% Chebyshev (Mean, Sd) UCL	2.15	97.5% KM (Chebyshev) UCL	5.86	KM H-UCL	2.76
Dibenz[a,h]anthracene	95% KM (Chebyshev) UCL	0.29	95% KM (Chebyshev) UCL	0.55	KM H-UCL	0.08
PCBs (total)	95% KM (Chebyshev) UCL	0.09	N/A	N/A	95% KM (Chebyshev) UCL	0.09

Bold indicates maximum value
NA = no detections
EU = Exposure Unit
EPC = Exposure Point Concentration
UCL = Upper Confidence Limit
Sd = Standard Deviation
KM = Kaplan-Meier

Table 9 - Sub-Parcel B13-2
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (88.1 ac.)				
		EPC (mg/kg)	Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	8.04	3.0	480	2.7E-06	0.02
Cobalt	Respiratory; Thyroid	14.0	1,900	350	7.4E-09	0.04
Iron	Gastrointestinal	133,655		820,000		0.2
Manganese	Nervous	13,762		26,000		0.5
Thallium	Dermal	5.80		12		0.5
Vanadium	Dermal; Respiratory	418		5,800		0.07
Benz[a]anthracene		2.30	21		1.1E-07	
Benzo[a]pyrene	Developmental	2.09	2.1	220	1.0E-06	0.01
Benzo[b]fluoranthene		2.67	21		1.3E-07	
Dibenz[a,h]anthracene		0.37	2.1		1.8E-07	
PCBs (total)		0.02	0.94		2.1E-08	
					4E-06	↓

RSLs were obtained from the EPA Regional Screening Levels for Composite Worker Soil with TR=1E-6 and THQ=1.0

EPC: Exposure Point Concentration
 HQ: Hazard Quotient
 HI: Hazard Index
 Bold indicates Maximum Value

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

Table 10 - Sub-Parcel B13-2
Subsurface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (88.1 ac.)				
		EPC (mg/kg)	Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	6.03	3.0	480	2.0E-06	0.01
Cobalt	Respiratory; Thyroid	14.8	1,900	350	7.8E-09	0.04
Iron	Gastrointestinal	104,602		820,000		0.1
Manganese	Nervous	18,390		26,000		0.7
Thallium	Dermal	8.24		12		0.7
Vanadium	Dermal; Respiratory	924		5,800		0.2
Benz[a]anthracene		6.01	21		2.9E-07	
Benzo[a]pyrene	Developmental	5.19	2.1	220	2.5E-06	0.02
Benzo[b]fluoranthene		7.51	21		3.6E-07	
Dibenz[a,h]anthracene		0.71	2.1		3.4E-07	
PCBs (total)		N/A	0.94			
					5E-06	↓

RSLs were obtained from the EPA Regional Screening Levels for Composite Worker Soil with TR=1E-6 and THQ=1.0

EPC: Exposure Point Concentration
 HQ: Hazard Quotient
 HI: Hazard Index
 N/A: No detections

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

**Table 11 - Sub-Parcel B13-2
Pooled Soils
Composite Worker Risk Ratios**

Parameter	Target Organs	EU1 (88.1 ac.)				
		EPC (mg/kg)	Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	5.47	3.0	480	1.8E-06	0.01
Cobalt	Respiratory; Thyroid	12.6	1,900	350	6.6E-09	0.04
Iron	Gastrointestinal	113,400		820,000		0.1
Manganese	Nervous	14,554		26,000		0.6
Thallium	Dermal	7.25		12		0.6
Vanadium	Dermal; Respiratory	592		5,800		0.1
Benz[a]anthracene		2.76	21		1.3E-07	
Benzo[a]pyrene	Developmental	2.46	2.1	220	1.2E-06	0.01
Benzo[b]fluoranthene		3.42	21		1.6E-07	
Dibenz[a,h]anthracene		0.12	2.1		5.7E-08	
PCBs (total)		0.02	0.94		2.1E-08	
					3E-06	↓

RSLs were obtained from the EPA Regional Screening Levels for Composite Worker Soil with TR=1E-6 and THQ=1.0

EPC: Exposure Point Concentration
 HQ: Hazard Quotient
 HI: Hazard Index

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

Table 12 - Sub-Parcel B13-2
Surface Soils
Construction Worker Risk Ratios

95 Day		EU1-EXP (89.9 ac.)				
Parameter	Target Organs	EPC (mg/kg)	Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	6.28	39.8	255	1.6E-07	0.02
Cobalt	Respiratory; Thyroid	11.7	18,481	2,566	6.3E-10	0.005
Iron	Gastrointestinal	135,293		633,004		0.2
Manganese	Nervous	13,397		11,534		1
Thallium	Dermal	5.80		36.2		0.2
Vanadium	Dermal; Respiratory	360		4,247		0.08
Benz[a]anthracene		1.80	366		4.9E-09	
Benzo[a]pyrene	Developmental	1.64	44.5	14.0	3.7E-08	0.1
Benzo[b]fluoranthene		2.15	443		4.9E-09	
Dibenz[a,h]anthracene		0.29	46.9		6.2E-09	
PCBs (total)		0.09	10.9		8.3E-09	
					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

Bold indicates Maximum Value

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

Table 13 - Sub-Parcel B13-2
Subsurface Soils
Construction Worker Risk Ratios

95 Day		EU1-EXP (89.9 ac.)				
Parameter	Target Organs	EPC (mg/kg)	Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	6.58	39.8	255	1.7E-07	0.03
Cobalt	Respiratory; Thyroid	17.5	18,481	2,566	9.5E-10	0.007
Iron	Gastrointestinal	108,200		633,004		0.2
Manganese	Nervous	16,919		11,534		1
Thallium	Dermal	7.85		36.2		0.2
Vanadium	Dermal; Respiratory	802		4,247		0.2
Benz[a]anthracene		4.66	366		1.3E-08	
Benzo[a]pyrene	Developmental	3.90	44.5	14.0	8.8E-08	0.3
Benzo[b]fluoranthene		5.86	443		1.3E-08	
Dibenz[a,h]anthracene		0.55	46.9		1.2E-08	
PCBs (total)		N/A	10.9			
					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

N/A: Indicates no detections

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

Table 14 - Sub-Parcel B13-2
Pooled Soils
Construction Worker Risk Ratios

95 Day		EU1-EXP (89.9 ac.)				
Parameter	Target Organs	EPC (mg/kg)	Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
			Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	5.98	39.8	255	1.5E-07	0.02
Cobalt	Respiratory; Thyroid	15.0	18,481	2,566	8.1E-10	0.006
Iron	Gastrointestinal	116,681		633,004		0.2
Manganese	Nervous	14,046		11,534		1
Thallium	Dermal	6.66		36.2		0.2
Vanadium	Dermal; Respiratory	523		4,247		0.1
Benz[a]anthracene		0.88	366		2.4E-09	
Benzo[a]pyrene	Developmental	0.98	44.5	14.0	2.2E-08	0.07
Benzo[b]fluoranthene		2.76	443		6.2E-09	
Dibenz[a,h]anthracene		0.08	46.9		1.7E-09	
PCBs (total)		0.09	10.9		8.3E-09	
					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
	Developmental	0
	Gastrointestinal	0
	Nervous	1
	Respiratory	0
	Thyroid	0

APPENDIX A



November 14, 2024

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230
Attention: Ms. Jennifer Sohns

**Subject: Request to Enter Temporary CHS Review
Tradepoint Atlantic Sub-Parcel B13-2**

Dear Ms. Sohns:

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 Sub-Parcel B13-2 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



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 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,

Matthew Newman

Environmental Manager
TRADEPOINT ATLANTIC
6995 Bethlehem Boulevard, Suite 100
Baltimore, Maryland 21219
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APPENDIX B

**Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B13-2**

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/cm ²)	AF	0.3
Skin surface exposed (cm ²)	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/cm ³)	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 B13-2

Area of site (ac)	Ac	89.9
Overall duration of construction (wk/yr)	EW	19
Exposure frequency (day/yr)	EF	95
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	13.2
Overall duration of construction (hr)	tc	3,192
Overall duration of traffic (s)	Tt	2,736,000
Surface area (m2)	AR	363,813
Length (m)	LR	603
Distance traveled (km)	ΣVKT	573
Particulate emission factor (m3/kg)	PEFsc	206,143,352
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	6.06
Total time of construction (s)	Tcv	2,736,000

→ EU1-EXP

Input

Calculation

Chemical	RfD & RfC Sources	^a Ingestion SF (mg/kg-day) ⁻¹	^a Inhalation Unit Risk (ug/m ³) ⁻¹	^a Subchronic RfD (mg/kg-day)	^a Subchronic RfC (mg/m ³)	^a GIABS	Dermally Adjusted RfD (mg/kg-day)	^a ABS	^a RBA	^a Dia	^a Diw	^a Henry's Law Constant (unitless)	^a Kd	^a 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				39.9	38,680	39.8	256	35,641	255
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	0.01	1			-	4.50E+01					18,481	18,481	2,713	47,521	2,566
Iron	P	-	-	7.00E-01	-	1	7.00E-01	0.01	1			-	2.50E+01							633,004		633,004
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	0.01	1			-	6.50E+01							12,774	118,804	11,534
Thallium (Soluble Salts)	P	-	-	4.00E-05	-	1	4.00E-05	0.01	1			-	7.10E+01							36.2		36.2
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							4,324	237,607	4,247
Benz[a]anthracene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	2.60E-02	6.70E-06	4.91E-04	1.08E+03	1.80E+05	6.71E-10	1.23E+5	469	1,659	366			
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	6.57E+5	46.9	881	44.5	201	15.1	14.0
Benzo[b]fluoranthene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.80E-02	5.60E-06	2.69E-05	3.60E+03	6.00E+05	2.91E-11	5.93E+5	469	7,945	443			
Dibenz[a,h]anthracene	I	1.00E+00	6.00E-04	-	-	1		0.13	1	4.50E-02	5.20E-06	5.76E-06	1.14E+04	1.90E+06	4.13E-12	1.57E+6	46.9	277,209	46.9			
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	1.48E+4	23.0	20.9	10.9			

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at <https://www.epa.gov/risk/regional-screening-levels-rsls>
^achemical 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.

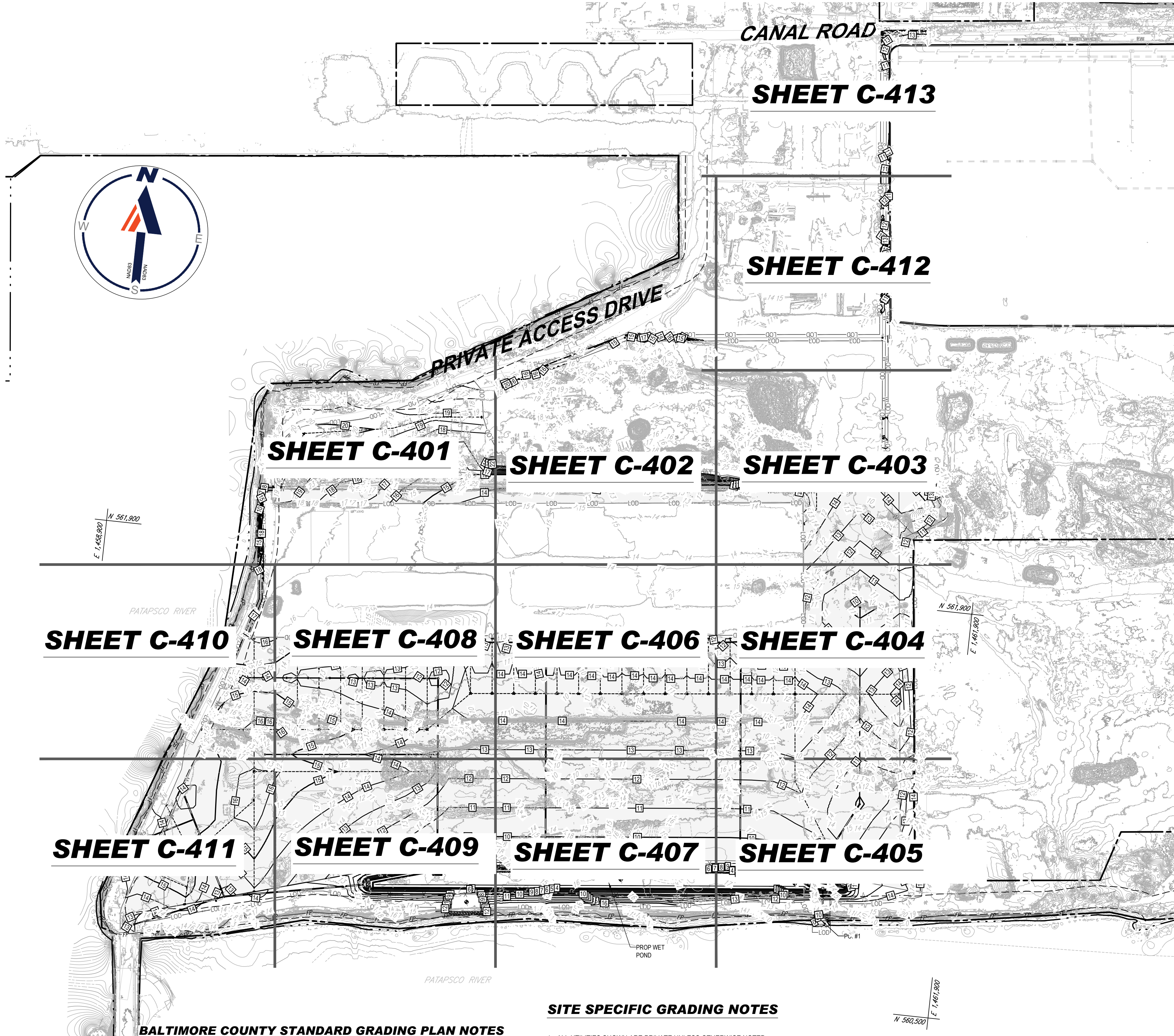
Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

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

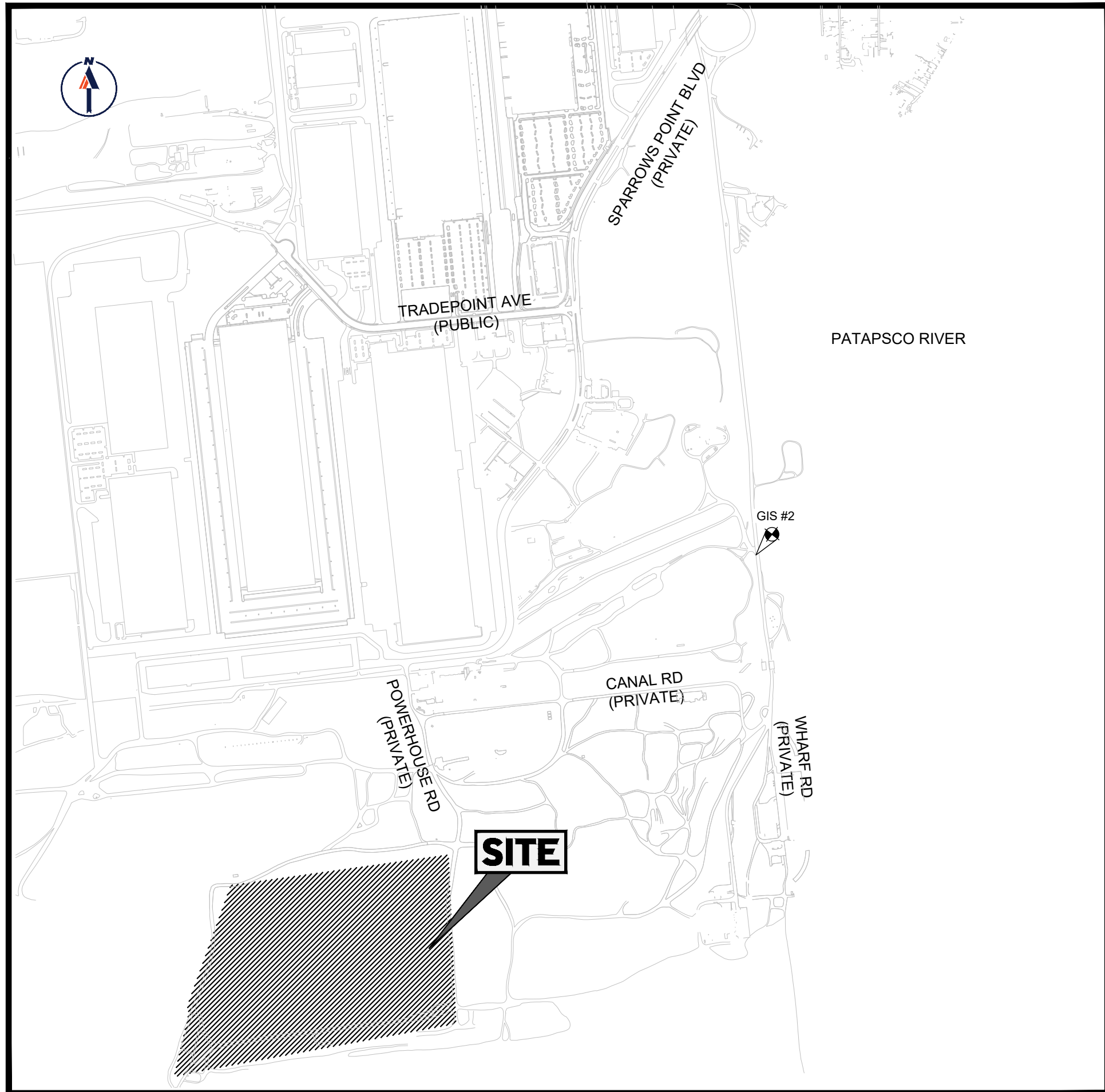


BALTIMORE COUNTY STANDARD GRADING PLAN NOTES

- THE PROPOSED GRADING SHOWN ON THIS PLAN MEETS THE REQUIREMENTS SET FORTH BY BALTIMORE COUNTY DEPARTMENT OF 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.
- ALL SWALES HAVE BEEN DESIGNED BY THE ENGINEER TO CONVEY RUNOFF ACCORDING TO BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN STANDARDS.
- THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE CRITICAL AREA BUFFER AND FOREST BUFFER, EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
- STORMWATER MANAGEMENT HAS BEEN ADDRESSED VIA A WET POND BASED UPON AN LOD OF 68.48 ACRES AND AN IMPERVIOUS TREATMENT AREA OF 73.11 ACRES.

SITE SPECIFIC GRADING NOTES

- ALL UTILITIES SHOWN ARE PRIVATE UNLESS OTHERWISE NOTED.
- 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 240010555G, MAP REVISED MAY 5, 2014.
- 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 OR RELOCATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY TRADEPOINT DEVELOPMENT.
- EXISTING UTILITIES NOTED AS 'TO REMAIN' WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED OR ADJACENT DEVELOPMENT.
- EXISTING GRADES SHOWN ON THIS PLAN ARE FROM THE TPA TRIMBLE STRATUS AERIAL SURVEY ON 5/6/2024. IF ACTUAL EXISTING GRADES DIFFER FROM WHAT IS SHOWN ON THESE PLANS, CONTRACTOR IS TO NOTIFY BOHLER IN WRITING.
- 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.
- LOCATION OF ALL UNDERGROUND UTILITIES ARE APPROXIMATE. SOURCE INFORMATION FROM PLANS AND MARKINGS HAVE BEEN COMBINED WITH OBSERVED EVIDENCE OF UTILITIES TO DEVELOP A VIEW OF THOSE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION MAY BE REQUIRED.
- SPOTS NOTED AS 'H' HAVE BEEN INTERPOLATED FROM EXISTING TOPOGRAPHY. CONTRACTOR IS TO VERIFY THESE SPOT ELEVATIONS PRIOR TO CONSTRUCTION AND NOTIFY BOHLER IN WRITING IF THE ACTUAL ELEVATIONS DIFFER.



LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20802153-5
SCALE: 1"=1,000'

BENCHMARK INFORMATION

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

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

LEGEND

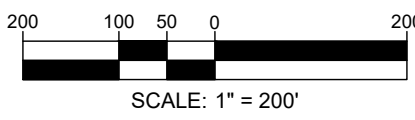
EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
---	ONSITE PROPERTY LINE / R.O.W. LINE	---
---	CONTOUR LINE	---
---	SPOT ELEVATIONS	• TC 516.00 • BC 515.50
---	SANITARY SEWER LINE	---
---	UNDERGROUND WATER LINE	---
---	INDUSTRIAL WATER LINE	---
---	UNDERGROUND ELECTRIC LINE	---
---	UNDERGROUND GAS LINE	---
---	OVERHEAD WIRE	---
---	UNDERGROUND TELEPHONE LINE	---
---	STORM SEWER	---
---	SANITARY SEWER FORCE MAIN	---
---	LIMIT OF DISTURBANCE	---
---	IDA CRITICAL AREA BOUNDARY	---
---	CONCRETE CURB & GUTTER	---
---	HEAVY DUTY ASPHALT PAVEMENT (REFER TO GEOTECHNICAL RECOMMENDATION)	---
---	100-YEAR FEMA FLOODPLAIN	---

CRITICAL AREA COVERAGES NOTE

(AREA TO BE TREATED BY PROPOSED STORMWATER MANAGEMENT FACILITY)
PRE-DEVELOPMENT COVERAGES
IMPERVIOUS AREA = 1,174,864 SF OR 26.97 AC
PERVIOUS AREA = 2,283,806 SF OR 52.43 AC
TOTAL AREA = 3,458,670 SF OR 79.40 AC
POST-DEVELOPMENT COVERAGES
IMPERVIOUS AREA = 3,056,451 SF OR 70.17 AC
PERVIOUS AREA = 402,219 SF OR 9.23 AC
TOTAL AREA = 3,458,670 SF OR 79.40 AC

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BLVD
BALTIMORE, MD 21219
CONTACT: MIKE HURWITZ
PHONE: 443-909-9617



GRADING 1 OF 14

STORMWATER MANAGEMENT REQUIRED

BALTIMORE COUNTY
DEPARTMENT OF ENVIRONMENTAL
PROTECTION AND SUSTAINABILITY

APPROVED FOR GRADING

DATE

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

LIMIT OF DISTURBANCE: 2,982,989 S.F. OR 68.48 AC.

MARYLAND COORDINATE
SYSTEM (MCS)

REVISIONS

REV	DATE	COMMENT	DRAWN BY
1	05/22/24	REV PER REVIEW COMMENTS	DMD
2	07/22/24	REV PER COUNTY COMMENTS	MJG



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PROJECT No.: MDA2400065.00
DRAWN BY: DMD
CHECKED BY: MJG
DATE: 05/09/2024
CAD ID: -0

PROJECT:

CONSTRUCTION
DOCUMENTS

FOR



SOUTHEAST PENINSULA PAVING

SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
MGESELL@BOHLERENG.COM

M.J. GESELL

PROFESSIONAL ENGINEER
JURY AND LICENSE NO. 4408
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: 6/9/25

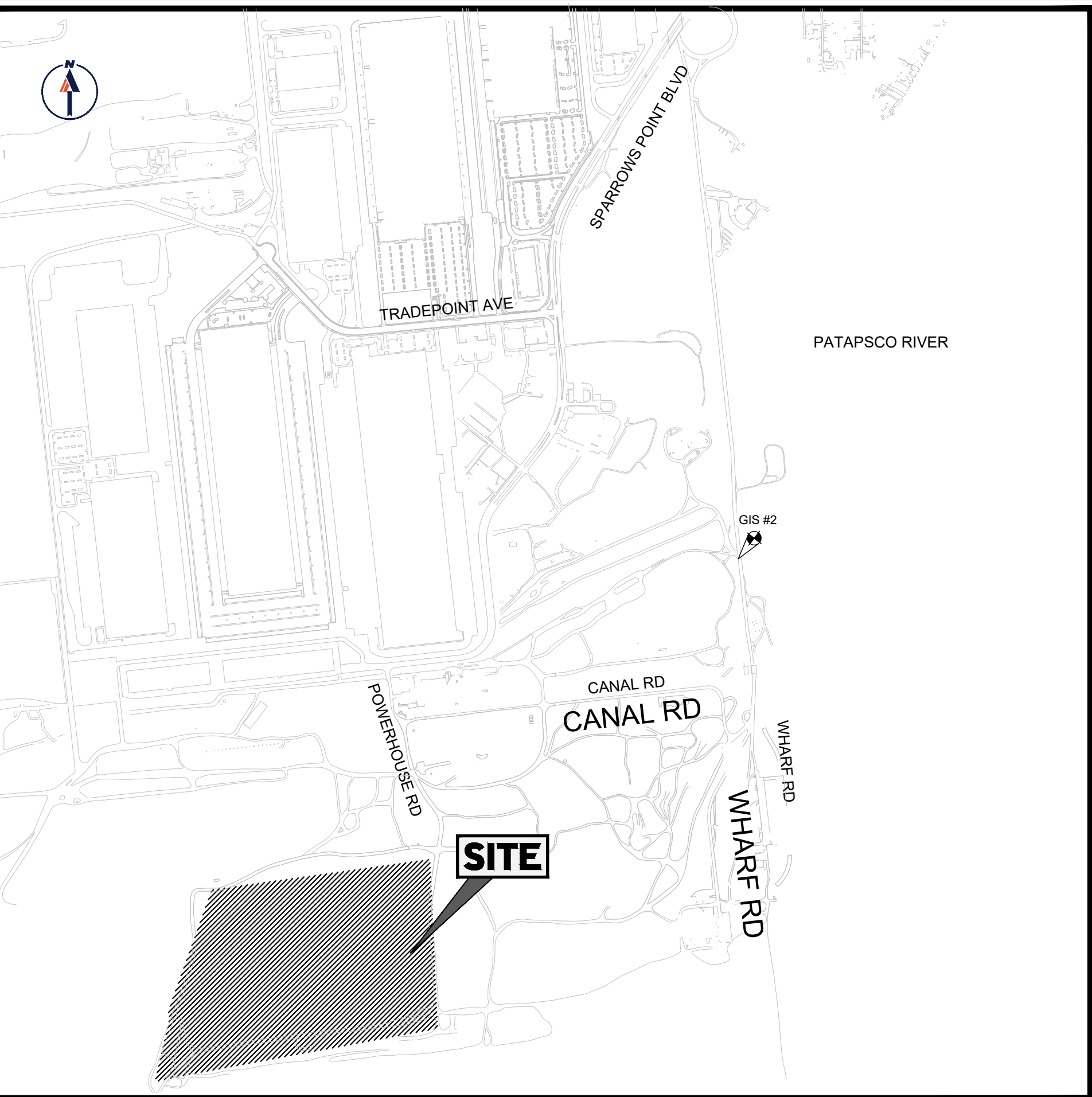
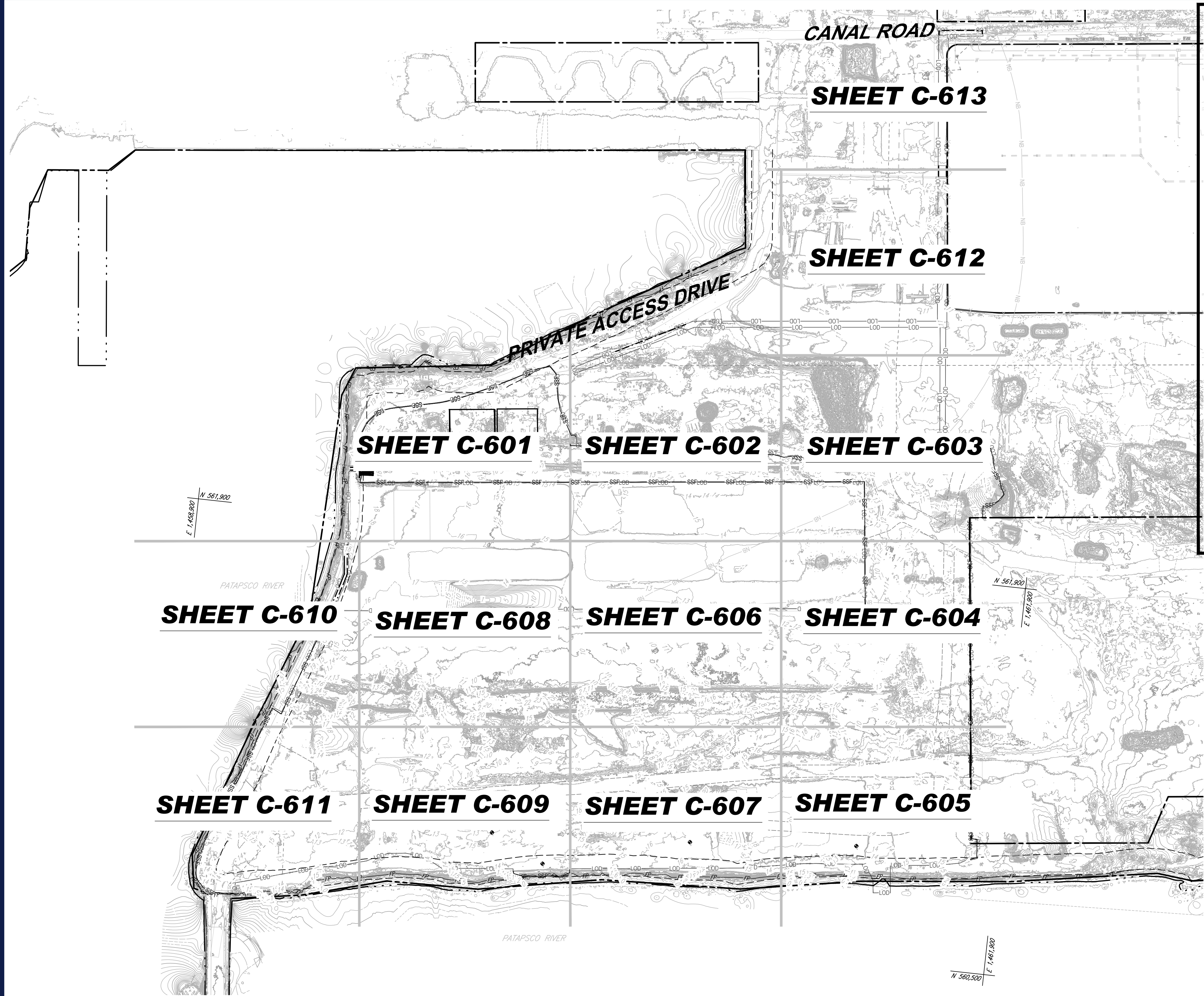
SHEET TITLE:

OVERALL FINAL
GRADING PLAN

SHEET NUMBER:

C-400

MDE PROJECT NO. 24-SF-0132



LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=1,000'

BENCHMARK INFORMATION

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

GIS #2 (BRASS DISK)
N 585.162.38, E. 1,464,480.72, ELEV. 9.95
EAST SIDE OF WHARF ROAD 408± NORTH OF LIGHT TOWER

SAME DAY STABILIZATION NOTES

- WHERE NO SCE IS PROVIDED, THE CONTRACTOR SHALL DESIGNATE PIECES OF CONSTRUCTION EQUIPMENT THAT SHALL BE ALLOWED WITHIN THE LOD. THIS EQUIPMENT SHALL BE KEPT WITHIN THE LOD UNTIL THE PROPOSED WORK IS COMPLETE AND SHALL HAVE TREADS/TIRES CLEANED PRIOR TO LEAVING THE LOD. ALL MATERIAL REMOVAL/LOAD OUT SHALL BE LIFTED FROM THE LOD.
- NO AREAS SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE.
- STOCKPILE AREAS ON PAVEMENT SHALL NOT BE USED FOR PLACEMENT OR STORAGE OF ANY ERODIBLE MATERIALS.
- THE WORK SHOWN IN THIS AREA SHALL BE DONE USING THE METHOD OF SAME DAY STABILIZATION. NO MORE LAND AREA (OR LENGTH OF TRENCH, SWALE, CHANNEL, ETC.) SHALL BE DISTURBED THAN CAN BE STABILIZED BY THE END OF EACH WORKDAY. ALL DISTURBED AREAS THAT DO NOT DRAIN TO A SEDIMENT CONTROL DEVICE SHALL BE STABILIZED BY THE END OF THE WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS RUNOFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE. FOR WORK ACTIVITIES IN PAVED AREAS, THE STONE BASE COURSE LAYER MUST BE PLACED BY THE END OF THE SAME DAY TO QUALIFY AS SAME DAY STABILIZATION.

UTILITY NOTE

- CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE OF) THE TRENCH.
- PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
- ANY SEDIMENT CONTROL, DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

QUANTITY TAKEOFF OF SEDIMENT CONTROL MEASURES

ALL PHASES	6,455 L.F.
SUPER SILT FENCE OR SMARTFENCE#2:	41 EA
GABION INLET PROTECTION	1 EA
STABILIZED CONSTRUCTION ENTRANCE:	1 EA
MOUNTABLE BERM	2 EA
FILTER BAG	2 EA
REMOVABLE PUMPING STATION	2 EA

EARTH WORK (TOTAL DEVELOPMENT)

CUT:	258,388 C.Y.
FILL:	111,253 C.Y.
NET:	147,135 C.Y. (CUT)

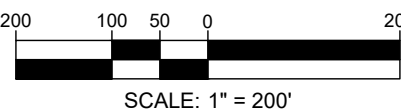
SPOIL MATERIAL SHALL BE DISCARDED AT A SITE WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN. BORROW MATERIAL SHALL BE OBTAINED FROM AN APPROVED SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.

EARTH QUANTITIES LISTED ABOVE ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE FIGURES FOR ESTIMATING AND BONDING PURPOSES.

SOIL STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

MARYLAND COORDINATE SYSTEM (MCS)



E&S 2 OF 33

LIMIT OF DISTURBANCE: 2,982,989 S.F. OR 68.48 AC.

MAINTENANCE NOTE

CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SEDIMENT CONTROL MEASURES AND DEVICES AFTER EVERY STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION. SUPER SILT FENCE STORAGE AREAS SHALL BE DEWATERED AND SEDIMENT CLEANED OUT AFTER EVERY STORM EVENT.

TEMPORARY STOCKPILE NOTES

TEMPORARY STOCKPILES SHALL BE:

- LOCATED WITHIN THE LIMIT OF DISTURBANCE (LOD).
- DRAIN TO A FUNCTIONING SEDIMENT CONTROL DEVICE.
- POSITIONED TO NOT IMPEDE UPON, OR IMPAIR THE FUNCTION OF SAID DEVICE.
- POSITIONED TO NOT ALTER DRAINAGE DIVIDES.

THESE ITEMS SHOULD BE INCORPORATED INTO ANY NOTE REFERENCING TEMPORARY STOCKPILES, AND WHEN ACTUALLY DELINEATING THEM ON PLAN VIEWS.

INLET PROTECTION NOTE

THE CONTRACTOR IS REQUIRED TO INSTALL INLET PROTECTION ON ALL STORM DRAIN INLETS WITH THE EXCEPTION OF THE FOLLOWING:

- ANY INLET OUTFALLING DIRECTLY INTO A SEDIMENT TRAPPING DEVICE.
- INLETS ON PRIVATE OR PUBLIC PAVED ROAD OPEN TO THE PUBLIC.
- IF AN AREA AROUND THE GABION INLET PROTECTION DOES NOT DRAIN WITHIN 24 HOURS OF A RAIN EVENT, CONTRACTOR TO PUMP AREA THROUGH A FILTER BAG TO AN EXISTING UNDERGROUND STORM DRAIN SYSTEM OR PUMP TO AN EXISTING INLET THAT DRAINS DIRECTLY TO THE TIDMILL CANAL WASTEWATER TREATMENT PLANT.

ALL INLET PROTECTION WILL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PAGE E-23. THE REMOVAL OF ANY INLET PROTECTION DEVICES WILL REQUIRE APPROVAL FROM THE INSPECTOR.

*STORM DRAIN TO BE FLUSHED PRIOR TO TRAPPING DEVICE REMOVAL.

WORK OUTSIDE PERIMETER CONTROLS NOTES

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:

- FOR AREA TO BE PAVED, THE APPLICATION OF STONE BASE
- FOR AREAS TO BE VEGETATIVELY STABILIZED
 - PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD
 - FOR ALL STEEP SLOPES, CHANNELS OR SWALES
 - PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWN SLOPE SIDE.

WORK TO BE COMPLETED OUTSIDE THE SEDIMENT CONTROL MEASURES SHALL BE DONE PER THE "WORK OUTSIDE PERIMETER CONTROLS NOTES" AND "UTILITY NOTES" ON THIS SHEET.

NOTE TO CONTRACTOR:

EROSION/SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY _____ DATE _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

SOILS INFORMATION

SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE
UuB	URBAN LAND-UDORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA

ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE.

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY
1	05/22/24	REV PER REVIEW COMMENTS	DMD
2	07/22/24	REV PER COUNTY COMMENTS	MJG



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NOT APPROVED FOR CONSTRUCTION

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PROJECT No.: MDA240065.00
DRAWN BY: DMD
CHECKED BY: MJG
DATE: 05/09/2024
CAD ID: -0

PROJECT:

CONSTRUCTION DOCUMENTS

FOR



SOUTHEAST PENINSULA PAVING

SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
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: 6/30/25

SHEET TITLE:

**OVERALL PHASE I
EROSION AND
SEDIMENT
CONTROL PLAN**

SHEET NUMBER:

C-600

MDE PROJECT NO. 24-SF-0132

PRIVATE ACCESS DRIVE

A

87 88 AC

**PART OF
MAP 111, GRID 14
PARCEL 318
LANDS N/F
TRADEPOINT ATLANTIC
D.B. 35478, PG. 379**

N 560,500

REVIEWED AND APPROVED FOR SEDIMENT
CONTROL UNDER SECTION 4-105

BY _____ DATE _____

MARYLAND DEPARTMENT OF THE ENVIRONMENT

SOILS INFORMATION

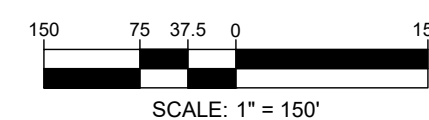
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHERTS COMPLEX	0% TO 8%	NOT RATED	D	NA
ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE.					

ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE

NOTE TO CONTRACTOR:

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PROFESSIONAL ENGINEER

MARYLAND LICENSE No. 44097
PROFESSIONAL CERTIFICATION

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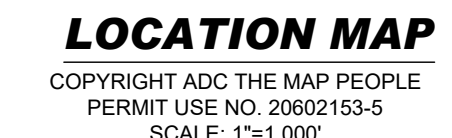
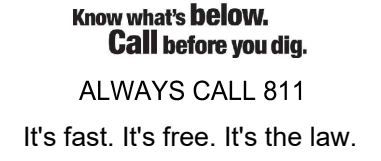
SHEET TITLE:

PHASE I EROSION AND SEDIMENT CONTROL DRAINAGE AREA MAP

SHEET NUMBER

C-614

MDE PROJECT NO. 24-SF-0133

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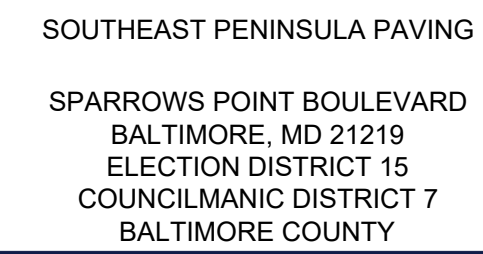
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MDE PROJECT NO. 24-SF-0132

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NOTE TO CONTRACTOR:

EROSION/SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.

SOILS INFORMATION					
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORIENTHS COMPLEX	0% TO 8%	NOT RATED	D	NA
ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE.					

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION
USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

PURPOSE
TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

CONDITIONS WHERE PRACTICE APPLIES
ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

EFFECTS ON WATER QUALITY AND QUANTITY
STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS. PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF. INFILTRATION, EVAPORATION, TRANSPARATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL, AND SUBSEQUENT PLANT GROWTH. VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE. SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT
INSPECT SEEDBED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.
1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUND COVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, REESTABLISH FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

DEFINITION
ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

PURPOSE
TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

CONDITIONS WHERE PRACTICE APPLIES
ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

CRITERIA

- INCREMENTAL STABILIZATION - CUT SLOPES
 - EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
 - CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
 - CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
 - PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
 - PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
 - PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

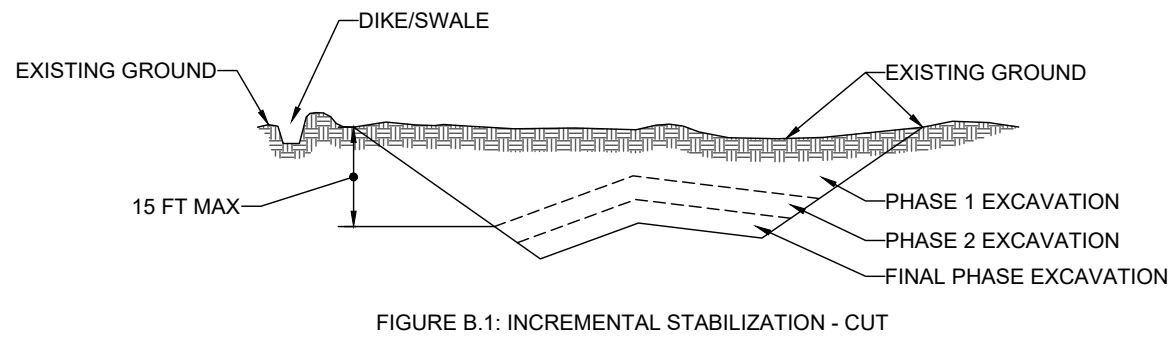


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

B. INCREMENTAL STABILIZATION - FILL SLOPES

- CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
- STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS DESCRIBED IN THE PLANS. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
- CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
 - CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
 - AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
 - PLACE PHASE 1 EMBANKMENT, PREPARE SEEDBED, AND STABILIZE.
 - PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
 - PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL, (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

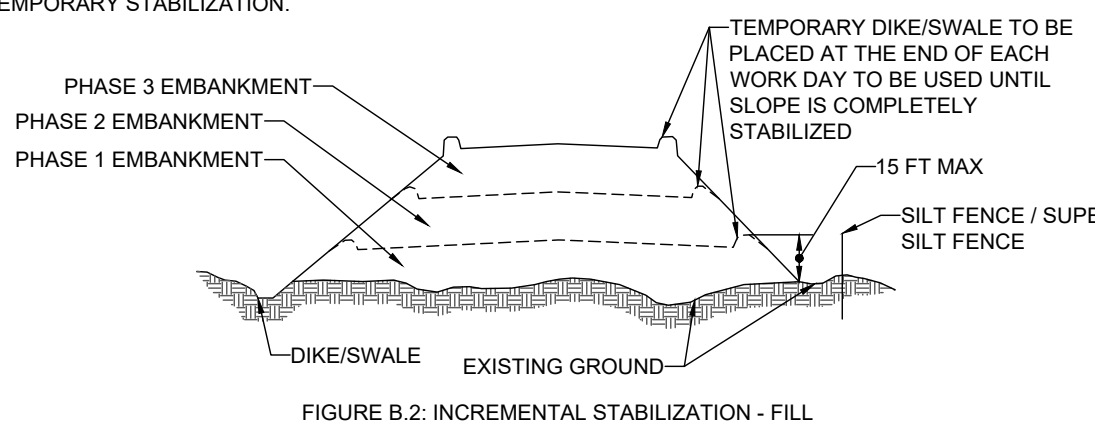


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

B-4-2 STANDARDS AND SPECIFICATIONS FOR FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

- SOIL PREPARATION
 - TEMPORARY STABILIZATION
 - SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHisel PLOWS OR RIPPERS MOUNTED ON TRACTORS. AFTER THE SOIL IS LOOSE, IT MUST BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
 - APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
 - INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 - PERMANENT STABILIZATION
 - A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - SOIL PH BETWEEN 6.0 AND 7.0.
 - SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
 - SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
 - SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
 - SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
 - APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
 - GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENOED TO A DEPTH OF 3 TO 5 INCHES.
 - APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
 - MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE. REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT, LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRAGILE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

- TOPSOILING
 - TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
 - TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
 - TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIME/STONE IS NOT FEASIBLE.
 - AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
 - TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
 - TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
 - TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL.

- TOPSOIL APPLICATION
 - EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
 - UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 10 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
 - TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION. WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED APPLICATION.
- SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
 - SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
 - FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
 - LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
 - LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 - WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES

TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

- SEEDING
 - SPECIFICATIONS
 - ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
 - MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
 - INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
 - SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
 - APPLICATION
 - DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
 - DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
 - CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
 - HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
 - IF FERTILIZATION IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHORUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.
 - LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURST OR HYDRATED LIME WHEN HYDROSEEDING.
 - MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.
- MULCHING
 - MULCH MATERIALS (IN ORDER OF PREFERENCE)
 - STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
 - WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
 - WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMITY SPREAD SLURRY.
 - WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
 - MULCH MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED. FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
 - WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
 - WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
 - APPLICATION
 - APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
 - WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
 - WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - ANCHORING
 - PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
 - A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
 - WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRY TACK II, TERRA TACK AK OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES WIND, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
 - LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (from Figure B.3): ZONES 7A/7B SEED MIXTURE (from Table B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
COOL SEASON GRASSES						
1	ANNUAL RYEGRASS	40	2/15 - 4/30 8/15 - 11/30	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
2	BARLEY	96	2/15 - 4/30 8/15 - 11/30	1"		
3	OATS	72	2/15 - 4/30 8/15 - 11/30	1"		
4	WHEAT	120	2/15 - 4/30 8/15 - 11/30	1"		
5	CEREAL RYE	112	2/15 - 4/30 8/15 - 12/15	1"		
WARM SEASON GRASSES						
6	FOXTAIL MILLET	30	5/1 - 8/14	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
7	PEARL MILLET	20	5/1 - 8/14	0.5"		

1. SEEDING RATES FOR THE WARM SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY. AS TESTED, ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES.

SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS. WHEN PLANTED ALONE, WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% BY WEIGHT OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP. UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE.

OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

2. FOR SANDING SLOPES, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.

3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

- SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
- FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
- WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3-A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

- GENERAL USE
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
 - FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
 - FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 1 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
- TURFGRASS MIXTURES
 - AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - KENTUCKY BLUEGRASS: FULL SUN MIXTURE. FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET, CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE. FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE. FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS WITH EACH RANGING FROM 100 PERCENT TO 100 PERCENT CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
 - KENTUCKY BLUEGRASS/FESCUE: SHADE MIXTURE. FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.
- NOTES:
 - SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND."
 - CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.
 - IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES:
 - WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)
 - CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)
 - SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)
 - TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
 - IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/4 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY						FERTILIZER RATE (10-20-20)			
HARDINESS ZONE (from Figure B.3): ZONE 7A SEED MIXTURE (from Table B.3)									
NO.	SPECIES	APPLICATION RATE (LB/AC)	*SEEDING DATES	SEEDING DEPTHS		N	P2O5	K2O	LIME RATE
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYE GRASS	60 40 20	2/15 - 4/30 8/15 - 10/31	1/4" - 1/2"					
5	HARD FESCUE PERENNIAL RYE GRASS FLAT PEA	20 10 15	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"		45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC

THIS TABLE DEPICTS VARIOUS RIGHTS-OF-WAY THAT MAY NEED TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER. CHOOSE THE RIGHT(S)-OF-WAY THAT APPLY TO YOUR PROJECT, AND THEN CREATE THE TABLE ACCORDINGLY.

THIS TABLE DEPICTS VARIOUS RIGHTS-OF-WAY THAT MAY NEED TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER. CHOOSE THE RIGHT(S)-OF-WAY THAT APPLY TO YOUR PROJECT, AND THEN CREATE THE TABLE ACCORDINGLY.

**NOTE: DURING THE PROCESSING OF DEVELOPMENT PLANS AND PRIOR TO FINAL DEVELOPMENT PLAN (FDP) SUBMITTAL, TOTAL AREAS SHOWN IN THIS TABLE MAY BE APPROXIMATE.

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BALTIMORE COUNTY SOIL CONSERVATION DISTRICT

DISTRICT OFFICIAL	DATE	PLAN NO.
TECHNICAL REVIEW FOR DISTRICT		

Y: _____ DATE _____
ALTO. CO. DEPT. OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

LIMIT OF DISTURBANCE: 2,982,989 SF OR 68.48 AC
EX. IMPERVIOUS AREA: 517,057 SF OR 11.87 AC (WITHIN LOD)
EX. IMPERVIOUS AREA: 517,057 SF OR 11.87 AC (TOTAL DRAINAGE AREA TO FACILITY)
PROP. IMPERVIOUS AREA: 2,322,184 SF OR 53.31 AC (WITHIN LOD)
PROP. IMPERVIOUS AREA: 3,184,672 SF OR 73.11 (TOTAL DRAINAGE AREA TO FACILITY)
REQUIRED WQv VOLUME ($P_e = 1.00$) = 254,011 CF +/-
PROVIDED WQv VOLUME = 274,857 CF

WATERSHED: BALTIMORE HARBOR

BLANKET ACCESS NOTE FOR SWM

OWNERS OF LOTS CONTAINING STORMWATER EASEMENTS OR DRAINAGE AND UTILITY EASEMENTS SHALL GRANT TO AUTHORIZED BALTIMORE COUNTY PERSONNEL A RIGHT OF ENTRY FOR THE PURPOSE OF INSPECTION AND/OR MONITORING SITE VISITS. SAID INSPECTION AND/OR MONITORING VISITS SHALL ONLY BE CONDUCTED DURING NORMAL BALTIMORE COUNTY WORKING HOURS (8 AM TO 4 PM MONDAY THROUGH FRIDAY).

SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHERTS	0% TO 8%	NOT RATED	D	N/A

KEYSHEET	ANW
ELECTION DISTRICT	15
COUNCILMANIC DISTRICT	7
SWM MAINTENANCE	PRIVATE

1. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH:
 - A. BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR CONSTRUCTION MATERIAL, DECEMBER 2007, ERRATA & ADDENDA
 - B. NATURAL RESOURCES CONSERVATION SERVICE OF MARYLAND STANDARDS AND SPECIFICATIONS, POND, CODE 378, JANUARY 2000.
 - C. MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION, JULY 2005 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS
2. STORMWATER MANAGEMENT APPROVED UNDER BILL NO. 25-10.
3. SWM FACILITY WILL BE PRIVATELY OWNED AND MAINTAINED.
4. A STATE PERMIT FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT DAM SAFETY DIVISION IS REQUIRED.

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

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

INTRODUCTION:

THE SUBJECT SITE IS LOCATED IN THE SOUTHEAST PENINSULA OF BALTIMORE COUNTY, MARYLAND. THE SITE IS A PORTION OF AN INDUSTRIAL STEEL MILL REDEVELOPMENT. THE TOTAL PARCEL IS 6,035.49 ACRES, WITH THIS PROJECT BEING DEFINED AS A PORTION OF THE ENTIRE PARCEL. THE PROJECT AREA IS APPROXIMATELY 100 ACRES, LOCATING 68.48 ACRES ZONED ENTIRELY MH-MM (MANUFACTURING HEAVY - INDUSTRIAL - MAJOR). THE LIMIT OF DISTURBANCE IS MADE UP OF 7.3% IMPROVISED COVER, PER MDE STORMWATER MANAGEMENT REGULATIONS. THE REMAINING 92.7% OF THE PROJECT AREA IS UNIMPROVED COVER. THE SITE WILL NOT BE CONSIDERED A DEVELOPMENT. THE SITE IS LOCATED WITHIN THE BALTIMORE HARBOR WATERSHED (02130903) (STREAM USE DESIGNATION CLASS II). DISCHARGES DIRECTLY TO TIDAL WATERS BY SHEETFLOW FROM THE PROJECT ARE PROHIBITED. THE PROJECT AREA HAS BEEN DETERMINED TO BE CLASSIFIED AS THE D HYDROLOGIC SOIL GROUP AS DEFINED BY THE USDA NRCS. REFER TO THE INCLUDED SOIL REPORT.

ACCESS TO THE SITE IS BY A PRIVATE ACCESS DRIVE TO THE S
OFF OF CANAL ROAD. THE SITE IS CURRENTLY NOT BEING
THERE ARE REMNANTS OF DRIVE AISLES AND OTHER PARTS OF
FORMER BETHLEHEM STEEL MILL THAT WAS DEMOLISHED
YEARS AGO. PREDEVELOPMENT USE OF THE PAVEMENT PRIOR
TO THE 1980S DITCH DRAINAGE COURSED TO THE 11.5 ACRES
IMPERVIOUS AREA AND 56.81 ACRES OF PERVIOUS AREA WITHIN
LIMIT OF DISTURBANCE. WATER GENERALLY SHEET FLOWS FROM
NORTH TO THE SOUTH INTO THE PATAPSCO RIVER. THERE ARE
KNOWN STREAMS OR WETLANDS AND PORTIONS OF THE
PERIMETER ARE LOCATED WITHIN A 100-YEAR FLOODPLAIN.

PROPOSED CONDITIONS:
IN THE PROPOSED CONDITION, A MAJORITY OF THE SITE WILL BE PAVED WITH HEAVY DUTY ASPHALT, AND WILL BE USED TO STORE VARIOUS BULK MATERIALS. STORMDRAIN AND A STORMWATER MANAGEMENT FACILITY WILL ALSO BE INSTALLED IN THIS PROPOSED AREA. POST-DEVELOPMENT SITE COVERAGE IS COMPRISED OF 53 ACRES OF IMPERVIOUS AREA AND 15.17 ACRES OF PERVIOUS ARE

IN ORDER TO DRAIN THE SITE, INLETS, HEADWALLS, AND RIPRAP INFLOWS ARE PROPOSED ON SITE TO OUTFALL TO A WET POND LOCATED LONG THE SOUTHERN EDGE OF THE SITE. THE PROPOSED WET POND WILL ULTIMATELY OUTFALL DIRECTLY INTO THE TIDAL WATERS BEING THE PATAPSCO RIVER. IT WILL OUTFALL INTO A NEW PROPOSED PRINCIPAL SPILLWAY CONSISTING OF A 48" PIPE, AS WELL AS AN EARTH SPILLWAY.

TO THE PROPOSED POND ARE CURRENTLY BEING ADDRESSED VIA DEDUCTION FROM THE REGIONAL FACILITY CREDIT BANK. HOWEVER, THE REGIONAL FACILITY CREDIT BANK CURRENTLY HAS 15.05 ACRES OF IMPERVIOUS AREA SO THE CREDITS CURRENTLY BEING USED FOR THAT AREA CAN BE RETURNED TO THE CREDIT UPON CONSTRUCTION AND AS-BUILT APPROVAL OF THIS FACILITY. REQUIRED WOV BASED UPON THE 85.53 ACER DRAINAGE AREA, 11 ACRES OF PRE-DEVELOPMENT IMPERVIOUS COVER, 73.11 ACERS POST-DEVELOPMENT IMPERVIOUS COVER, AND A PE OF 1.0" IS 254.50 CF. THE REQUIRED WOV SHALL BE PROVIDED VIA ONE (1) WET POND. THE WET POND SHALL BE LOCATED IN THE BALTIMORE HARBOR WATERSHED. QUANTITY MANAGEMENT WILL NOT BE REQUIRED AS THE SITE IS LOCATED IN THE BALTIMORE HARBOR WATERSHED. SINCE THE POND IS DISCHARGING DIRECTLY INTO TIDAL WATERS, A PE OF 1.00" IS REQUIRED TO BE TREATED. CALCULATIONS FOR WET POND FACILITY SIZING AND WOV PROVIDED ARE INCLUDED IN THIS REPORT.

SUPER SILT FENCE (OR SMARTFENCE42) AND GABION PROTECTION. ONE (1) STABILIZED CONSTRUCTION ENTRANCE WILL BE CONSTRUCTED TO CONTROL SEDIMENT RUNOFF ONTO THE EXISTING ROADWAYS. THE CONTRACTOR WILL BE INSTRUCTED TO MAINTAIN A FLUSH GRADE WITH THE INLETS THROUGHOUT CONSTRUCTION. COMPLETION OF THE WET POND FACILITY WILL BE RELEGATED TOWARDS THE END OF CONSTRUCTION WHEN THE MAJORITY OF THE SITE IS STABILIZED, AND IT CAN BE INSTALLED WITH NO CONCERN FOR COMPROMISING THE INTEGRITY OF THE OVERALL SYSTEM.

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SCALE: 1"=1,000'

<i>EXISTING NOTE</i>	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
	CONTOUR LINE	
<i>TC 516.4 OR 516.4</i>	SPOT ELEVATIONS	
	SANITARY SEWER LINE	
	UNDERGROUND WATER LINE	
	INDUSTRIAL WATER LINE	
	UNDERGROUND ELECTRIC LINE	
	UNDERGROUND GAS LINE	
	OVERHEAD WIRE	
	UNDERGROUND TELEPHONE LINE	
	STORM SEWER	
	SANITARY SEWER FORCE MAIN	
	LIMIT OF DISTURBANCE	
	IDA CRITICAL AREA BOUNDARY	
	CONCRETE CURB & GUTTER	
	HEAVY DUTY ASPHALT PAVEMENT	
	100-YEAR FLOODPLAIN	
	BORING LOCATIONS	

APPROVED: _____ CHIEF

STORMWATER MANAGEMENT DIVISION
BALTO. CO. DEPT. OF
ENVIRONMENTAL PROTECTION
AND SUSTAINABILITY

MARYLAND COORDINATE
SYSTEM (MCS)



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REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION
DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MDA240065.0
DRAWN BY:	DM
CHECKED BY:	MJ
DATE:	05/09/202
CAD I.D.:	

PROJECT:

FOR



SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
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
MGESELL@BOHLERENG.COM

M.J. GESELL

PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION
 I, DAVID J. GESELL, HEREBY CERTIFY THAT THE
 TESTS WERE PREPARED OR APPROVED BY
 ME AS A DULY LICENSED PROFESSIONAL ENGINEER
 UNDER THE LAWS OF THE STATE OF MARYLAND
 LICENSE NO. 44097, EXPIRATION DATE: 6/30/2011

SHEET TITLE

OVERALL STORMWATER MANAGEMENT PLAN

SHEET NUMBER

C-700

MDE PROJECT NO. 24-SF-0132

MDE PROJECT NO. 24-SF-0132



N 561,200
E 1,461,900

PATAPSCO
RIVER

PRIVATE ACCESS DRIVE

PART OF
MAP 111, GRID 14
PARCEL 318
LANDS NIP
TRADEPOINT ATLANTIC, LLC
D.B. 35478, PG. 379

PATAPSCO
RIVER

N 560,500
E 1,461,900

LEGEND

- IMPERVIOUS AREA
- DRAINAGE DIVIDE

SWM DRAINAGE AREAS

1	IMPERVIOUS	1,388,257 S.F. OR 31.87 AC.
	PERVIOUS	2,250,310 S.F. OR 51.66 AC.
	TOTAL	3,638,567 S.F. OR 83.53 AC.

REVISIONS

REV	DATE	COMMENT	DRAWN BY
1	05/22/24	REV PER REVIEW COMMENTS	DMD
2	07/22/24	REV PER COUNTY COMMENTS	DMD



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PROJECT No.:	MDA240065.00
DRAWN BY:	DMD
CHECKED BY:	MUG
DATE:	05/09/2024
CAD ID:	-0

PROJECT:

CONSTRUCTION DOCUMENTS



SOUTHEAST PENINSULA PAVING
SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
MD@BohlerEng.com

M.J. GESELL

PROFESSIONAL ENGINEER
MARY AND 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: 6/30/25

PRE DEVELOPMENT SWM DRAINAGE AREA MAP

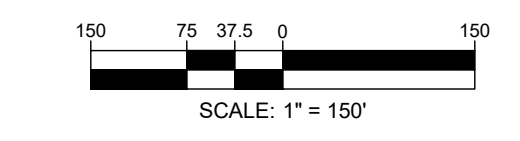
SHEET NUMBER:
C-714

MDE PROJECT NO. 24-SF-0132

SOILS INFORMATION					
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE
UuB	URBAN LAND/ORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA
ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE.					

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BLVD.
BALTIMORE, MD 21219
CONTACT: LUKE KLUTZ
PHONE: 443-909-9617



APPROVED: _____ CHIEF

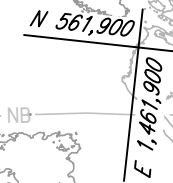
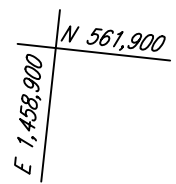
STORMWATER MANAGEMENT DIVISION
BALTO. CO. DEPT. OF
ENVIRONMENTAL PROTECTION
AND SUSTAINABILITY

ELEVATIONS BASED ON NAVD 88.
COORDINATES AND MERIDIAN ARE BASED ON
THE MARYLAND COORDINATE SYSTEM (MCS)
PER MONUMENTS BCO #1433 AND GIS 2

MARYLAND COORDINATE
SYSTEM (MCS)

SWM 15 OF 21

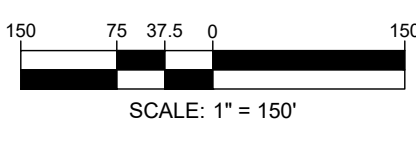
LIMIT OF DISTURBANCE: 2,982,989 S.F. OR 68.48 AC.



<u>SWM DRAINAGE AREAS</u>		
A	IMPERVIOUS	3,184,672 S.F. OR 73.11 AC.
	PERVIOUS	453,895 S.F. OR 10.42 AC.
	TOTAL	3,638,567 S.F. OR 83.53 AC.

<i>SITE DATA</i>	
KEYSHEET	ANW
ELECTION DISTRICT	15
COUNCILMANIC DISTRICT	7
SWM MAINTENANCE	PRIVATE

SOILS INFORMATION					
SYMBOL	NAME	SLOPE	STRUCTURAL LIMITATIONS	HYDROLOGIC GROUP	K VALUE > 0.35
UuB	URBAN LAND-UDORTHERENTS COMPLEX	0% TO 8%	NOT RATED	D	NA
ALL SOILS ONSITE AND IN THE IMMEDIATE VICINITY ARE OF THE TYPE NOTED ABOVE.					



APPROVED: _____ **CHIEF**

STORMWATER MANAGEMENT DIVISION
BALTO. CO. DEPT. OF
ENVIRONMENTAL PROTECTION
AND SUSTAINABILITY

COORDINATES AND MERIDIAN ARE BASED ON
THE MARYLAND COORDINATE SYSTEM (MCS)
PER MONUMENTS BCO #1433 AND GIS 2

MARYLAND COORDINATE
SYSTEM (MCS)

LIMIT OF DISTURBANCE: 2,982,989 S.F. OR 68.48 AC.

C-715

MDE PROJECT NO. 24-SF-0132



CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ±2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, roller,

ers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi, 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags,

etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

- 1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted

- 3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
- 4. Backfilling shall conform to "Structure Backfill".
- 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe - The following criteria shall apply for plastic pipe:

- 1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

- 2. Joints and connections to anti-seep collars shall be completely watertight.
- 3. Bedding -The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

- 4. Backfilling shall conform to "Structure Backfill".
- 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory per-

with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

- 2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

- 3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, pre-punched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter

of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

- 4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
- 5. Backfilling shall conform to "Structure Backfill".
- 6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

- 1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
- 2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

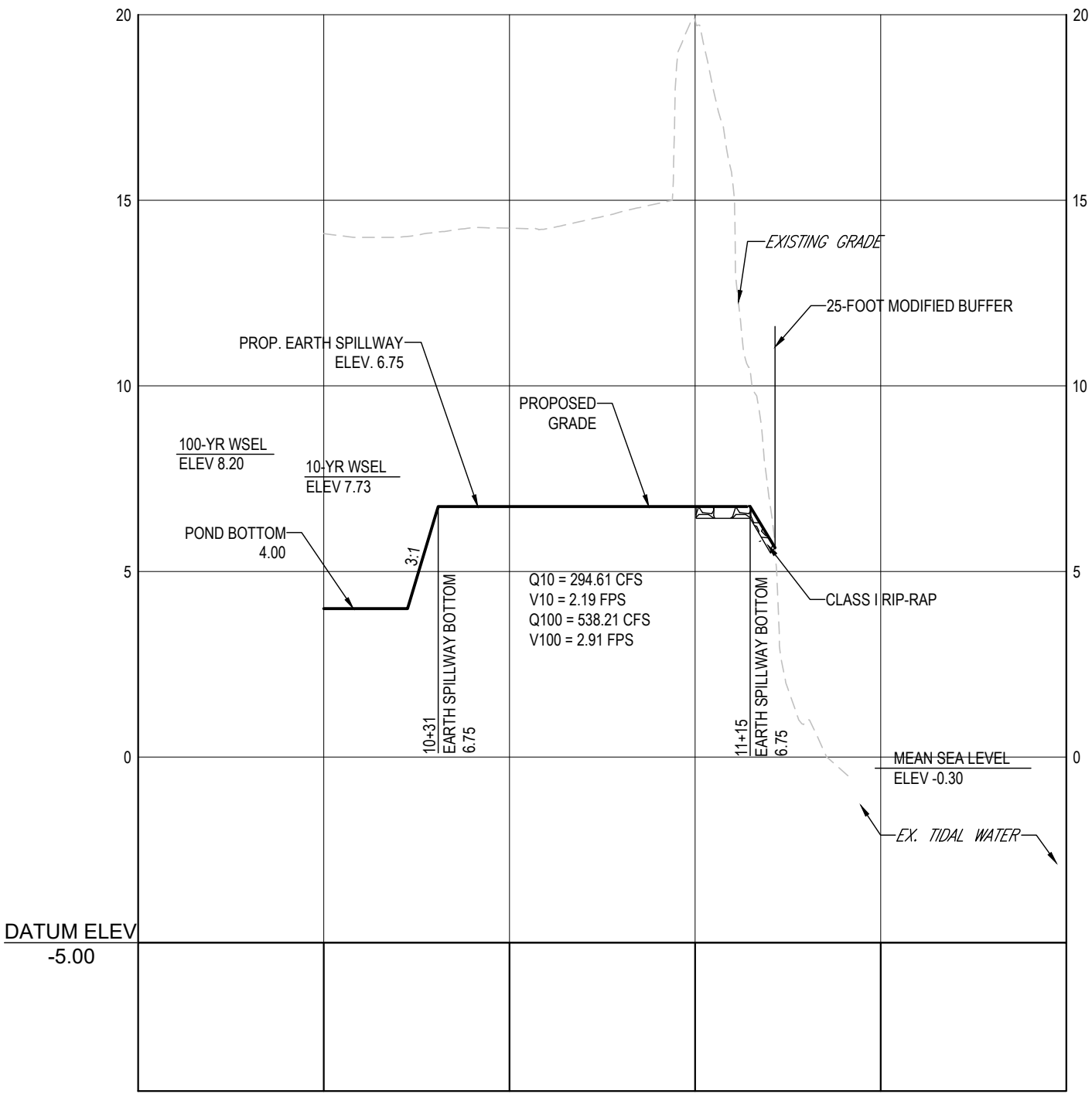
formance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.



PROPOSED EARTH SPILLWAY PROFILE

SCALE: 1"=40' HORIZONTAL
1"=4' VERTICAL

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
8905 BETHLEHEM BLVD
BALTIMORE, MD 21219
CONTACT: LUKE KLITZ
PHONE: 443-909-9617

SCALE: 1" = 40'

SITE DATA

KEYSHEET	ANW
ELECTION DISTRICT	15
COUNCILMANIC DISTRICT	7
SWM MAINTENANCE	PRIVATE

APPROVED: _____ CHIEF

STORMWATER MANAGEMENT DIVISION
BALTO. CO. DEPT. OF
ENVIRONMENTAL PROTECTION
AND SUSTAINABILITY

ELEVATIONS BASED ON NAVD 88.
COORDINATES AND MERIDIAN ARE BASED ON
THE MARYLAND COORDINATE SYSTEM (MCS)
PER MONUMENTS BCO #1433 AND GIS 2

MARYLAND COORDINATE
SYSTEM (MCS)

SWM 19 OF 21

LIMIT OF DISTURBANCE: 2,982,989 S.F. OR 68.48 AC.

CONSTRUCTION SPECIFICATIONS

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All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

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ers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

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etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

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Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted

- 3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
- 4. Backfilling shall conform to "Structure Backfill".
- 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

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- 2. Joints and connections to anti-seep collars shall be completely watertight.
- 3. Bedding -The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

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Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory per-



REVISIONS

REV	DATE	COMMENT	DRAWN BY
1	05/22/24	REV PER REVIEW COMMENTS	DMD
2	07/22/24	REV PER COUNTY COMMENTS	MJG



NOT APPROVED FOR CONSTRUCTION

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.: MDA240065.00
DRAWN BY: DMD
CHECKED BY: MJG
DATE: 05/09/2024
CAD ID: -0

PROJECT:

CONSTRUCTION DOCUMENTS

FOR



SOUTHEAST PENINSULA PAVING

SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY



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
MARY AND LICENSE # 4409
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. 4409, EXPIRATION DATE: 6/3/25

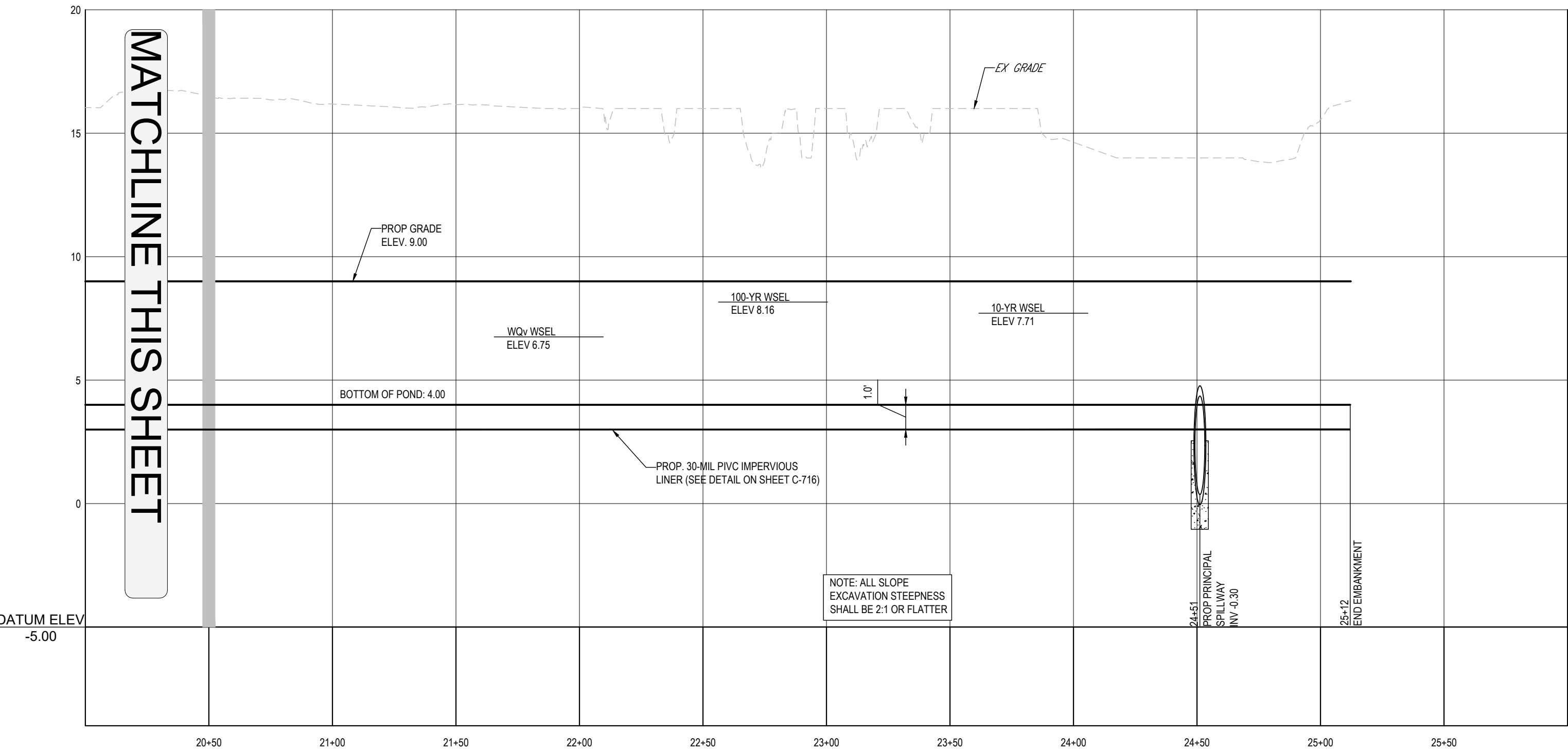
SHEET TITLE:

STORMWATER MANAGEMENT NOTES AND DETAILS

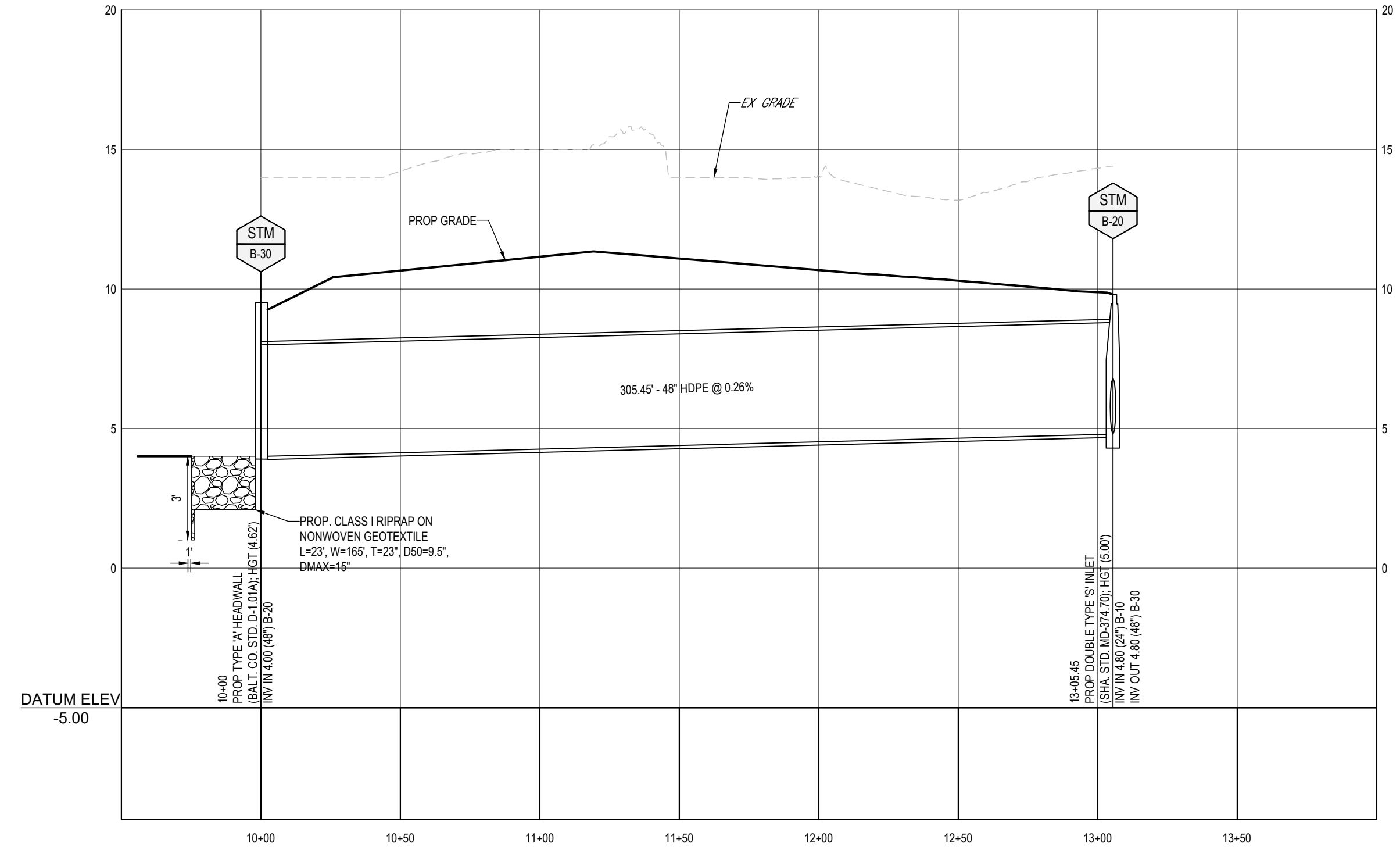
SHEET NUMBER:

C-718

MDE PROJECT NO. 24-SF-0132

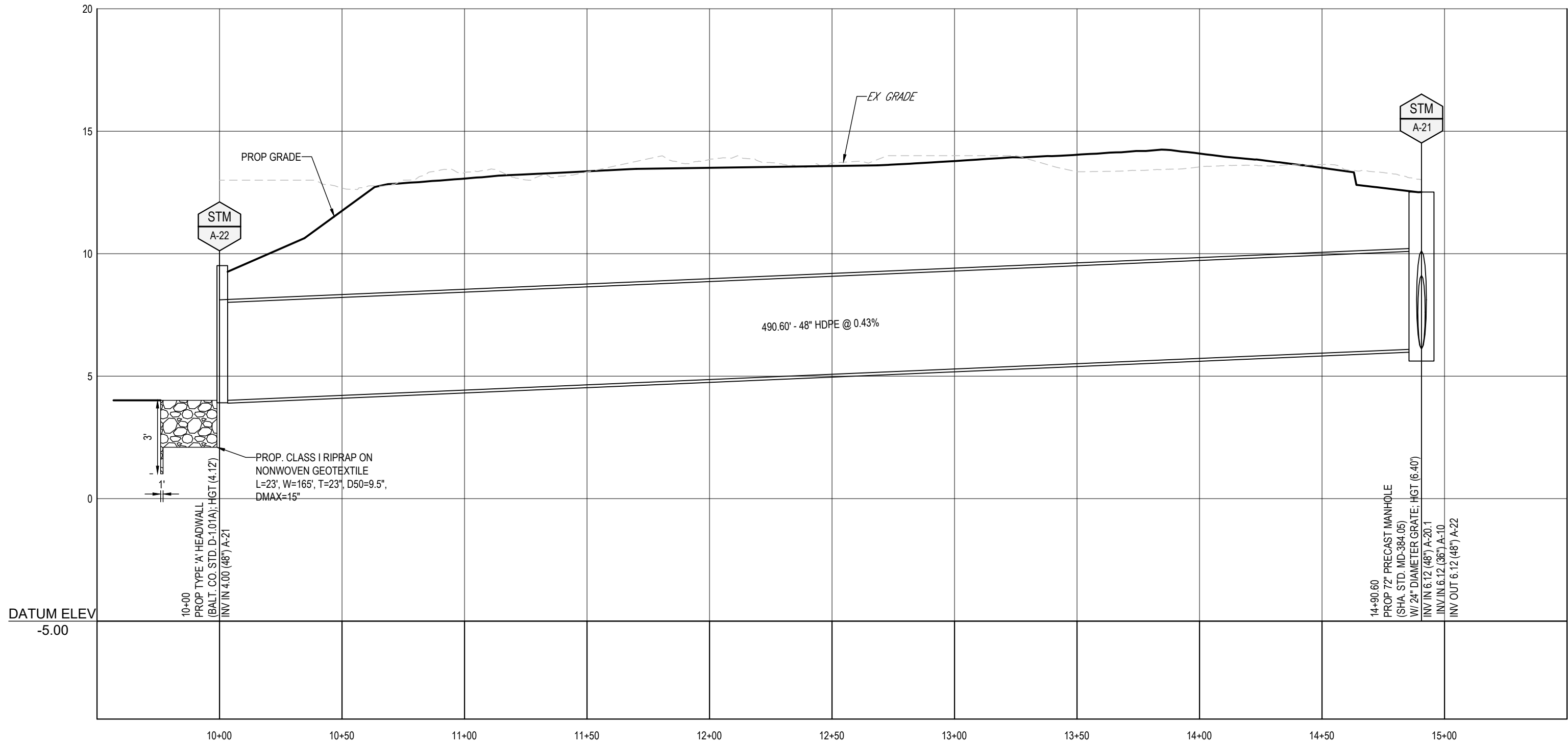


SCALE: 1"= 40' HORIZONTAL
1"= 4' VERTICAL



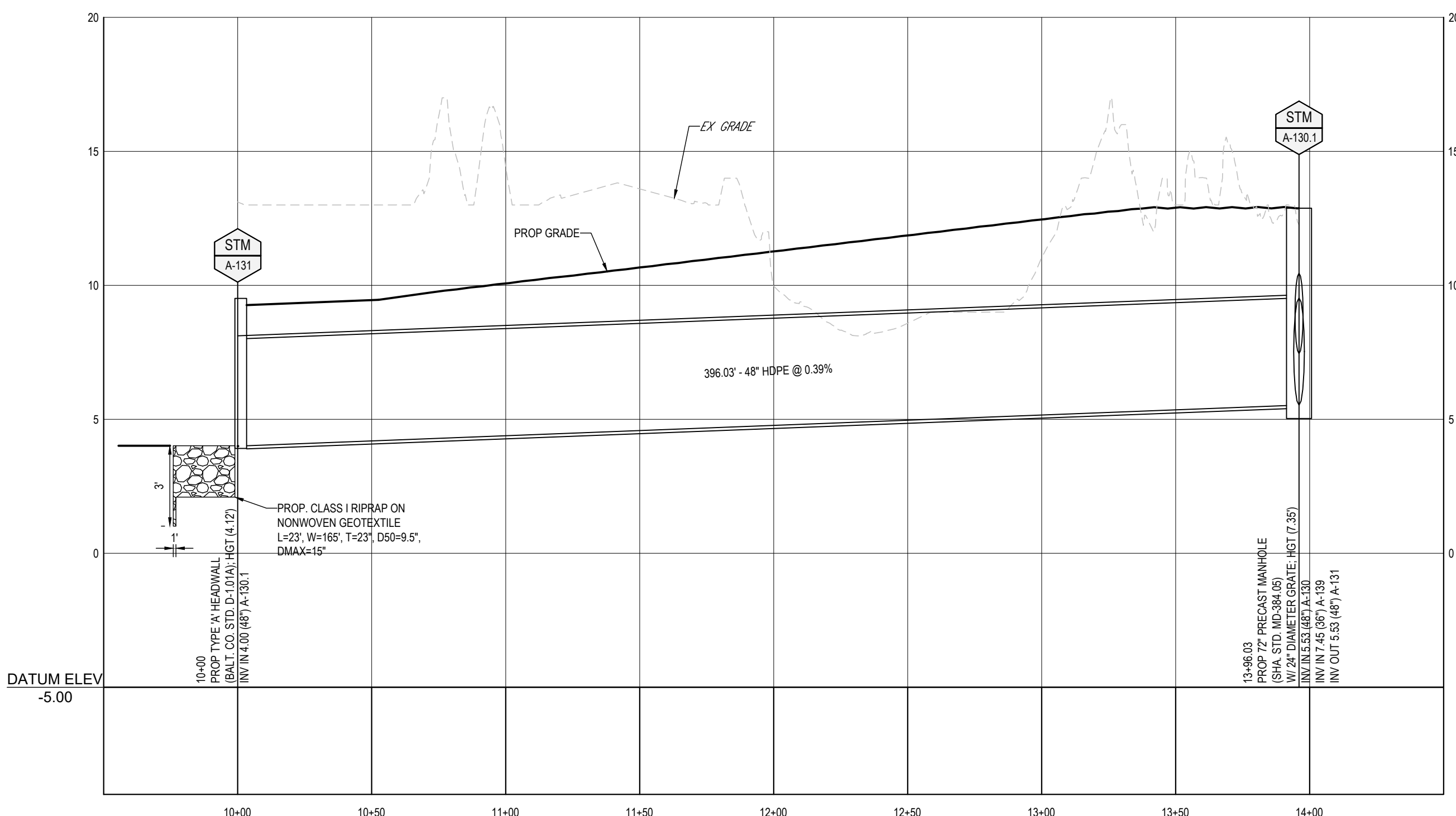
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1"= 4' VERTICAL

C-719



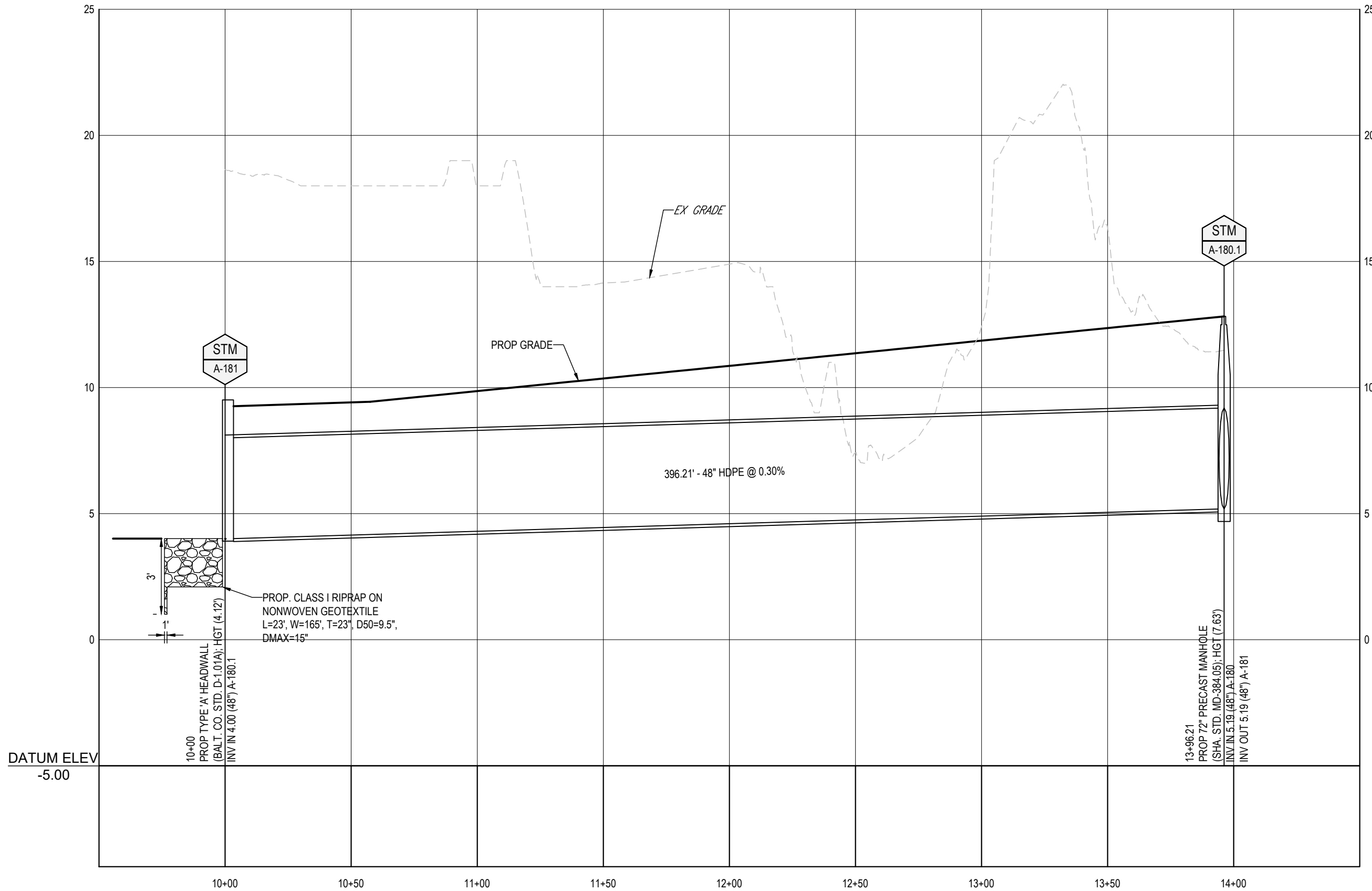
PROPOSED STORM DRAIN - (A-22 TO A-21)

SCALE: 1"= 40' HORIZONTAL
1"= 4' VERTICAL



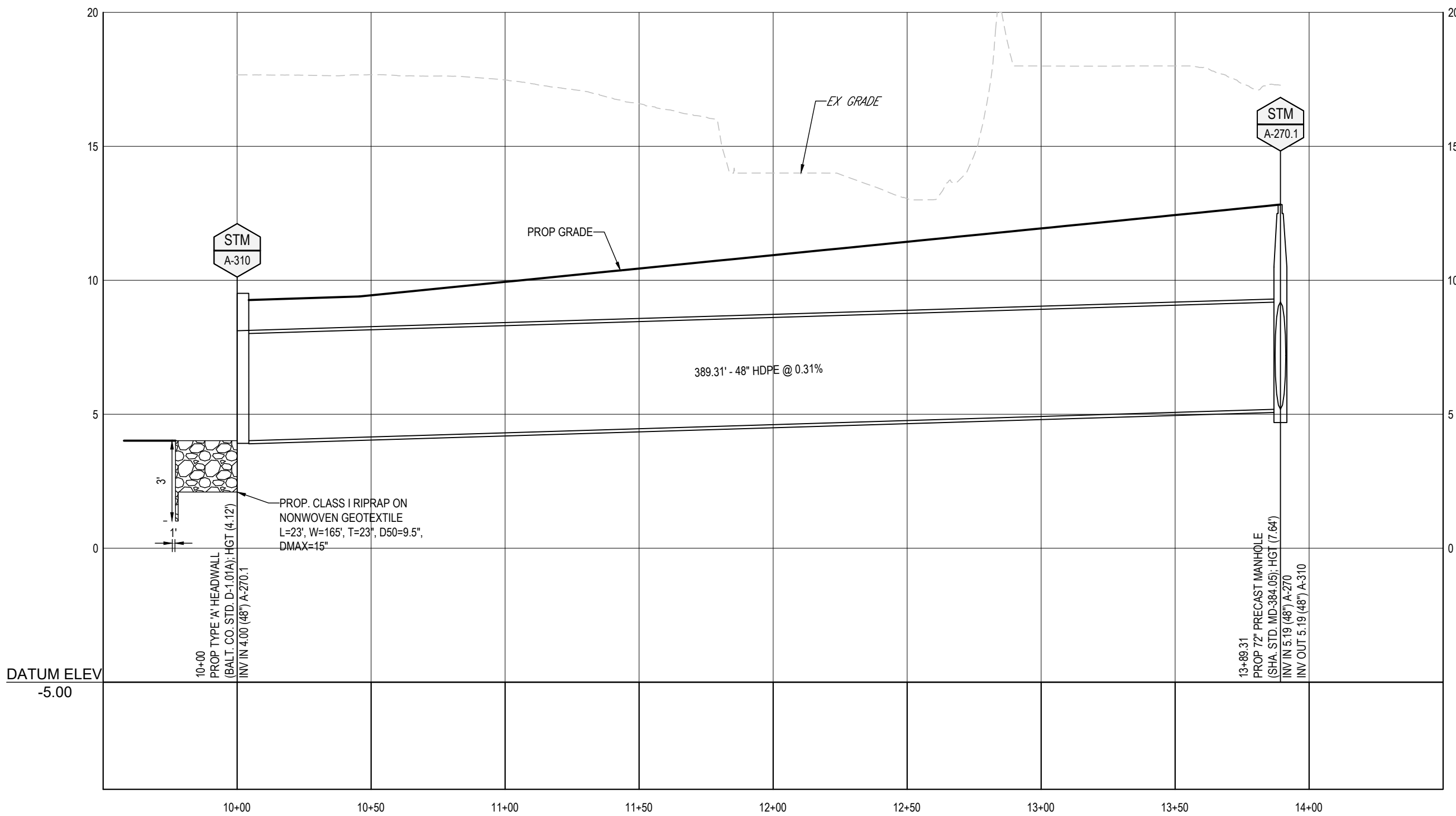
PROPOSED STORM DRAIN - (A-131 TO A-130.1)

SCALE: 1"= 40' HORIZONTAL
1"= 4' VERTICAL



PROPOSED STORM DRAIN - (A-181 TO A-180.1)

SCALE: 1"= 40' HORIZONTAL
1"= 4' VERTICAL

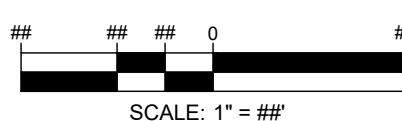


PROPOSED STORM DRAIN - (A-310 TO A-270.1)

SCALE: 1"= 40' HORIZONTAL
1"= 4' VERTICAL

OWNER/DEVELOPER

TRADEPOINT ATLANTIC, LLC
6995 BETHLEHEM BLVD
BALTIMORE, MD 21219
CONTACT: LUKE KLUTTZ
PHONE: 443-909-9617



APPROVED: _____ CHIEF

STORMWATER MANAGEMENT DIVISION
BALTO. CO. DEPT. OF
ENVIRONMENTAL PROTECTION
AND SUSTAINABILITY

ELEVATIONS BASED ON NAVD 88.
COORDINATES AND MERIDIAN ARE BASED ON
THE MARYLAND COORDINATE SYSTEM (MCS)
PER MONUMENTS BCO #1433 AND GIS 2

MARYLAND COORDINATE
SYSTEM (MCS)

SWM 21 OF 21

LIMIT OF DISTURBANCE: 2,982,989 S.F. OR 68.48 AC.

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LANDSCAPE ARCHITECTURE
PROGRAM MANAGEMENT
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY
1	05/22/24	REV PER REVIEW COMMENTS	DMD
2	07/22/24	REV PER COUNTY COMMENTS	DMD



ALWAYS CALL 811

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NOT APPROVED FOR
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THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY
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DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MDA240065.00
CHECKED BY: DMD
DATE: 05/09/2024
CAD ID: -0

PROJECT:

CONSTRUCTION
DOCUMENTS

FOR



SOUTHEAST PENINSULA PAVING

SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7967
MD@BohlerEng.com

M.J. GESELL

PROFESSIONAL ENGINEER

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: 6/3/25

SHEET TITLE:

STORMWATER
MANAGEMENT
NOTES AND
DETAILS

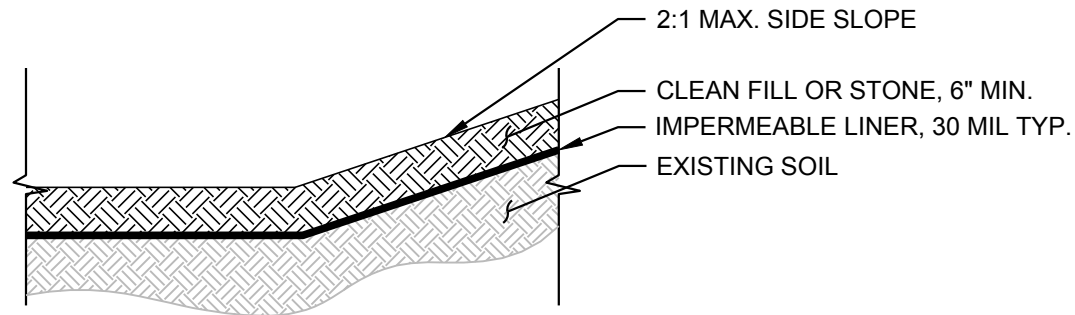
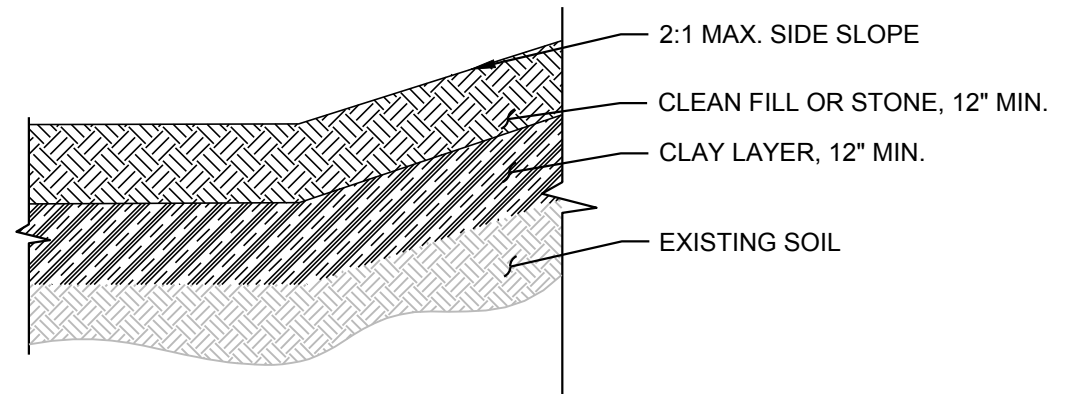
SHEET NUMBER:

C-720

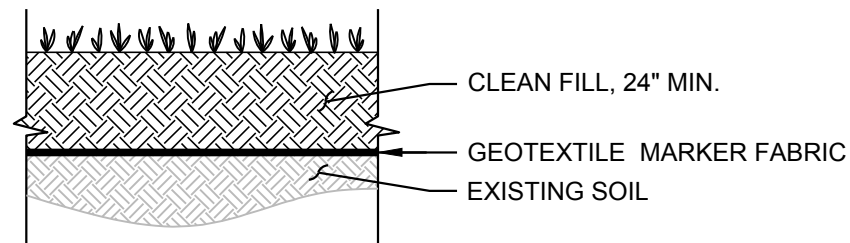
MDE PROJECT NO. 24-SF-0132

APPENDIX E

P:\EnviroAnalytics Group\160443M EAG_TPA Redevelopment\Drawg\B6\Production\Figure 6b - Environmental Capping Detail.dwg Plotted: April 9, 2019



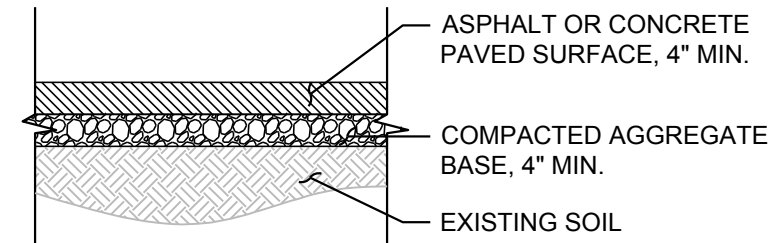
TYPICAL POND SECTIONS
NOT TO SCALE



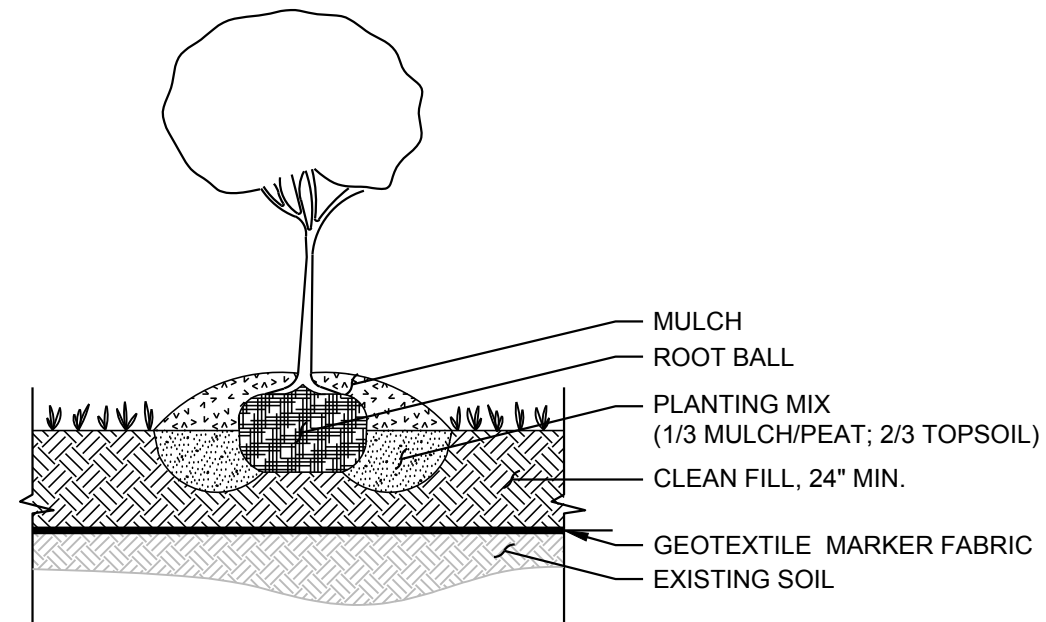
TYPICAL LANDSCAPE SECTION
NOT TO SCALE

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



TYPICAL PAVING SECTION
NOT TO SCALE



TYPICAL PLANTING SECTION
NOT TO SCALE

TABLE 1

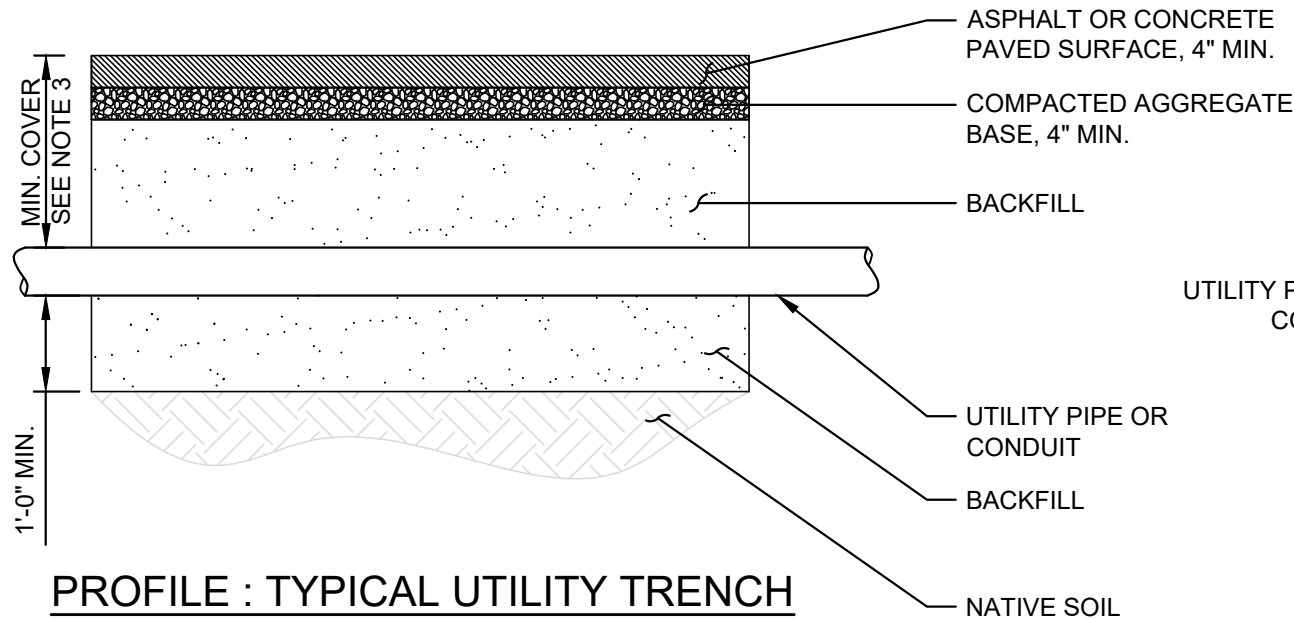
Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
			Maximum 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	



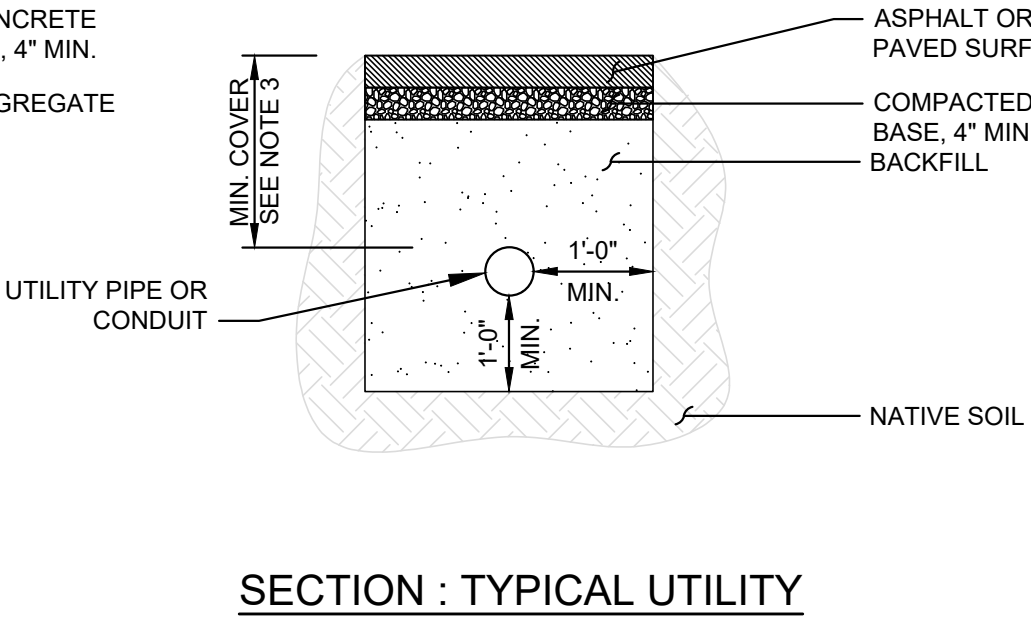
APPENDIX F

GENERAL NOTES:

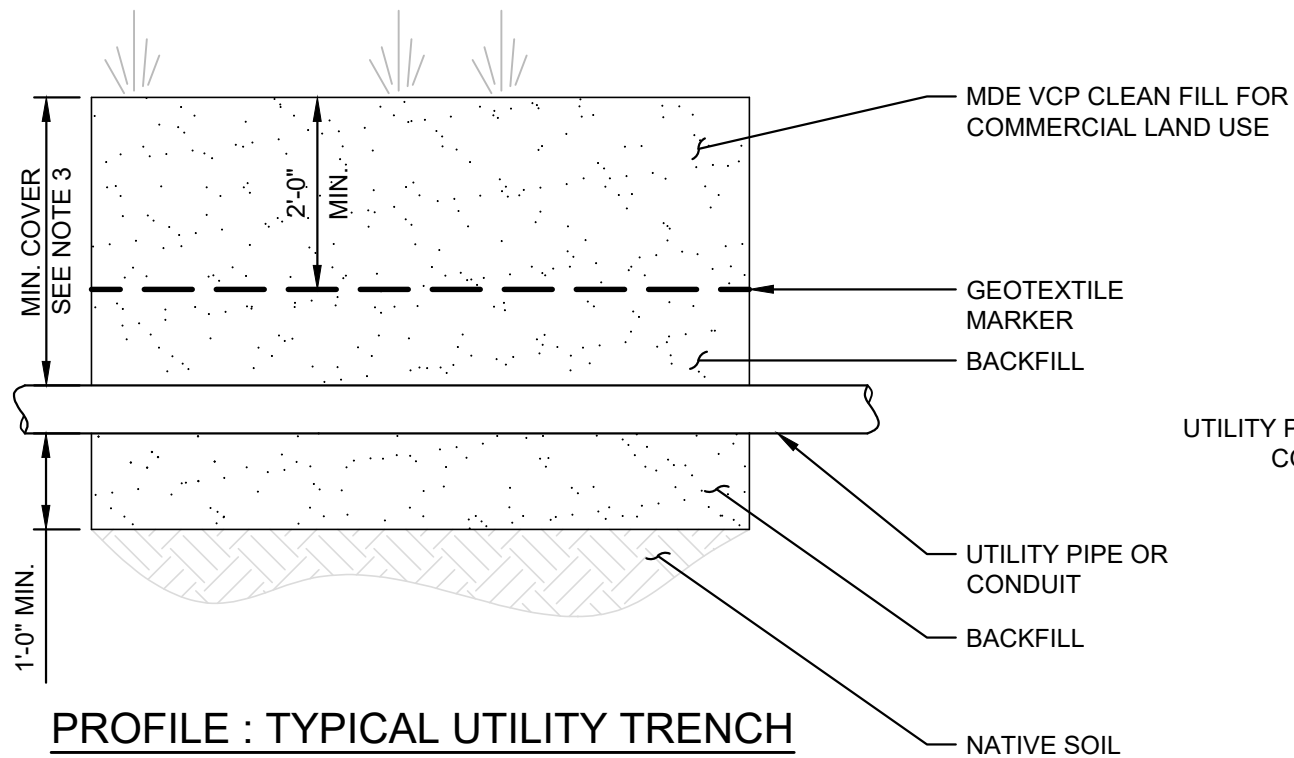
- 1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.
- 2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED 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 COMMERCIAL 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.



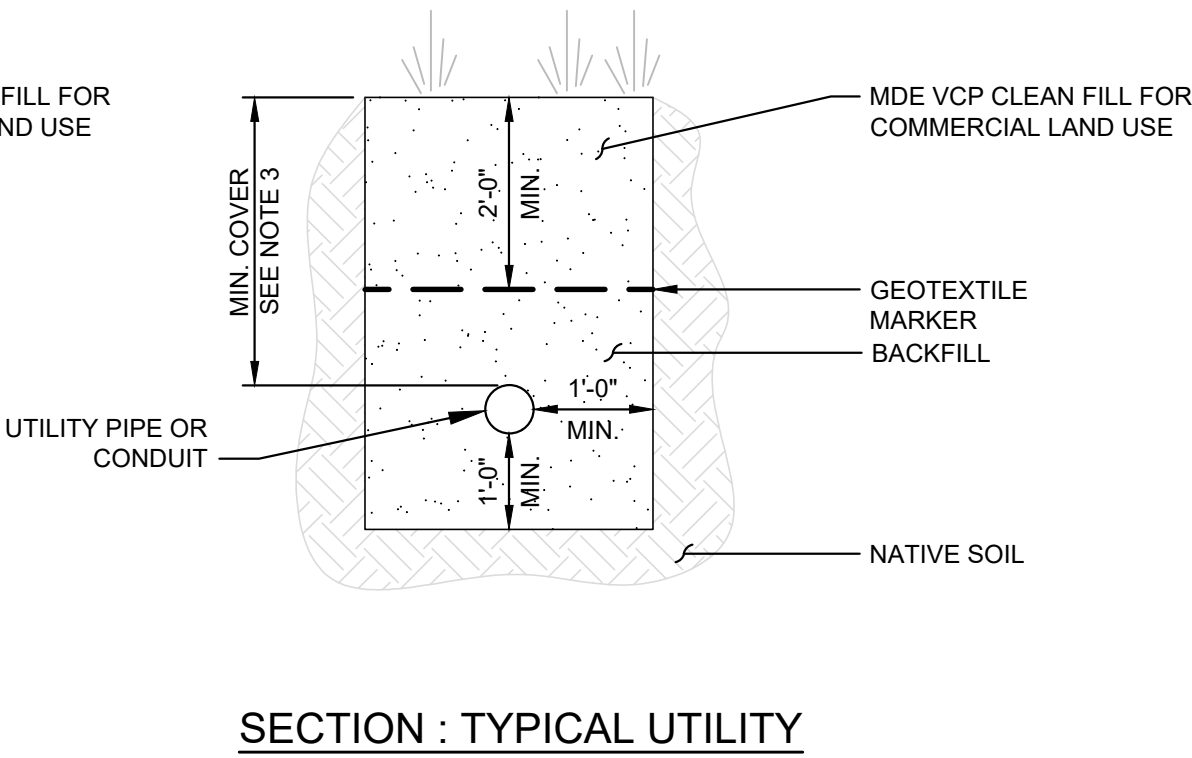
PROFILE : TYPICAL UTILITY TRENCH



SECTION : TYPICAL UTILITY



PROFILE : TYPICAL UTILITY TRENCH
(SEE NOTE 5)



SECTION : TYPICAL UTILITY
(SEE NOTE 5)

APPENDIX G

Utility Excavation NAPL Contingency Plan

Revision 5 – September 20, 2022

Objectives:

The purpose of this plan is to describe procedures to be followed in the event that non-aqueous phase liquid (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 NAPL contaminated soils.
2. To ensure proper worker protection for working in areas of NAPL contamination.
3. To ensure that the installation of new utilities does not create new preferential flow paths for the migration of NAPL 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 NAPL during installation of utility trenches or other excavation activities completed during development. NAPL-contaminated soils can be identified by the presence of free oil. 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 may be addressed via similar contingency measures provided herein (based on the judgement of the EP).

If NAPL is encountered during construction, potentially impacted material from the excavation will be removed and separated on plastic / covered with the same. Additional discussion of removal of material is in the **Soil Excavation, Staging, Sampling and Disposal** section below. If NAPL is encountered in an area where there is no known historical NAPL impact, the MDE will be notified (see **Initial Reporting** section) and the open excavation may be allowed to sit overnight. If after removal of the initial material identified additional NAPL impacted material enters the open excavation, the extent of impacts may be delineated and additional material removed / segregated. .

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 photoionization detector (PID) for potential volatile organic compounds (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.

Soil exhibiting physical evidence of NAPL contamination, which is located within 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 required analytical testing. If NAPL material continues to enter the open excavation, additional excavation may be continued in the field based on visual screening supplemented by the PID.

Any recovered NAPL impacted material will be segregated and collected for disposal. As required for disposal, samples impacted by NAPL will be collected for profiling/waste characterization and submitted to a fixed laboratory. Upon receipt of any additional characterization analytical results, the stockpiles will be tracked from generation to disposal.

Initial Reporting:

If evidence of NAPL in soil or groundwater is encountered during excavation in an area with no known historic NAPL impact, it will be reported to the MDE. Information regarding the location and characteristics of NAPL contaminated material will be documented as follows:

- Location (Site / Parcel ID with map);
- Approximate 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)

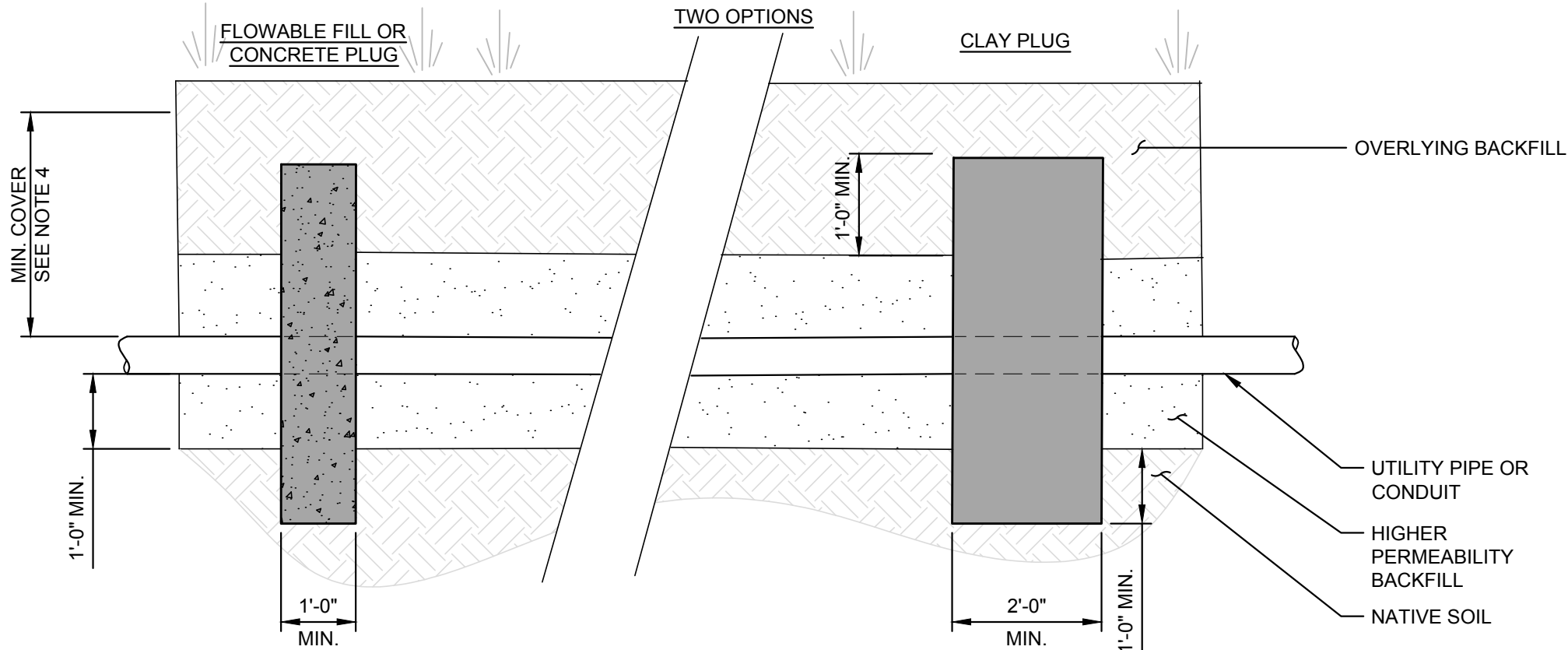
Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of known NAPL 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. Trench backfill will meet the MDE definition of clean fill, or be otherwise approved by the MDE. Bedding must be properly placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs may be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

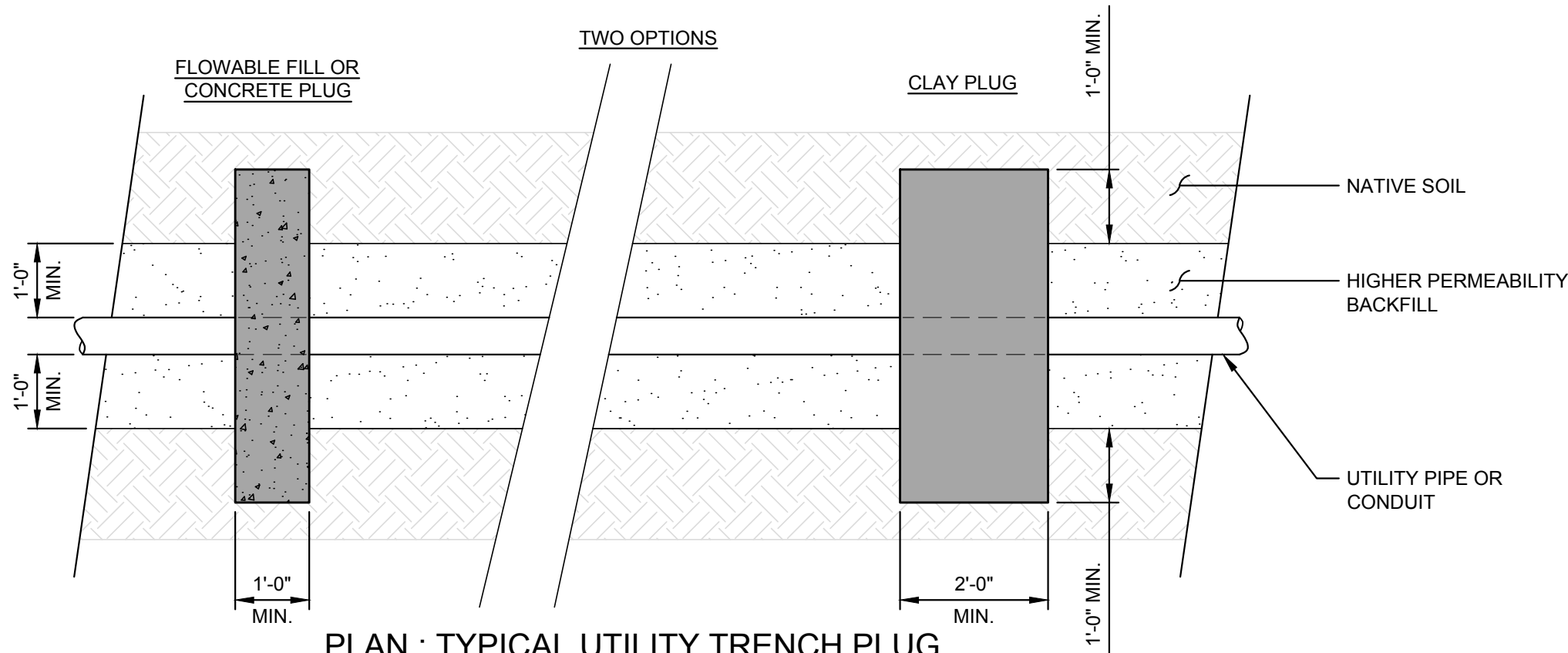
If required, each trench plug will be constructed with a 2-foot-thick clay plug or 1-foot-thick flowable fill or concrete plug, perpendicular to the pipe, which extends at least 1 foot in all directions beyond the permeable pipe bedding. The plug acts as an anti-seep collar, and will extend above the top of the pipe. A specification drawing for installation of the trench plug has been provided as **Figure 1**.

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
Not to Scale
160443M

Figure
1

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