RESPONSE AND DEVELOPMENT WORK PLAN

AREA B: SUB-PARCEL B21-1
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:

TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Sparrows Point, Maryland 21219

Prepared By:

ARM GROUP LLC
9175 Guilford Road
Suite 310
Columbia, Maryland 21046

ARM Project No. 20010221

Respectfully Submitted:

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

Kaye Guille, P.E., PMP
Senior Engineer

Revision 0 – October 4, 2021

TABLE OF CONTENTS

TABLE OF CONTENTS
(CONT.)

FIGURES

TABLES

TABLE OF CONTENTS
(CONT.)

APPENDICES

ELECTRONIC ATTACHMENTS

1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area B: Sub-Parcel B21-1 (the Site). Tradepoint Atlantic submitted a letter (dated September 16, 2021; **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 B21-1 consists of approximately 30.5 acres located primarily within Parcel B21, but extending slightly into Parcel B2, Parcel B22, and Parcel B23, of the approximately 3,100-acre former steel plant property.

As shown on **Figure 2** and **Figure 3**, Sub-Parcel B21-1 is slated for development and occupancy as a logistics center. The logistics center will include main office and warehouse space, with a total area of approximately 604,000 square feet (including 5,120 square feet of office space). Associated water lines, sanitary sewer lines, storm drains, conventional and trailer parking, access roads, and interior roads are also proposed. The planned development activities will generally include grading; construction of the main 604,000 square foot building; installation of utilities; landscaping and paving of parking areas and roadways. Subsequent site-use will involve workers in the on-site building, and truck drivers entering and leaving the Site with goods. Outside of the main development area designated as Sub-Parcel B21-1, temporary external construction worker areas (not intended for permanent occupancy) with a total area of approximately 1.07 acres within the Limit of Disturbance (LOD) will be utilized to install the facility entrance and subgrade utility connections for the project.

A Logistics Center Grading Plan (Revision 0 dated April 1, 2020) was previously submitted to allow Tradepoint Atlantic to proceed with grading (site preparation) for the future construction of the warehouse building designated as Logistics Center VII. The proposed grading work was limited to the footprint of the proposed warehouse building and the immediately surrounding area. However, the scope of grading in relation to Sub-Parcel B21-1 development has been modified, so this previous grading plan will be superseded by the grading proposed as part of this RADWP.

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

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

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial) and plans for the property include demolition and redevelopment over the next several years. Sub-Parcel B21-1 is part of the acreage that remains subject to the requirements of 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.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Sub-Parcel B21-1 and complement the statutory requirements of the VCP (Section 7-501 of the Environment Article). Upon submission of a RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a No Further Action Letter (NFA) upon a recordation of an Environmental Covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

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

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

This RADWP provides a Site description and history; summary of environmental conditions identified by the Phase I Environmental Site Assessment (ESA); summary of relevant findings and environmental conditions identified by the relevant Phase II Investigations; 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 MDE demonstrating that exposure pathways on the Site are addressed in a manner that protects public health and the environment.

The remainder of Parcel B2, Parcel B21, Parcel B22, and Parcel B23 will be addressed in separate development plans in accordance with the requirements of the ACO that will include RADWPs, if necessary. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use. As noted above, temporary external construction worker areas with a total area of 1.07 acres will be utilized to install the facility entrance and subgrade utility connections for the project outside of the sub-parcel. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction is covered by this RADWP.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Sub-Parcel B21-1 development project consists of approximately 30.5 acres comprising a significant portion of Parcel B21 as well as small portions of Parcel B2, Parcel B22 and Parcel B23 (**Figure 1**). The development will include construction of a logistics center totaling approximately 604,000 square feet (**Figure 2** and **Figure 3**). Outside of the main development area designated as Sub-Parcel B21-1, temporary external construction worker areas (not intended for permanent occupancy) with a total area of approximately 1.07 acres within the construction LOD will be utilized to install the facility entrance and subgrade utility connections for the project. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM), and is not occupied. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Ground surface elevations at the Site range from approximately 6 to 12 feet above mean sea level (amsl) and are generally flat. According to Figure B-2 of the property Stormwater Pollution Prevention Plan (SWPPP) Revision 8 dated April 30, 2020, surface water runoff from the Site flows through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014 beyond the Humphrey Creek Wastewater Treatment Plant (HCWWTP), which discharges to Bear Creek.

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 B21 was formerly occupied by a portion of the Finishing Mills Area (consisting primarily of the Continuous Tin Mill) containing numerous steel-making facilities. Several iron and steel work processes were completed within the boundary of Parcel B21. The No. 3 Pickler included five pickling tanks used to remove scale from the steel bands. The 48" Tandem Mill reduced the steel strip in thickness, produced a smooth/dense surface, and developed the required metallurgical properties. The No. 6 Washer was used to clean strips from the Tandem Mill with a caustic solution before annealing. The Box Annealing facility annealed coils to varying degrees of hardness determined by the customer's end use. The No. 5 Continuous Anneal combined the caustic cleaning process with continuous annealing. Product from the No. 5 Continuous Anneal and the batch Box Annealing operation was delivered to the No. 6 Skin Pass Mill. The No. 6 Skin Pass Mill reduced the gauge, tempered the steel, and prepared the surface of the strip for finishing. The No. 3 Duo Mill was used to reduce the thickness of the annealed strip and temper the steel.

Three Coil Preparation Lines were used in the Tin Mill to prepare the final product for packaging and shipping. The No. 1 Tin Plate Line applied a tin coating to a prepared coil. The No. 2 Tin Plate Line also applied a tin coating to a prepared coil through a very similar process. In the No. 8 Chrome Line, the strip was plated with chrome. Additional information regarding historic iron and steel work processes can be found in the Parcel B21 Phase II Investigation Work Plan (Revision 1 dated June 28, 2018).

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos Consultants for the entire Sparrows Point property on May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These 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 (RFA) prepared by A.T. Kearney, Inc. dated August 1993, for the purpose of identifying Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) on the property. This VSI is regularly cited in DCC Report.

Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. The following RECs were identified at the Site from information presented in the Phase I ESA:

Halogen Lines Trenches/Sumps (undesignated REC, Finding 43, also listed as SWMU 88):
The Halogen Lines are located in the northwestern corner of the Finishing Mills Area, within the Tin Mill. The trenches/sumps were designed to transport passivation wastewater and spent chemical solutions to the Tin Mill Canal (TMC) discharge point. Separate trench and sump systems collected different types of discharges. Chromium-bearing wastes were sent to the Chromium High Density Sludge (HDS) Plant, and oily wastewater and rinse water were discharged to the TMC.

Former 1991 Acid Leak Area (AOC I):
An overflow line leaked acid below the process tanks within the Tin Mill into a trench that ultimately discharged to the TMC. The line was repaired shortly after the leak was detected, on June 23, 1991.

As part of the relevant Phase II Investigation Work Plans, historical site drawings were reviewed to identify additional sampling targets. Sampling target locations were identified if the historical site drawings depicted industrial activities or a specific feature at a location that may have been a source of environmental contamination that impacted the Site. Drip legs are points throughout the distribution system where coke oven gas condensate was removed from the gas pipelines. The

condensate from the drip legs was typically discharged to drums, although it is possible some spilled out of the drums and on to the ground. A list and figure of former PCB-containing transformer equipment was also reviewed for inclusion as potential additional targets.

3.2 PHASE II INVESTIGATION RESULTS – SUB-PARCEL B21-1

Phase II Investigations specific to soil and groundwater conditions were performed for the property area including Sub-Parcel B21-1 in accordance with the requirements outlined in the ACO as further described in the following agency-approved Phase II Investigation Work Plans:

- Area B: Parcel B2 (Revision 1) dated May 17, 2017
- Area B: Parcel B21 (Revision 1) dated June 28, 2018
- Area B: Parcel B23 (Revision 0) dated July 24, 2018
- Area B Groundwater Investigation (Revision 3) dated October 6, 2015
- Finishing Mills Groundwater Investigation (Revision 1) dated July 7, 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 B2 (Revision 2) dated October 12, 2018
- Area B: Parcel B21 (Revision 0) dated January 14, 2020
- Area B: Parcel B23 (Revision 0) dated December 20, 2019
- Area B Groundwater Investigation Report (Revision 0) dated September 30, 2016
- Finishing Mills Groundwater Investigation (Revision 0) dated November 30, 2016

This RADWP summarizes the relevant soil and groundwater findings from these Phase II Investigations with respect to the proposed development of Sub-Parcel B21-1.

3.2.1 Phase II Soil Investigation Findings

Based on the scope of development for Sub-Parcel B21-1, 80 soil samples collected from 39 soil borings (including four soil borings from the Parcel B2 Phase II Investigation, 34 soil borings from the Parcel B21 Phase II Investigation, and one soil boring from the Parcel B23 Phase II Investigation) were included in this evaluation of Sub-Parcel B21-1. The 39 boring locations are shown on **Figure 4**, and the samples obtained from these borings provided relevant analytical data

for discussion of on-site conditions. Note that three of the selected soil borings (B2-026-SB, B2-051-SB, and B21-065-SB) are located outside Sub-Parcel B21-1; however, data from these locations have been included in this evaluation because they are close to the development LOD and have been utilized due to the lack of soil borings in the vicinity.

Soil samples collected during the Phase II Investigation were analyzed for the Target Compound List (TCL) semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs), 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). Samples from any depth interval with a sustained photoionization detector (PID) reading above 10 ppm were also analyzed for TCL volatile organic compounds (VOCs). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (30% to 50% validated soil data) are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results were screened against the Project Action Limits (PALs) established in the property-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016, or based on other direct agency guidance. Several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 1** and **Table 2** provide summaries of the detected organic compounds and inorganics in the soil samples collected from the 39 soil borings relevant for this Site evaluation. **Figure S1** through **Figure S4** present the soil sample results that exceeded the PALs among these soil borings. PAL exceedances consisted of five SVOCs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, hexachlorobenzene), two PCB mixtures (Aroclor 1260 and total PCBs), Oil & Grease, and five inorganics (arsenic, hexavalent chromium, lead, manganese, and thallium).

Evidence of non-aqueous phase liquid (NAPL) was observed at one Phase II soil boring location: B2-051-SB. A temporary NAPL screening piezometer was installed at this locations to identify the presence of NAPL on the water table, as described in the following Section 3.2.2. Contingency measures to address the presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

3.2.2 Phase II Groundwater Investigation Findings

Groundwater conditions were investigated as reported in the Area B Groundwater Phase II Investigation Report (Revision 0 dated September 30, 2016), the Finishing Mills Groundwater Phase II Investigation Report (Revision 0 dated November 30, 2016), and the Area B: Parcel B2 Phase II Investigation Report (Revision 2 dated October 12, 2018). These reports included aqueous sample data from three wells sampled during Area B Groundwater Phase II Investigation (SW-079-MWS, SW-079-MWI, and SW-057-MWS), six wells sampled during the Finishing

Mills Groundwater Investigation (FM-01-PZM003, FM-01-PZM041, FM-003-PZS, FM-003-PZI, FM-016-PZS, and FM-016-PZI), and one piezometer (B2-051-PZ) which was sampled during the Parcel B2 Phase II Investigation. The ten monitoring points provide relevant analytical data for the proposed Sub-Parcel B21-1 development project and are shown on **Figure 5**. There is no direct exposure risk for future Composite Workers at the Site because there is no use of groundwater on the Tradepoint Atlantic property; however, groundwater may be encountered in the sub-parcel during some construction tasks. If groundwater is encountered, it will be managed to prevent exposures in accordance with the dewatering requirements outlined in Section 5.2. Additionally, vapor intrusion (VI) risks are evaluated in Section 3.2.3.

Each groundwater monitoring well was inspected for evidence of NAPL using an oil-water interface probe prior to sampling. None of the monitoring wells relevant for the proposed development project showed evidence of NAPL during these checks. While NAPL was observed at soil boring B2-051-SB, however, the temporary piezometer B2-051-PZ indicated no NAPL thickness or sheen, and a groundwater sample was collected for analysis. The groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs and PAHs, TPH-DRO/GRO, Oil & Grease, TAL-dissolved/total metals, hexavalent chromium, and total cyanide. The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports (50% to 100% validated groundwater data) are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP dated April 5, 2016, or based on other direct agency guidance. Similar to the evaluation of soil data, several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 3** and **Table 4** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure GW1** presents the groundwater results that exceeded the PALs. PAL exceedances in the Phase II Investigation groundwater samples collected in the vicinity of the proposed development project consisted of five VOCs (1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, benzene, and chloroform), four SVOCs (1,4-dioxane, benz[a]anthracene, naphthalene, and pentachlorophenol), TPH-DRO, and six total and/or dissolved metals (arsenic, cobalt, iron, manganese, thallium, and vanadium). For simplicity, the inorganic PAL exceedances shown on **Figure GW1** do not include duplicate exceedances of total/dissolved metals. If both total and dissolved concentrations exceeded the PAL, the value for total metals is displayed.

3.2.3 Locations of Potential Concern

Groundwater data were screened to determine whether any sample results exceeded the USEPA Vapor Intrusion TCR (carcinogen) or THQ (non-carcinogen) Screening Levels. None of the individual sample results exceeded the VI TCR or THQ criteria. When the aqueous results were summed by sample location, none of the cumulative VI cancer risks exceeded 1E-5, and none of

the cumulative VI non-cancer Hazard Index (HI) values exceeded 1. There are no concerns related to potential VI risks/hazards at the Site. The VI risk evaluation is summarized in **Table 5**.

Other locations of potential concern which are subject to special requirements could include elevated lead, PCBs, or TPH/Oil & Grease in soil. The soil data for Sub-Parcel B21-1 were evaluated to determine the presence of any such locations of potential concern including: lead concentrations above 10,000 mg/kg, PCB concentrations above 50 mg/kg, or TPH/Oil & Grease concentrations above 6,200 mg/kg. There were no soil concentrations of lead or PCBs above the specified criteria; however, one location (B21-012-SB), shown on **Figure S3**, exhibited an Oil & Grease exceedance.

Locations with physical evidence of NAPL are also considered to be locations of potential concern with respect to proposed development. One soil boring (B2-051-SB) had visual observations of NAPL as shown on **Figure S3**; however, the temporary piezometer B2-051-PZ indicated no NAPL thickness or sheen. NAPL was not detected on the water table in any piezometers or monitoring wells within the proposed development area.

3.3 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

3.3.1 Analysis Process

A human health Screening Level Risk Assessment (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. It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at the Site; therefore, regardless of the findings of the Composite Worker baseline SLRA, Sub-Parcel B21-1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials.

The SLRA included the following evaluation process:

Identification of Exposure Units (EUs): The SLRA was evaluated using a single site-wide EU (EU1) with an area of 30.5 acres. The Construction Worker SLRA was evaluated using a slightly expanded EU (EU1-EXP), covering 31.6 acres in total which includes the additional construction worker areas incorporated within the LOD to include the facility entrance and utility connections outside of the sub-parcel. One soil boring (B21-065-SB) positioned along the utility easement to the north of the main development area was not included in EU1 for the Composite Worker evaluation but was included as a relevant location in EU1-EXP for the Construction Worker evaluation.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, COPC screening was completed assuming a Target Risk (TR) of 1E-6 and Target

Hazard Quotient (THQ) of 0.1. The initial screening also identified parameters detected at a frequency greater than 5%. Based on that data set, parameters were identified as COPCs if:

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

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

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

Exposure Point Concentrations (EPCs): The COPC soil datasets for the site-wide EU were divided into surface (0 to 2 feet bgs), subsurface (>2 feet bgs), and pooled depths for estimation of potential EPCs. Thus, there are three soil datasets associated with both site-wide EUs. A statistical analysis was performed for each COPC dataset using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model (ALM)-based values (presented in **Table 7**).

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

For the Construction Worker, site-specific risk-based evaluations were completed for a range of potential exposure frequencies to determine the maximum allowable exposure frequency for the site-wide EU that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for the individual target organs. This analysis indicated that the allowable exposure frequency before additional worker protections or more detailed job safety evaluations might be needed is 125 days.

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

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

Assessment of TPH/Oil & Grease: EPCs were not calculated for TPH/Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). As described in Section 3.2.3, an Oil & Grease exceedance was observed at B21-012-SB. Additionally, physical evidence of NAPL was identified at B2-051-SB, however no NAPL was observed in the temporary piezometer installed at this location. 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 Tradepoint Atlantic property will be used at the Site; therefore, regardless of the findings of the Composite Worker baseline assessment, Sub-Parcel B21-1 will be subject to surface

engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials. The goal of the SLRA is therefore to determine whether additional response actions beyond capping may be needed due to current conditions at the Site.

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

3.3.2 SLRA Results and Risk Characterization

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel B21-1 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which will be implemented during development at the Site, each of these potential exposure scenarios is relevant for the SLRA.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled soils) in the site-wide 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 (30.5 acres)	Surface Soil	none	1E-5
		Subsurface Soil	none	7E-6
		Pooled Soil	none	2E-5

Based on the risk ratios for Sub-Parcel B21-1, environmental capping (100% of the Site) is an acceptable remedy to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios. None of the non-carcinogenic HI values exceeded 1. However, the carcinogenic risk estimate for the Composite Worker pooled scenario was greater than the acceptable risk level of 1E-5 but below the secondary risk level of 1E-4 which would warrant consideration of toxicity reduction. The proposed capping remedy will provide adequate protection from the carcinogenic risk exceedance. Capping and institutional controls (to maintain the integrity of the cap) are suitable measures for the protection of the future Composite Worker for both cancer risks and non-cancer hazards. The capping remedy will additionally be protective of slag aggregate which will be used as the primary fill material and pavement subbase at the Site.

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 1E-5 or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected duration (125 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 (31.6 acres) (125 exposure days)	Surface Soil	none	1E-6
		Subsurface Soil	none	6E-7
		Pooled Soil	none	1E-6

Using the selected exposure duration for the site-wide EU1-EXP (125 days), the carcinogenic risks were all less than 1E-5, and none of the non-carcinogens caused a cumulative HI to exceed 1 for

any target organ system. These findings are below the acceptable limits for no further action established by the agencies. This evaluation indicates that additional site-specific health and safety requirements (beyond standard Level D protection) would be required only if the allowable exposure duration of 125 days were to be exceeded for an individual worker.

Certain activities at the Site may exceed the allowable duration; if so, then Construction Worker risks must be mitigated to facilitate the proposed construction work. At that point additional site-specific health and safety requirements are warranted 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 data obtained from the characterization of surface and subsurface soils, results from the SLRA indicate that environmental capping is required within the development area to mitigate potential Composite Worker risks. Additionally, Tradepoint Atlantic will be using industrial fill (including processed slag aggregate) throughout the Site. The entirety of the Site (30.5 acres) will therefore require a remedy of capping with institutional controls to mitigate potential Composite Worker risks.

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

The proposed VCP capping remedy with institutional controls was evaluated for consistency with the RCRA Threshold Criteria and Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at 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 or where soil concentrations exceed a cancer risk of 1E-5 or a HI of 1. Groundwater does not present a direct human health hazard since there is no groundwater use on the property. Implementation of the proposed use restrictions will address the residual risk and will also protect future workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil/groundwater COPCs by human receptors.

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

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at 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 Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. The proposed remedy will maintain protection of human health and the environment over time by controlling exposures to the hazardous constituents potentially remaining in slag aggregate or existing on-site media. The long-term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, land and groundwater use restrictions are expected to continue in the long term.

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

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The risks to the Construction Worker during remedy implementation are mitigated by executing the modified Level D PPE requirements outlined in **Appendix C**. The short-term risk to site workers following these upgraded health and safety measures during implementation of the remedy will be low, leading to a high level of short-term effectiveness for protection of future site users and the environment. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security and fences will be used to maintain controlled access during construction.

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

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

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

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

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing to construct a logistics center totaling approximately 604,000 square feet on Sub-Parcel B21-1. The proposed development will include permanent improvements on approximately 30.5 acres of land intended for occupancy. The proposed future use of Sub-Parcel B21-1 is Tier 3 – Industrial. The remainder of Parcel B2, Parcel B21, Parcel B22, and Parcel B23 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 1.07 acres will be utilized to install the facility entrance and subgrade utility connections for the project. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction work is covered by this RADWP. The Site (30.5 acres encompassing Sub-Parcel B21-1; excluding the temporary construction worker areas) will be fully capped by surface engineering controls.

Certain compounds are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs. Therefore, soil is considered a potential media of concern. Potential risks to future adult workers associated with impacts to soil and groundwater exceeding the PALs will be addressed through a remedy consisting of surface engineering controls (capping of the entire area) and institutional controls (deed restrictions). The development plan provides for a containment remedy and institutional controls that will mitigate future adult workers from contacting impacted soil at the Site. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase at the Site. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls regardless of the existing soil conditions.

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 125-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).

Certain activities at the Site may exceed the allowable duration; if so, then Construction Worker risks must be mitigated to facilitate the proposed construction work. At that point additional site-specific health and safety requirements are warranted 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 MDE, 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** and **Figure 3**, and the detailed development drawings (provided by Bohler Engineering) are included as **Appendix D**. The process of constructing the proposed logistics center will involve the tasks listed below. Documentation of the outlined tasks and procedures will be provided in a Sub-Parcel B21-1 Development Completion Report.

4.1 RESPONSE PHASE – GROUNDWATER NETWORK ABANDONMENT

Permanent groundwater monitoring wells FM01-PZM003 and FM01-PZM041, shown on **Figure 5**, are the only two wells located inside of the development boundary. Well FM01-PZM003 was abandoned while FM01-PZM041 was not able to be located. Abandonment forms for these two wells are provided as **Appendix E**. No further groundwater network abandonment is necessary as part of this redevelopment.

4.2 DEVELOPMENT PHASE

4.2.1 Erosion and Sediment Control Installation

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

4.2.2 Grading and Site Preparation

As indicated on the development plans in **Appendix D**, grading activities including both cut and fill will occur within the Sub-Parcel B21-1 boundary. Any material that is not suitable for compaction will be excavated and replaced with subbase material, although it is not anticipated that poor soils will be encountered. Borrow materials will be obtained from MDE-approved sources and will be documented prior to transport to the Site. Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as fill. Other materials approved by the MDE for industrial use may also be used as fill, but the placement of materials other than approved clean

fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Fill sources shall be free of organic material, frozen material, or other deleterious material. In the case that there is excess material (not anticipated), the spoils will be stockpiled at a suitable location and dealt with in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Papadopulos & Associates, et al., June 17, 2015). This work will be coordinated with MDE accordingly. No excess material will leave the 3,100-acre property without prior approval from MDE.

4.2.3 Installation of Structures and Underground Utilities

The logistics center building, parking lots, and other infrastructure associated with the development of Sub-Parcel B21-1 will be installed as shown on the drawings in **Appendix D**. Soils relocated or removed during construction may be replaced on-site below the cap, but soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. Additional protocols for the installation of utilities at the Site are provided in Section 5.1.2. Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site Humphrey Creek Wastewater Treatment Plant (HCWWTP).

4.2.4 Floor Slabs and Paving

Much of the Site will be covered with floor slabs or paving as indicated in the development plans provided in **Appendix D**. The paved areas will receive a layer of subbase material which will consist of compacted aggregate base, which may include processed slag aggregate sourced from the Tradepoint Atlantic property. The placement of processed slag aggregate or materials other than MDE-approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping).

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

4.2.5 Landscaping

As shown on **Figure 6**, the areas not covered by the building, asphalt, or concrete will be covered by landscaped caps. The required minimum thicknesses of all site-wide landscaping sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix F**. According to the development plans, all landscaped areas at the Site will be installed with a minimum of 24 inches of clean fill, with an underlying geotextile marker fabric between the clean fill and the existing underlying material. The proposed landscape sections for the Site meet the minimum capping requirements. Note that the "Typical Perennial and Ground

Cover Planting" section in the development plans is specific to planting requirements and does not address capping - minimum capping section details are provided in **Appendix F** and will be implemented.

4.2.6 Stormwater Management

The proposed stormwater utility layout for the Site is provided on the development plan drawings in **Appendix D**. New stormwater infrastructure will be installed throughout the Site and will discharge to a new stormwater pond. The required minimum thicknesses of all pond sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix F.**

Based on the shallow groundwater elevation measurements collected during the Finishing Mills Groundwater Phase II Investigation, the pond excavations may encounter groundwater. As shown on **Figure 7**, the shallow groundwater elevations underlying the southeastern stormwater pond approximately 8 feet amsl (1 foot below the pond bottom elevation). Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site HCWWTP.

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

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1 DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with the development of Sub-Parcel B21-1. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PALs were identified in soil samples across the Site. The PALs are set based on USEPA's RSLs for industrial soils, or other direct guidance from the MDE. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate potential risks from such materials remaining on-site during the development phase. There were no locations in the proposed Site boundary with soil exceedances of the special management criteria for PCBs (50 mg/kg), lead (10,000 mg/kg), or TPH/Oil & Grease (6,200 mg/kg). As noted above, NAPL was identified at soil boring location (B2-051-SB), but no NAPL was observed at any groundwater sample collection points relevant for the Site.

Following completion of the SLRA, the findings of the Construction Worker evaluation indicated that using the site-specific 125-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). Certain activities at the Site may exceed the allowable duration of 125 days, and if that were the case, Construction Worker risks must be mitigated to facilitate the proposed construction. Upgraded PPE beyond standard Level D protection will be used in conjunction with the HASP for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

Based on the characterization of surface and subsurface soils and the associated SLRA findings, surface engineering controls are an acceptable remedy to be protective of future adult Composite Workers who otherwise could potentially contact surface soil (or relocated subsurface soil) at the Site. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase at the Site. 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 F**.

5.1.1 Erosion/Sediment Control

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

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

5.1.2 Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall include the construction manager and the Environmental Professional (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. Any stockpiles shall be kept within the Site footprint, and in a location that is not subjected to concentrated stormwater runoff. Stockpiles shall be managed as necessary to prevent the erosion and off-site migration of stockpiled materials, and in accordance with the applicable provisions of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Soil designated for replacement on-site which does not otherwise exhibit evidence of contamination (as determined by the EP) may be managed in large stockpiles (no size restriction) as long as they remain within the erosion and sediment controls.

All utility trenches will be backfilled with bedding and backfill materials approved by the MDE for industrial use. A general utility cross section is provided as **Appendix G**. 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 H**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to inhibit the spread of petroleum product will be conducted in accordance with this plan.

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

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

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

5.1.3 Soil Sampling and Disposal

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indications of potential contamination shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be covered with a polyethylene tarp to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill at this Site or on other areas of the property depending on the analytical results. A sampling Work Plan including a description of the material, estimated volume, and sampling parameters will be submitted to the MDE for approval. The

resulting analytical data will be submitted to the MDE to determine the suitability of the material for reuse. If the MDE determines that the materials are unsuitable for reuse, the materials will be sampled to determine alternative disposal options.

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

5.1.4 Fill

Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as the primary fill material for this project. The placement of processed slag aggregate or materials other than approved clean fill will necessitate that the Site 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 at the Site below the surface engineering controls (capping), unless such materials are determined by the EP/MDE 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 bedding and backfill approved by the MDE for industrial use. Soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. As with structural fill, processed slag aggregate and other materials approved for industrial use can be used as backfill in utility trenches if the area will be covered by a VCP cap. Any 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. Materials permanently placed in areas outside of the Site boundary (i.e., within the temporary external construction worker areas outside of Sub-Parcel B21-1) must meet the VCP clean fill requirements or be otherwise approved by the MDE prior to placement. A general utility detail drawing is provided as **Appendix G**. Material imported to the Site will be screened according to MDE guidance for suitability.

5.1.5 Dust Control

General construction operations, including soil excavation and transport, and trenching for utilities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. Best management practices should be undertaken at the Sparrows Point property as a whole to prevent the generation of dust which could impact other areas of the property outside of the immediate work zone. To limit worker exposure to contaminants borne on dust and windblown particulates, dust monitoring will be performed in the immediate work zone and at the upwind and downwind perimeter of the Site, and dust control measures will be implemented if

warranted based on the monitoring results. The action level proposed for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) during the development activities at the Site will be 3.0 mg/m³. The lowest of the site-specific dust action levels, OSHA Permissible Exposure Limits (PELs), and ACGIH Threshold Limit Value (TLV) was selected as the proposed action level.

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

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

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

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

be implemented. The dust suppression measures may include wetting or misting using a hose connected to a water supply or a water truck stationed at the Site.

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

5.2 WATER MANAGEMENT

This plan presents the protocols for handling any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel B21-1 development.

5.2.1 Groundwater PAL Exceedances

Groundwater samples were collected during the preceding Phase II Investigations from ten temporary piezometers and 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 obtained during the Phase II Investigations are summarized on **Figure GW1**. There are no concerns related to potential VI risks/hazards at the Site.

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

5.2.2 Dewatering

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

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

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

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

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

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

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

5.3 HEALTH AND SAFETY

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

General health and safety controls (level D protection) are adequate to mitigate potential risk to Construction Workers conducting ground intrusive activities for a duration of up to 125 exposure days. However, certain ground intrusive activities at the Site (utility installations for specific crews) may exceed the allowable duration. Therefore, modified Level D PPE will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. Health and safety controls outlined in the HASP and PPE SOP will mitigate any potential risk to Construction Workers from contacting impacted soil and groundwater during development. The modified Level D PPE requirements planned for this development project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**. The EP will be responsible for monitoring organic vapor concentrations in the worker breathing zone within the utility trenches and excavations to determine whether any increased level of health and safety protection (including engineering controls and/or PPE) is required.

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

5.4 INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

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

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

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

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

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

5.5 POST REMEDIATION REQUIREMENTS

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

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

5.6 CONSTRUCTION OVERSIGHT

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

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

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

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

Records will be developed by the EP to document:

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

6.0 PERMITS, NOTIFICATIONS AND CONTINGENCIES

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

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

Contingency measures will include the following:

1. The MDE 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 MDE.

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 MDE on a quarterly basis. Each quarterly progress report will include, at a minimum, a discussion of the following information regarding tasks completed during the specified quarter:

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

The proposed implementation schedule is shown below:

Task	**Proposed Completion Date**
Anticipated RADWP Approval	October 30, 2021
Development:	
Installation of Erosion and Sediment Controls	November 2021 (start)
Slag (or Alternative Fill) Delivery and Placement	November 2021 (start)
Grading	November 2021 (start)
Utility Installations	December 2021 (start)
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	June 2022
Request for NFA from the MDE	September 2022
Recordation of institutional controls in the land records office of Baltimore County	Within 30 days of receiving the approval of NFA from the MDE

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


B21-1 Development Boundary
Site Boundary
Parcel Boundaries
Private Property
Parcel A9
Parcel A13
Parcel A5
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A15
Parcel A2
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A10
Parcel A4
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B21
Parcel B22
Parcel B16
Parcel B24
Parcel B15
Parcel B23
B21-1
Parcel B7
Parcel B25
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12
Tradepoint Atlantic
Area A and Area B Parcels
September 20, 2021
Figure
1
ARM Group LLC
Engineers and Scientists
0 500 1,000 2,000
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
Area A: Project 200101
Area B: Project 200102
Sub-Parcel B21-1: 20010221

Parcel B14

Parcel B16

Parcel B15

Parcel B23

Parcel B21

Parcel B22

Parcel B2

FINISHING MILL ROAD

TRADEPOINT AVENUE

SHEET C-404

SHEET C-405

SHEET C-402

SHEET C-403

PART OF MAP 111, GRID 14 PARCEL 318 LANDS N/F DEPOINT ATLANTIC, LLC .B. 35478, PG. 379

PROP. LOGISTICS CENTER
603,980 S.F. ± (INCLUDING 5,120 S.F. OFFICE)
CONVENTIONAL PARKING = 167 SPACES
FUTURE CONVENTIONAL PARKING SPACES = 78 SPACES
TRAILER PARKING STALLS = 94 SPACES
DOCK DOORS = 74
DRIVE-IN RAMPS = 1
PROP. LEASE AREA = 30.677 AC. ±

FFE: 19.00

TOP 11.45

N
W
E
S
NAD83
NAD83

Site Boundary

External Construction Worker Area

Parcel Boundary

Sub-Parcel B21-1
Development Grading Plan

September 20, 2021

Figure 2

ARM Group LLC
Engineers and Scientists

0 75 150 300
Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010221

Parcel B14

Parcel B16

Parcel B15

Parcel B21

Parcel B23

Parcel B22

Parcel B2

FINISHING MILL ROAD

TRADEPOINT ATLANTIC AVENUE

PRIVATE ROAD
85' R/W
F.K.A. 7TH STREET
SPEED LIMIT: 25 MPH

SHEET C-504

SHEET C-502

SHEET C-505

SHEET C-503

PROP. LOGISTICS CENTER
603,960 S.F. ± (INCLUDING 5,120 S.F. OFFICE)
CONVENTIONAL PARKING = 167 SPACES
FUTURE CONVENTIONAL PARKING SPACES = 76 SPACES
TRAILER PARKING STALLS = 94 SPACES
DOCK DOORS = 74
DRIVE-IN RAMPS = 1
PROP. LEASE AREA = 30.677 AC. ±
FFE: 19.00

N
E
S
W

Site Boundary

External Construction Worker Area

Parcel Boundary

Sub-Parcel B21-1
Development Utility Plan

September 20, 2021

Figure 3

ARM Group LLC
Engineers and Scientists

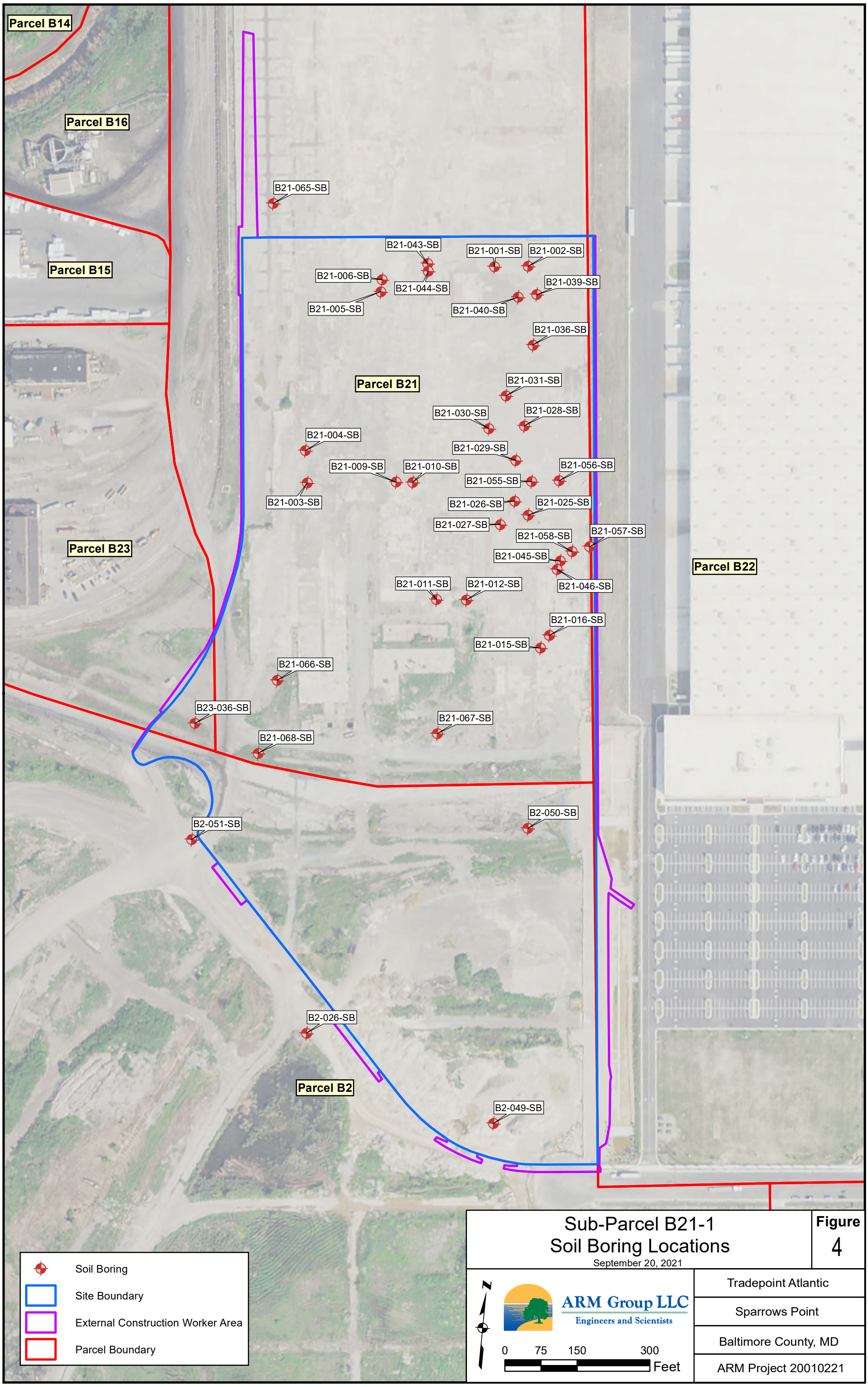
0 75 150 300 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010221


Parcel B14
Parcel B16
Parcel B15
Parcel B23
Parcel B21
Parcel B22
Parcel B2
B21-065-SB
B21-043-SB
B21-001-SB
B21-002-SB
B21-006-SB
B21-044-SB
B21-039-SB
B21-005-SB
B21-040-SB
B21-036-SB
B21-031-SB
B21-030-SB
B21-028-SB
B21-004-SB
B21-029-SB
B21-009-SB
B21-010-SB
B21-056-SB
B21-055-SB
B21-003-SB
B21-026-SB
B21-025-SB
B21-027-SB
B21-058-SB
B21-057-SB
B21-045-SB
B21-046-SB
B21-011-SB
B21-012-SB
B21-016-SB
B21-015-SB
B21-066-SB
B23-036-SB
B21-067-SB
B21-068-SB
B2-050-SB
B2-051-SB
B2-026-SB
B2-049-SB
Soil Boring
Site Boundary
External Construction Worker Area
Parcel Boundary
Sub-Parcel B21-1
Soil Boring Locations
September 20, 2021
Figure
4
ARM Group LLC
Engineers and Scientists
0
75
150
300
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221

Parcel B14

Parcel B16

Parcel B15

Parcel B21

Parcel B23

Parcel B22

Parcel B2

B21-065-SB-3
B21-065-SB-5

B21-001-SB-3
B21-001-SB-5

B21-002-SB-3.5
B21-002-SB-5

B21-043-SB-1.5
B21-043-SB-5

B21-006-SB-2
B21-006-SB-8

B21-040-SB-6.5

B21-039-SB-2
B21-039-SB-5

B21-044-SB-2
B21-044-SB-5

B21-005-SB-2
Benz[a]anthracene: 36.5
Benzo[a]pyrene: 30.3
Benzo[b]fluoranthene: 39.6
Dibenz[a,h]anthracene: 2.9
B21-005-SB-7

B21-036-SB-2
B21-036-SB-5

B21-031-SB-1
B21-031-SB-5

B21-028-SB-1
B21-028-SB-5

B21-029-SB-1
Benzo[a]pyrene: 2.4
B21-029-SB-5

B21-010-SB-2
B21-010-SB-5
Benzo[a]pyrene: 4.1

B21-004-SB-2.5
B21-004-SB-5

B21-030-SB-2.5
B21-030-SB-5

B21-055-SB-2.5

B21-003-SB-1
B21-003-SB-5
Benz[a]anthracene: 32.7
Benzo[a]pyrene: 32.8
Benzo[b]fluoranthene: 40.7
Dibenz[a,h]anthracene: 3.1

B21-009-SB-2
B21-009-SB-5

B21-025-SB-2
B21-025-SB-7.5

B21-026-SB-2
B21-026-SB-5
Benzo[a]pyrene: 2.5

B21-027-SB-1
B21-027-SB-5
Benzo[a]pyrene: 5.3

B21-057-SB-2
Hexachlorobenzene: 1.1
B21-057-SB-6

B21-058-SB-2.5

B21-011-SB-1
Benzo[a]pyrene: 4.0
B21-011-SB-5

B21-046-SB-2
B21-046-SB-6

B21-045-SB-3.5
B21-045-SB-4.5
Benzo[a]pyrene: 4.2

B21-012-SB-1
B21-012-SB-5

B21-066-SB-1
B21-066-SB-7.5

B21-015-SB-3
B21-015-SB-5

B21-016-SB-4
B21-016-SB-5

B23-036-SB-1
B23-036-SB-4

B21-067-SB-1
B21-067-SB-5
Benzo[a]pyrene: 2.4

B21-068-SB-1
B21-068-SB-5

B2-050-SB-1
Benzo[a]pyrene: 4.4 J
B2-050-SB-5

B2-051-SB-1
B2-051-SB-5

B2-026-SB-1
B2-026-SB-5

B2-049-SB-1
B2-049-SB-4

Soil Boring
Site Boundary
External Construction Worker Area
Parcel Boundary

Sub-Parcel B21-1
Soil SVOC PAL Exceedances (mg/kg)

September 20, 2021

Figure S1

ARM Group LLC
Engineers and Scientists

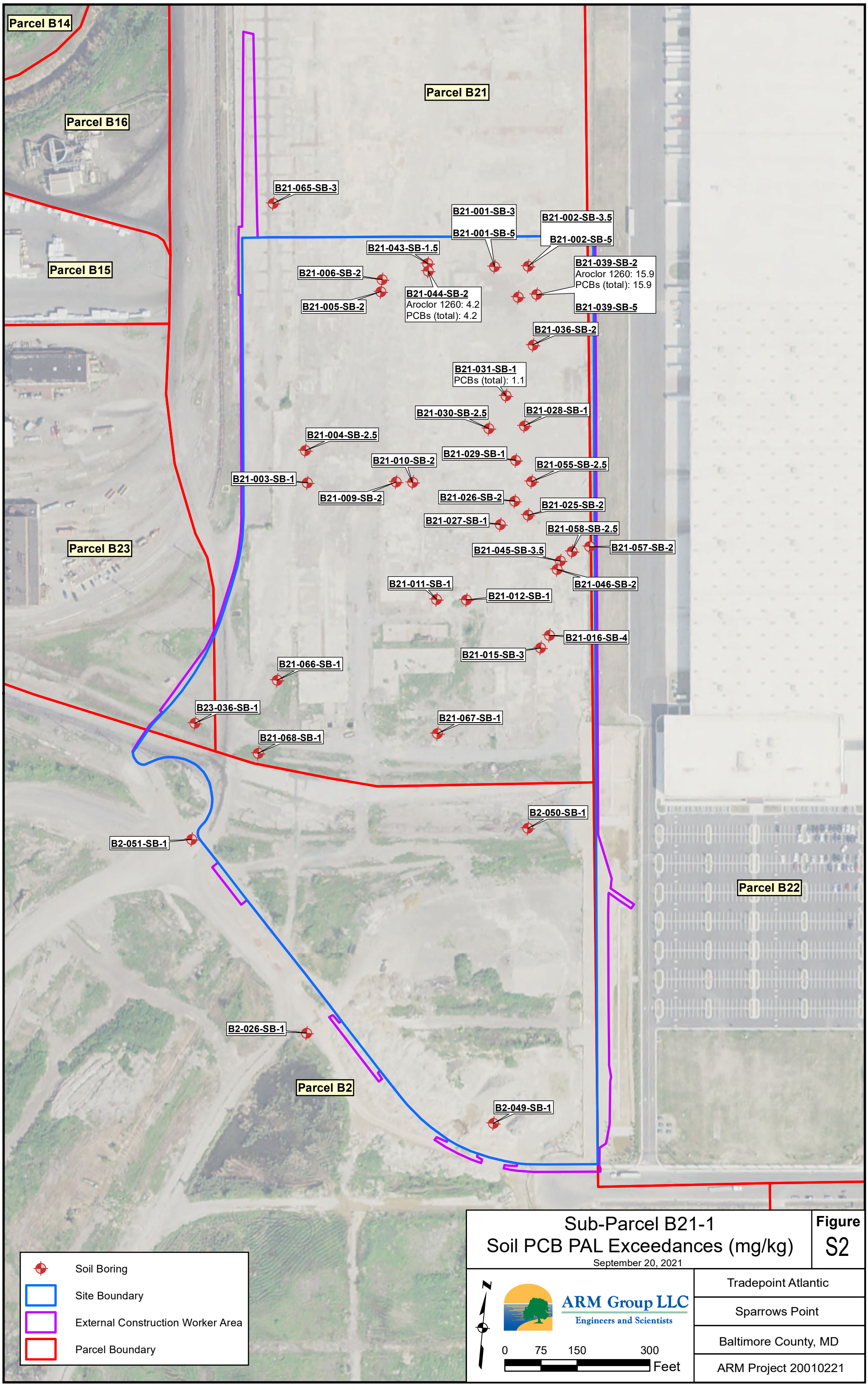
0 75 150 300 Feet

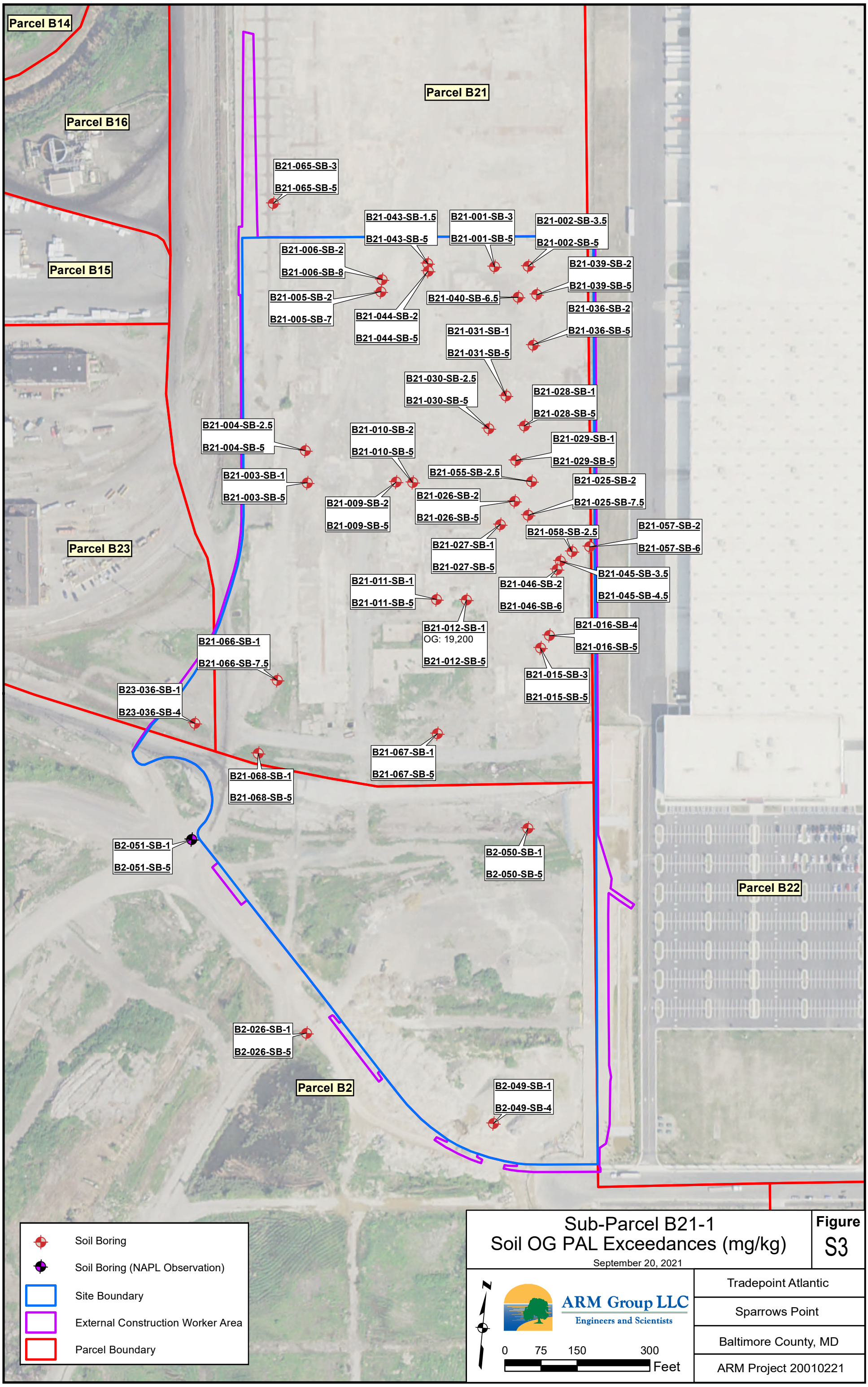
Tradepoint Atlantic

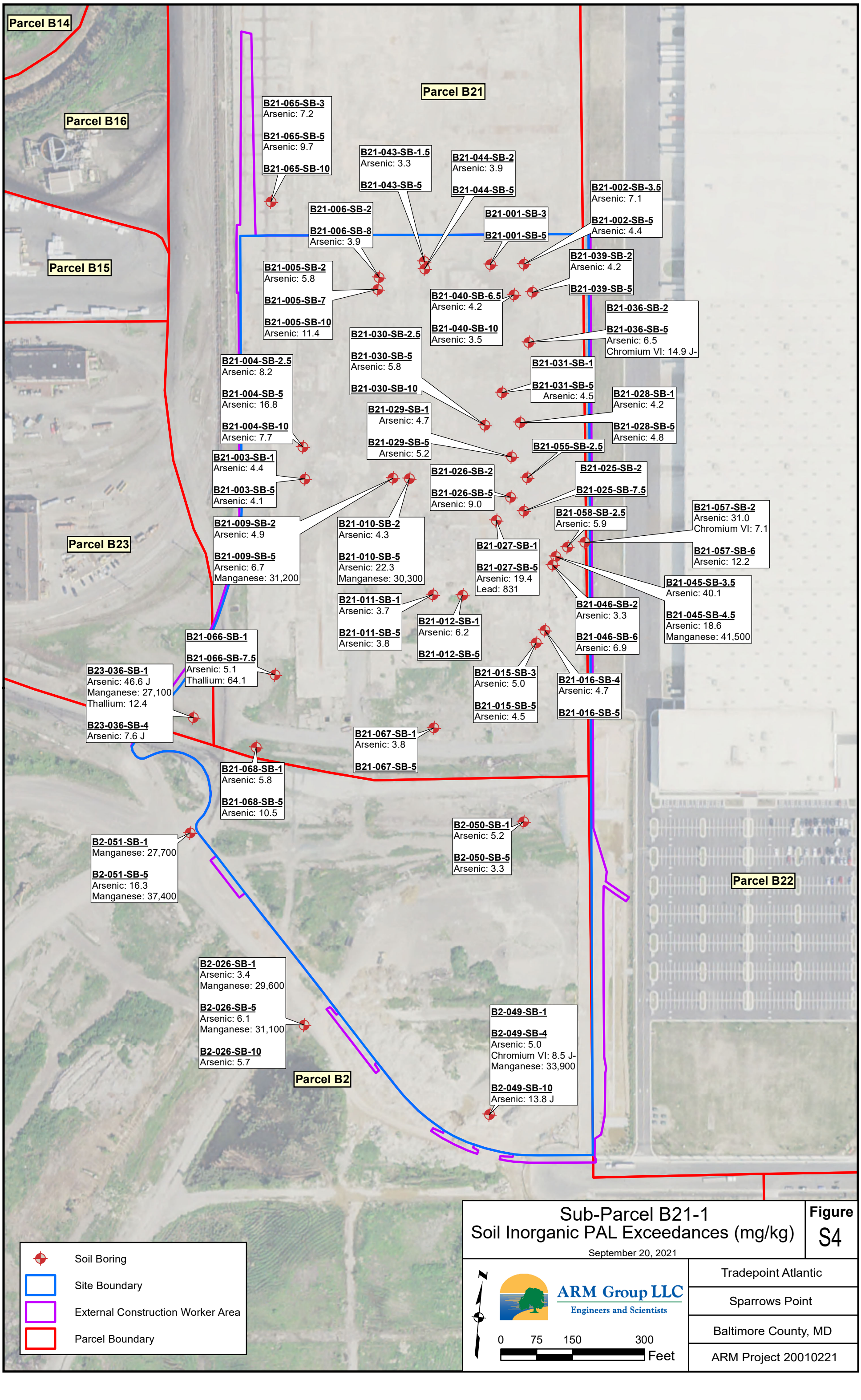
Sparrows Point

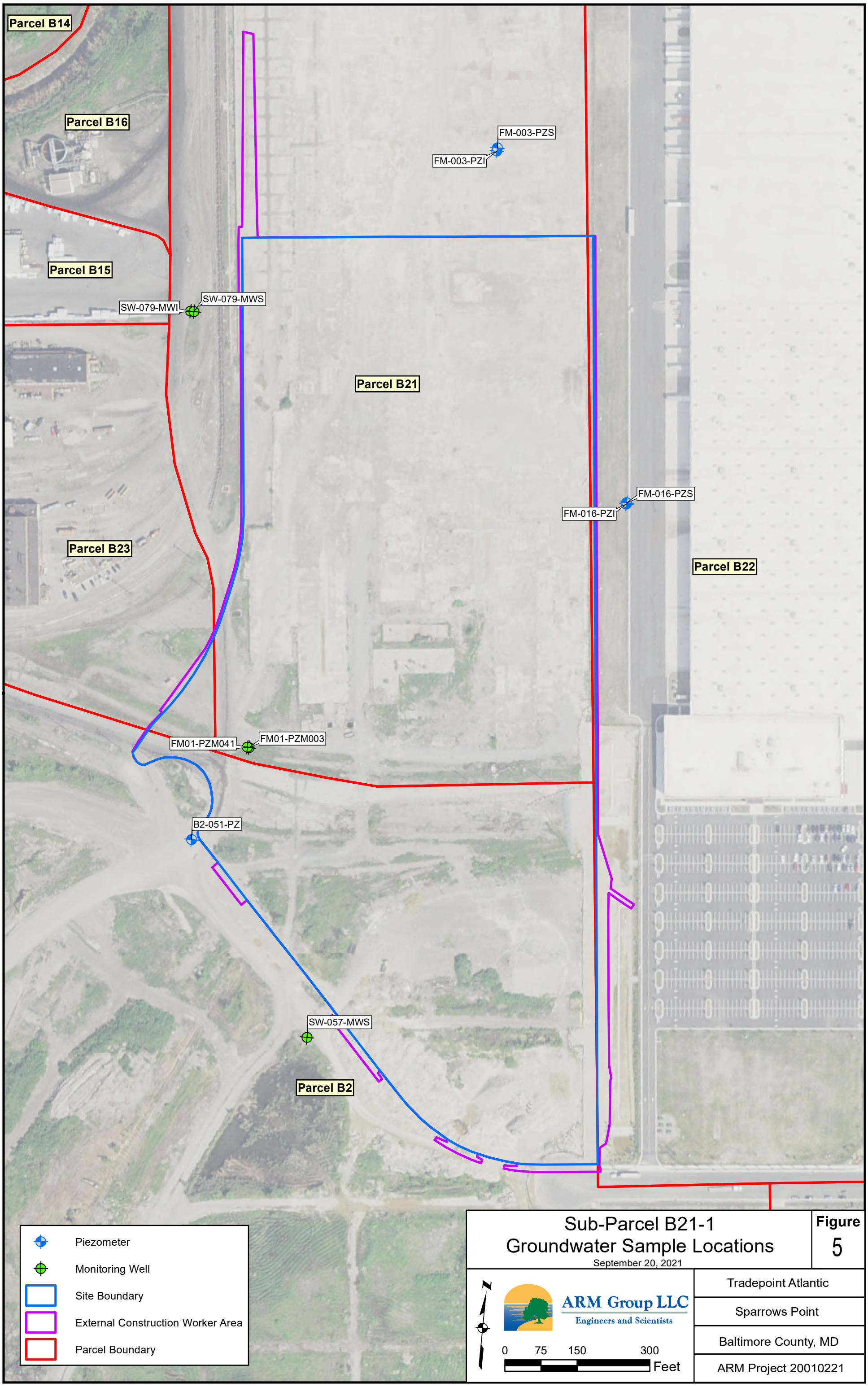
Baltimore County, MD

ARM Project 20010221


Parcel B14
Parcel B16
Parcel B15
Parcel B21
Parcel B23
Parcel B22
Parcel B2
B21-065-SB-3
B21-001-SB-3
B21-001-SB-5
B21-002-SB-3.5
B21-002-SB-5
B21-043-SB-1.5
B21-006-SB-2
B21-005-SB-2
B21-044-SB-2
Aroclor 1260: 4.2
PCBs (total): 4.2
B21-039-SB-2
Aroclor 1260: 15.9
PCBs (total): 15.9
B21-039-SB-5
B21-036-SB-2
B21-031-SB-1
PCBs (total): 1.1
B21-030-SB-2.5
B21-028-SB-1
B21-004-SB-2.5
B21-029-SB-1
B21-010-SB-2
B21-055-SB-2.5
B21-003-SB-1
B21-009-SB-2
B21-026-SB-2
B21-025-SB-2
B21-027-SB-1
B21-058-SB-2.5
B21-057-SB-2
B21-045-SB-3.5
B21-046-SB-2
B21-011-SB-1
B21-012-SB-1
B21-016-SB-4
B21-015-SB-3
B21-066-SB-1
B23-036-SB-1
B21-067-SB-1
B21-068-SB-1
B2-050-SB-1
B2-051-SB-1
B2-026-SB-1
B2-049-SB-1
Soil Boring
Site Boundary
External Construction Worker Area
Parcel Boundary
Sub-Parcel B21-1
Soil PCB PAL Exceedances (mg/kg)
September 20, 2021
Figure
S2
ARM Group LLC
Engineers and Scientists
0
75
150
300
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221


Parcel B14
Parcel B16
Parcel B15
Parcel B21
Parcel B23
Parcel B22
Parcel B2
B21-065-SB-3
B21-065-SB-5
B21-043-SB-1.5
B21-043-SB-5
B21-001-SB-3
B21-001-SB-5
B21-002-SB-3.5
B21-002-SB-5
B21-006-SB-2
B21-006-SB-8
B21-039-SB-2
B21-039-SB-5
B21-005-SB-2
B21-005-SB-7
B21-040-SB-6.5
B21-044-SB-2
B21-044-SB-5
B21-036-SB-2
B21-036-SB-5
B21-031-SB-1
B21-031-SB-5
B21-030-SB-2.5
B21-030-SB-5
B21-028-SB-1
B21-028-SB-5
B21-004-SB-2.5
B21-004-SB-5
B21-010-SB-2
B21-010-SB-5
B21-029-SB-1
B21-029-SB-5
B21-003-SB-1
B21-003-SB-5
B21-055-SB-2.5
B21-025-SB-2
B21-025-SB-7.5
B21-009-SB-2
B21-009-SB-5
B21-026-SB-2
B21-026-SB-5
B21-027-SB-1
B21-027-SB-5
B21-058-SB-2.5
B21-057-SB-2
B21-057-SB-6
B21-045-SB-3.5
B21-045-SB-4.5
B21-046-SB-2
B21-046-SB-6
B21-011-SB-1
B21-011-SB-5
B21-012-SB-1
OG: 19,200
B21-012-SB-5
B21-016-SB-4
B21-016-SB-5
B21-066-SB-1
B21-066-SB-7.5
B21-015-SB-3
B21-015-SB-5
B23-036-SB-1
B23-036-SB-4
B21-067-SB-1
B21-067-SB-5
B21-068-SB-1
B21-068-SB-5
B2-051-SB-1
B2-051-SB-5
B2-050-SB-1
B2-050-SB-5
B2-026-SB-1
B2-026-SB-5
B2-049-SB-1
B2-049-SB-4
Soil Boring
Soil Boring (NAPL Observation)
Site Boundary
External Construction Worker Area
Parcel Boundary
Sub-Parcel B21-1
Soil OG PAL Exceedances (mg/kg)
September 20, 2021
Figure
S3
ARM Group LLC
Engineers and Scientists
0
75
150
300
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221


Parcel B14
Parcel B16
Parcel B15
Parcel B21
Parcel B23
Parcel B22
Parcel B2
B21-065-SB-3
Arsenic: 7.2
B21-065-SB-5
Arsenic: 9.7
B21-065-SB-10
B21-043-SB-1.5
Arsenic: 3.3
B21-043-SB-5
B21-044-SB-2
Arsenic: 3.9
B21-044-SB-5
B21-002-SB-3.5
Arsenic: 7.1
B21-002-SB-5
Arsenic: 4.4
B21-006-SB-2
B21-006-SB-8
Arsenic: 3.9
B21-001-SB-3
B21-001-SB-5
B21-039-SB-2
Arsenic: 4.2
B21-039-SB-5
B21-005-SB-2
Arsenic: 5.8
B21-005-SB-7
B21-005-SB-10
Arsenic: 11.4
B21-040-SB-6.5
Arsenic: 4.2
B21-040-SB-10
Arsenic: 3.5
B21-036-SB-2
B21-036-SB-5
Arsenic: 6.5
Chromium VI: 14.9 J-
B21-030-SB-2.5
B21-030-SB-5
Arsenic: 5.8
B21-030-SB-10
B21-004-SB-2.5
Arsenic: 8.2
B21-004-SB-5
Arsenic: 16.8
B21-004-SB-10
Arsenic: 7.7
B21-031-SB-1
B21-031-SB-5
Arsenic: 4.5
B21-028-SB-1
Arsenic: 4.2
B21-028-SB-5
Arsenic: 4.8
B21-029-SB-1
Arsenic: 4.7
B21-029-SB-5
Arsenic: 5.2
B21-055-SB-2.5
B21-003-SB-1
Arsenic: 4.4
B21-003-SB-5
Arsenic: 4.1
B21-026-SB-2
B21-026-SB-5
Arsenic: 9.0
B21-025-SB-2
B21-025-SB-7.5
B21-058-SB-2.5
Arsenic: 5.9
B21-057-SB-2
Arsenic: 31.0
Chromium VI: 7.1
B21-057-SB-6
Arsenic: 12.2
B21-009-SB-2
Arsenic: 4.9
B21-009-SB-5
Arsenic: 6.7
Manganese: 31,200
B21-010-SB-2
Arsenic: 4.3
B21-010-SB-5
Arsenic: 22.3
Manganese: 30,300
B21-027-SB-1
B21-027-SB-5
Arsenic: 19.4
Lead: 831
B21-045-SB-3.5
Arsenic: 40.1
B21-045-SB-4.5
Arsenic: 18.6
Manganese: 41,500
B21-011-SB-1
Arsenic: 3.7
B21-011-SB-5
Arsenic: 3.8
B21-012-SB-1
Arsenic: 6.2
B21-012-SB-5
B21-046-SB-2
Arsenic: 3.3
B21-046-SB-6
Arsenic: 6.9
B21-066-SB-1
B21-066-SB-7.5
Arsenic: 5.1
Thallium: 64.1
B21-015-SB-3
Arsenic: 5.0
B21-015-SB-5
Arsenic: 4.5
B21-016-SB-4
Arsenic: 4.7
B21-016-SB-5
B23-036-SB-1
Arsenic: 46.6 J
Manganese: 27,100
Thallium: 12.4
B23-036-SB-4
Arsenic: 7.6 J
B21-067-SB-1
Arsenic: 3.8
B21-067-SB-5
B21-068-SB-1
Arsenic: 5.8
B21-068-SB-5
Arsenic: 10.5
B2-050-SB-1
Arsenic: 5.2
B2-050-SB-5
Arsenic: 3.3
B2-051-SB-1
Manganese: 27,700
B2-051-SB-5
Arsenic: 16.3
Manganese: 37,400
B2-026-SB-1
Arsenic: 3.4
Manganese: 29,600
B2-026-SB-5
Arsenic: 6.1
Manganese: 31,100
B2-026-SB-10
Arsenic: 5.7
B2-049-SB-1
B2-049-SB-4
Arsenic: 5.0
Chromium VI: 8.5 J-
Manganese: 33,900
B2-049-SB-10
Arsenic: 13.8 J
Soil Boring
Site Boundary
External Construction Worker Area
Parcel Boundary
Sub-Parcel B21-1
Soil Inorganic PAL Exceedances (mg/kg)
September 20, 2021
Figure
S4
ARM Group LLC
Engineers and Scientists
0 75 150 300
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221


Parcel B14
Parcel B16
Parcel B15
Parcel B21
Parcel B23
Parcel B22
Parcel B2
FM-003-PZS
FM-003-PZI
SW-079-MWS
SW-079-MWI
FM-016-PZS
FM-016-PZI
FM01-PZM041
FM01-PZM003
B2-051-PZ
SW-057-MWS
Piezometer
Monitoring Well
Site Boundary
External Construction Worker Area
Parcel Boundary
Sub-Parcel B21-1
Groundwater Sample Locations
September 20, 2021
Figure
5
ARM Group LLC
Engineers and Scientists
0 75 150 300
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221

Parcel B14

Parcel B16

Parcel B15

Parcel B21

Parcel B23

Parcel B22

Parcel B2

FM-003-PZI
VOC
Chloroform: 1.8

SVOC
1,4-Dioxane: 17.7

TPHO&
DRO: 102 J

Inorganic
Iron (D): 69,500
Manganese (D): 1,560

FM-003-PZS
VOC
1,1-Dichloroethane: 20.1
1,1-Dichloroethene: 131
1,2-Dichloroethane: 22.8

SVOC
1,4-Dioxane: 89.6

TPHO&
DRO: 197

Inorganic
Cobalt (D): 60.9
Iron (D): 34,600
Manganese (D): 2,200

SW-079-MWS
VOC

SVOC
Benz[a]anthracene: 0.037 J
Naphthalene: 12

TPHO&
DRO: 408

Inorganic
Thallium (D): 4.8 J
Vanadium (T): 217

SW-079-MWI
VOC
Chloroform: 2.4

SVOC

TPHO&
DRO: 74 J

Inorganic
Iron (T): 67,000
Manganese (T): 3,520

FM-016-PZS
VOC
1,1-Dichloroethane: 7.9
Chloroform: 1.8

SVOC
1,4-Dioxane: 15.8

TPHO&
DRO: 59.1 J

Inorganic
Manganese (D): 742

FM-016-PZI
VOC

SVOC
1,4-Dioxane: 0.62

TPHO&
DRO: 70.5 J

Inorganic
Iron (D): 56,800
Manganese (D): 2,630

FM01-PZM041
VOC

SVOC

TPHO&
DRO: 49.6 J

Inorganic
Arsenic (T): 40.6
Iron (T): 46,600

FM01-PZM003
VOC
Chloroform: 27.9

SVOC

TPHO&

Inorganic
Vanadium (T): 224

B2-051-PZ
VOC

SVOC
Benz[a]anthracene: 0.056 J

TPHO&
DRO: 198

Inorganic
Vanadium (D): 110

SW-057-MWS
VOC
Benzene: 14

SVOC
Naphthalene: 0.47
Pentachlorophenol: 1 J

TPHO&
DRO: 1,170 J

Inorganic
Iron (T): 15,600
Manganese (T): 2,190

Piezometer
Monitoring Well
Site Boundary
External Construction Worker Area
Parcel Boundary

(T) = Total
(D) = Dissolved

Sub-Parcel B21-1
Groundwater PAL Exceedances (ug/L)

September 20, 2021

Figure
GW1

ARM Group LLC
Engineers and Scientists

0 75 150 300
Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221

Parcel B14

Parcel B16

Parcel B15

Parcel B23

Parcel B21

Parcel B22

Parcel B2

FINISHING MILL ROAD

SHEET C-304

SHEET C-302

SHEET C-303

PROP. LOGISTICS CENTER
603,980 S.F. ± (INCLUDING 5,120 S.F. OFFICE)
CONVENTIONAL PARKING = 167 SPACES
FUTURE CONVENTIONAL PARKING SPACES = 78 SPACES
TRAILER PARKING STALLS = 94 SPACES
DOCK DOORS = 74
DRIVE-IN RAMPS = 1
PROP. LEASE AREA = 30.677 AC ±
FFE: 19.00

86.06'

0.78'

190.23'

TRADEPOINT AVENUE
PRIVATE ROAD
85' R.O.W.
F.K.A. 7TH STREET
SPEED LIMIT: 25 MPH

Building Foundation
Asphalt Cap
Concrete Cap
Heavy-Duty Concrete Cap
Landscape Cap
Site Boundary
External Construction Worker Area
Parcel Boundary

Source: IGN, an

Sub-Parcel B21-1 Capping Areas Layout

September 21, 2021

Figure 6

ARM Group LLC
Engineers and Scientists

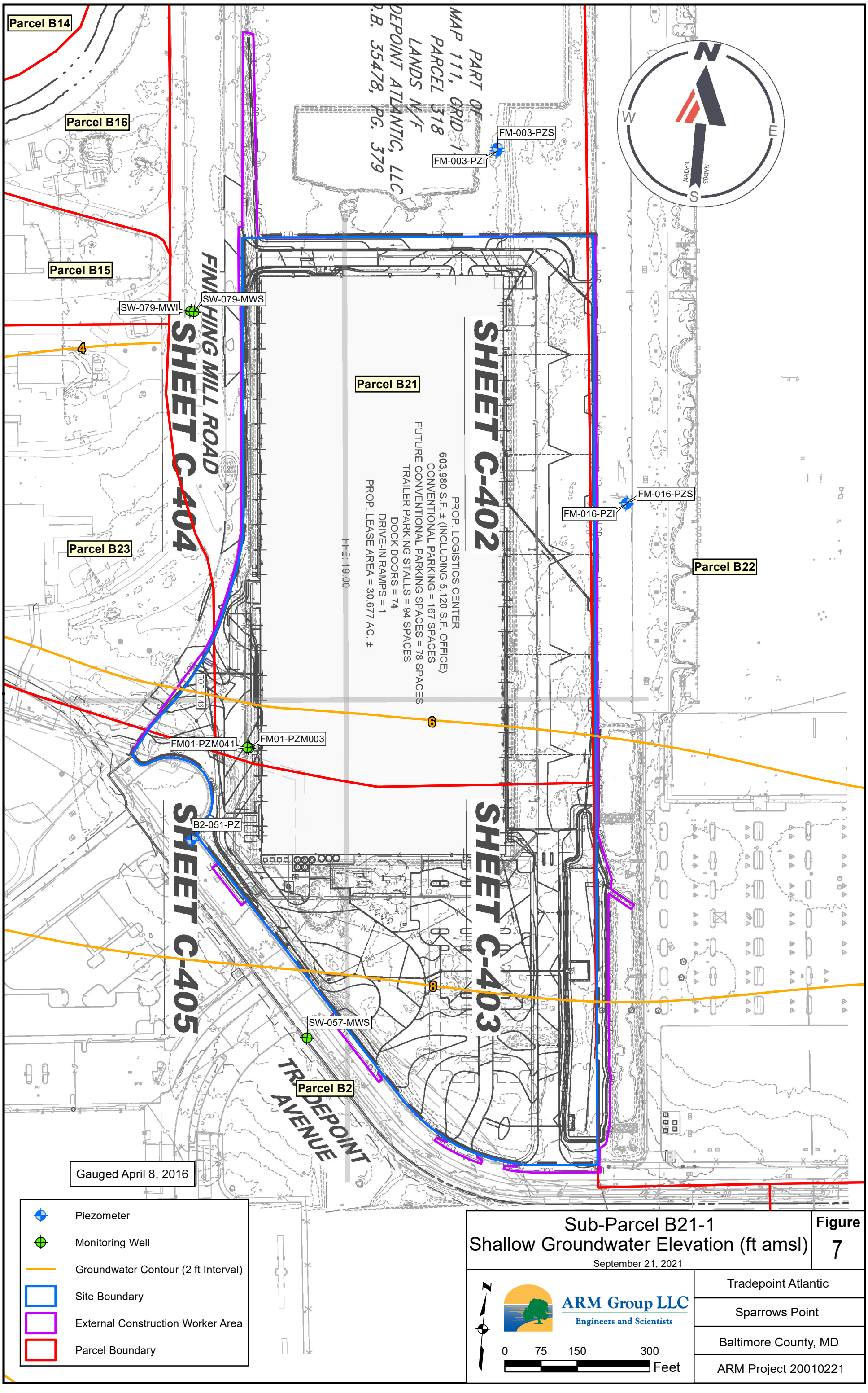
0 75 150 300 Feet

Tradepoint Atlantic

Sparrows Point

Baltimore County, MD

ARM Project 20010221


Parcel B14
Parcel B16
Parcel B15
Parcel B23
Parcel B21
Parcel B22
Parcel B2
FINCHING MILL ROAD
TRADEPOINT AVENUE
SHEET C-404
SHEET C-405
SHEET C-402
SHEET C-403
PART OF MAP 111, GRID 17, PARCEL 318 LANDS N/F DEPOINT ATLANTIC, LLC B. 35478, PG. 379
PROP. LOGISTICS CENTER
603,980 S.F. ± (INCLUDING 5,120 S.F. OFFICE)
CONVENTIONAL PARKING = 167 SPACES
FUTURE CONVENTIONAL PARKING SPACES = 78 SPACES
TRAILER PARKING STALLS = 94 SPACES
DOCK DOORS = 74
DRIVE-IN RAMPS = 1
PROP. LEASE AREA = 30.677 AC. ±
FFE: 19.00
FM-003-PZS
FM-003-PZI
FM-016-PZS
FM-016-PZI
SW-079-MWS
SW-079-MWI
FM01-PZM041
FM01-PZM003
B2-051-PZ
SW-057-MWS
4
6
8
N
S
E
W
NAD83
NAD83
Gauged April 8, 2016
Piezometer
Monitoring Well
Groundwater Contour (2 ft Interval)
Site Boundary
External Construction Worker Area
Parcel Boundary
Sub-Parcel B21-1
Shallow Groundwater Elevation (ft amsl)
September 21, 2021
Figure
7
ARM Group LLC
Engineers and Scientists
0
75
150
300
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010221

TABLES

Table 1 - Sub-Parcel B21-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B2-026-SB-1 5/26/2017	B2-026-SB-5 5/26/2017	B2-049-SB-1 6/22/2017	B2-049-SB-4 6/22/2017	B2-050-SB-1 6/22/2017	B2-050-SB-5 6/22/2017	B2-051-SB-1 6/22/2017	B2-051-SB-5 6/22/2017	B21-001-SB-3* 9/4/2018	B21-001-SB-5* 9/4/2018	B21-002-SB-3.5 9/5/2018	B21-002-SB-5 9/5/2018	B21-003-SB-1 7/17/2018	B21-003-SB-5 7/17/2018	B21-004-SB-2.5 7/17/2018
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16.0	N/A	0.0053 U	0.0051 U	0.0044 U	N/A	N/A	N/A	N/A	N/A	**0.0055 J**	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	**0.0034 J**	0.0051 U	0.0044 U	N/A	N/A	N/A	N/A	N/A	0.0059 U	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	**0.011**	0.0051 U	0.0044 U	N/A	N/A	N/A	N/A	N/A	**0.0036 J**	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11.0	N/A	0.0053 U	0.0051 U	0.0044 U	N/A	N/A	N/A	N/A	N/A	**0.0016 J**	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	0.011 U	0.01 U	0.0088 U	N/A	N/A	N/A	N/A	N/A	**0.008 J**	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	N/A	**0.022 J**	**0.022**	**0.0074 J**	N/A	N/A	N/A	N/A	N/A	**0.052**	N/A	N/A	N/A	N/A	N/A
Carbon disulfide	mg/kg	3,500	N/A	**0.0033 J**	0.0051 UJ	0.0044 UJ	N/A	N/A	N/A	N/A	N/A	**0.028**	N/A	N/A	N/A	N/A	N/A
Methyl Acetate	mg/kg	1,200,000	N/A	0.053 UJ	0.051 UJ	0.044 UJ	N/A	N/A	N/A	N/A	N/A	0.059 U	N/A	N/A	N/A	N/A	N/A
Methyl tert-butyl ether (MTBE)	mg/kg	210	N/A	0.0053 U	0.0051 U	0.0044 U	N/A	N/A	N/A	N/A	N/A	0.0059 U	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	**0.021 J**	0.07 U	0.069 U	0.73 U	**0.022 J**	0.75 U	0.68 U	1.5 U	**0.025 J**
1,2,4,5-Tetrachlorobenzene	mg/kg	350	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
2,4-Dimethylphenol	mg/kg	16,000	0.075 R	0.077 R	0.071 R	0.071 R	0.072 U	0.073 U	0.071 R	0.07 R	0.069 U	0.73 U	0.072 R	0.75 U	0.68 U	1.5 U	0.074 U
2,4-Dinitrophenol	mg/kg	1,600	0.19 R	0.19 R	0.18 R	0.18 R	0.18 UJ	0.18 R	0.18 R	0.18 R	0.17 U	1.8 U	0.18 R	1.9 UJ	1.7 UJ	3.7 UJ	0.19 UJ
2,4-Dinitrotoluene	mg/kg	7.40	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
2-Chloronaphthalene	mg/kg	60,000	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	**0.12**
2-Methylnaphthalene	mg/kg	3,000	**0.0043 J**	**0.015**	**0.01**	**0.012**	**0.14**	**0.047**	**0.12**	**0.11**	**0.025**	**0.0092**	**0.026**	**0.066**	**0.29**	**0.3**	**0.28**
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	0.15 U	0.14 R	0.14 R	0.14 U	1.5 U	0.14 R	1.5 U	1.4 U	2.9 U	0.15 U
3,3'-Dichlorobenzidine	mg/kg	5.10	0.075 U	0.077 U	0.071 U	0.071 U	0.072 UJ	0.073 UJ	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
Acenaphthene	mg/kg	45,000	**0.0014 J**	**0.0011 J**	0.0072 U	0.0072 U	**0.024 J**	**0.002 J**	0.071 U	**0.0083 J**	**0.0023 J**	**0.002 J**	**0.0033 J**	**0.017 J**	**0.3**	**2.4**	**0.019 J**
Acenaphthylene	mg/kg	45,000	**0.00092 J**	**0.02**	0.0072 U	0.0072 U	**0.86**	**0.026**	0.071 U	**0.073**	**0.0017 J**	**0.0016 J**	**0.002 J**	**0.0095**	**0.35 J**	**0.45 J**	**0.063 J**
Acetophenone	mg/kg	120,000	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	**0.029 J**
Anthracene	mg/kg	230,000	**0.0074 J**	**0.014**	**0.0009 J**	0.0072 U	**0.4**	**0.035**	0.071 U	**0.1**	**0.013**	**0.0074**	**0.009**	**0.035**	**0.58**	**6.3**	**0.064 J**
Benz[a]anthracene	mg/kg	21.0	**0.03**	**0.071**	**0.0039 J**	**0.0016 J**	**3.9**	**0.2**	**0.04 J**	**0.49**	**0.034**	**0.03**	**0.032**	**0.17**	**1.9**	32.7	**0.14**
Benzaldehyde	mg/kg	120,000	0.075 U	0.077 U	0.071 R	0.071 R	0.072 R	0.073 R	0.071 R	0.07 R	0.069 U	0.73 U	0.072 R	0.75 UJ	0.68 R	1.5 R	**0.047 J**
Benzo[a]pyrene	mg/kg	2.10	**0.018**	**0.062**	**0.0022 J**	**0.0013 J**	4.4 J	**0.15**	**0.016 J**	**0.37**	**0.033**	**0.025**	**0.019**	**0.13**	**1.7**	32.8	**0.094**
Benzo[b]fluoranthene	mg/kg	21.0	**0.054**	**0.12**	**0.012**	**0.0038 J**	**11.3 J**	**0.35 J**	**0.063 J**	**0.92**	**0.065**	**0.041**	**0.076**	**0.27**	**3.7**	40.7	**0.23**
Benzo[g,h,i]perylene	mg/kg		**0.0092**	**0.025**	**0.0081**	**0.0015 J**	**1.9 J**	**0.06**	**0.047 J**	**0.11**	**0.031**	**0.02**	**0.029**	**0.13**	**0.53**	**7.6**	**0.056 J**
Benzo[k]fluoranthene	mg/kg	210	**0.048**	**0.049**	**0.008**	**0.0015 J**	**7.7 J**	**0.24 J**	**0.043 J**	**0.63**	**0.025**	**0.017**	**0.021**	**0.068**	**3.3**	**16.9**	**0.2**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.015 B	0.077 U	0.071 U	0.071 U	0.072 UJ	0.073 UJ	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	**0.018 J**
Caprolactam	mg/kg	400,000	0.19 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.17 U	1.8 U	0.18 U	1.9 U	1.7 U	3.7 U	**0.16 J**
Carbazole	mg/kg		0.075 U	0.077 U	0.071 U	0.071 U	**0.032 J**	0.073 U	0.071 U	**0.032 J**	0.069 U	0.73 U	**0.021 J**	**0.18 J**	**0.18 J**	**1.2 J**	0.074 U
Chrysene	mg/kg	2,100	**0.036**	**0.083**	**0.011**	**0.004 J**	**2.8**	**0.14**	**0.12**	**0.32**	**0.051**	**0.032**	**0.076**	**0.19**	**1.8**	**28.3**	**0.29**
Dibenz[a,h]anthracene	mg/kg	2.10	**0.0025 J**	**0.011**	0.0072 U	0.0072 U	**0.69 J**	**0.027**	0.071 U	**0.035 J**	**0.0087**	**0.0057 J**	**0.0082**	**0.038**	**0.23**	3.1	**0.036 J**
Di-n-butylphthalate	mg/kg	82,000	0.043 B	0.026 B	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
Di-n-ocytlphthalate	mg/kg	8,200	0.075 U	0.077 U	0.071 U	0.071 U	0.072 UJ	0.073 UJ	0.071 UJ	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
Fluoranthene	mg/kg	30,000	**0.073**	**0.1**	**0.01**	**0.0098**	**3.7**	**0.31**	**0.12**	**0.74**	**0.13**	**0.099**	**0.29 J**	**0.4**	**3.5**	**67**	**0.24**
Fluorene	mg/kg	30,000	**0.001 J**	**0.0024 J**	0.0072 U	0.0072 U	**0.043 J**	**0.0033 J**	0.071 U	**0.0063 J**	0.0069 U	**0.00074 J**	**0.00075 J**	**0.012**	**0.2**	**1.7**	**0.023 J**
Hexachlorobenzene	mg/kg	0.96	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
Hexachloroethane	mg/kg	8.00	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	**0.018 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21.0	**0.0089**	**0.029**	**0.0028 J**	0.0072 U	**1.8 J**	**0.066**	0.071 U	**0.12**	**0.025**	**0.017**	**0.023**	**0.11**	**0.58**	**8.3**	**0.033 J**
Naphthalene	mg/kg	8.60	0.0046 B	**0.019**	0.0072 UJ	**0.0037 J**	**0.07 J**	**0.037 J**	0.071 UJ	0.071 UJ	**0.008**	**0.0032 J**	**0.015 J**	**0.079 J**	**0.32**	**0.28**	**0.2**
N-Nitrosodiphenylamine	mg/kg	470	0.075 U	0.077 U	0.071 U	0.071 U	0.072 U	0.073 U	0.071 U	0.07 U	0.069 U	0.73 U	0.072 U	0.75 U	0.68 U	1.5 U	0.074 U
Pentachlorophenol	mg/kg	4.00	0.19 R	0.19 R	0.18 R	0.18 R	0.18 U	0.18 R	0.18 R	0.18 R	0.17 U	1.8 U	0.18 R	1.9 UJ	1.7 U	3.7 U	0.19 U
Phenanthrene	mg/kg		**0.039**	**0.038**	**0.0062 J**	**0.01**	**0.48**	**0.23**	**0.33**	**0.29**	**0.21**	**0.21**	**0.33 J**	**0.34**	**2.5**	**38.3**	**0.77**
Pyrene	mg/kg	23,000	**0.051**	**0.1**	**0.0093**	**0.0076**	**3.9**	**0.24**	**0.16**	**0.61**	**0.066**	**0.059**	**0.15**	**0.33**	**3**	**55.9**	**0.23**
PCBs																	
Aroclor 1242	mg/kg	0.97	0.019 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	0.017 U	0.018 U	0.018 U	0.019 U	0.017 U	N/A	0.019 U
Aroclor 1248	mg/kg	0.94	0.019 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	**0.043**	**0.024**	**0.023 J**	0.019 U	0.017 U	N/A	0.019 U
Aroclor 1254	mg/kg	0.97	0.019 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	0.017 U	0.018 U	0.018 U	0.019 U	0.017 U	N/A	0.019 U
Aroclor 1260	mg/kg	0.99	0.019 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	**0.092**	**0.064**	**0.035 J**	0.019 UJ	0.017 U	N/A	0.019 U
Aroclor 1262	mg/kg		0.019 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	0.017 U	0.018 U	0.018 U	0.019 U	**0.25 J**	N/A	0.019 U
Aroclor 1268	mg/kg		0.019 U	N/A	0.018 U	N/A	0.018 U	N/A	0.018 U	N/A	0.017 U	0.018 U	**0.013 J**	0.019 UJ	0.017 U	N/A	0.019 U
PCBs (total)	mg/kg	0.97	0.13 U	N/A	0.13 U	N/A	0.13 U	N/A	0.13 U	N/A	**0.13 J**	**0.088 J**	**0.07 J**	0.17 U	**0.25**	N/A	0.17 U
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**19.8 J**	**418 J**	**30.4**	**17.4**	**342**	**62.3 J**	**235**	**29.3**	**70.9**	**66.8**	**73 J**	**107 J**	**159 J**	**515 J**	**51.6 J**
Gasoline Range Organics	mg/kg	6,200	2.2 B	3.3 B	**3.1 J**	**3 J**	**5.2 J**	**5 J**	**3 J**	**2.8 J**	10.7 U	10 U	8.7 U	11.6 U	12.4 U	**19.5**	10.5 U
Oil & Grease	mg/kg	6,200	**283 J-**	**491 J-**	**182**	**64.9 J**	**5,040**	**139**	**1,430**	**267**	**246**	**331**	**449 J-**	**1,390 J-**	**1,310**	**1,340**	**280**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
*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.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence

Table 1 - Sub-Parcel B21-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B21-004-SB-5 7/17/2018	B21-005-SB-2* 7/20/2018	B21-005-SB-7* 7/20/2018	B21-006-SB-2* 7/20/2018	B21-006-SB-8* 7/20/2018	B21-009-SB-2 7/17/2018	B21-009-SB-5 7/17/2018	B21-010-SB-2* 7/18/2018	B21-010-SB-5* 7/18/2018	B21-011-SB-1 7/17/2018	B21-011-SB-5 7/17/2018	B21-012-SB-1 7/17/2018	B21-012-SB-5 7/17/2018	B21-015-SB-3* 9/4/2018	B21-015-SB-5* 9/4/2018
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16.0	N/A	N/A	0.0046 U	0.0054 U	0.0045 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0095 U
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	0.0046 U	0.0054 U	0.0045 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0095 U
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	0.0046 U	0.0054 U	0.0045 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0095 U
1,4-Dichlorobenzene	mg/kg	11.0	N/A	N/A	0.0046 U	0.0054 U	0.0045 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0095 U
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	0.0092 U	0.011 U	0.0091 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.019 U
Acetone	mg/kg	670,000	N/A	N/A	**0.094**	**0.17**	**0.19**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.019 U
Carbon disulfide	mg/kg	3,500	N/A	N/A	0.0046 U	**0.0038 J**	0.0045 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0095 U
Methyl Acetate	mg/kg	1,200,000	N/A	N/A	**0.0058 J**	0.054 U	**0.0082 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.095 U
Methyl tert-butyl ether (MTBE)	mg/kg	210	N/A	N/A	0.0046 U	0.0054 U	0.0045 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0095 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	**0.076 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
1,2,4,5-Tetrachlorobenzene	mg/kg	350	**0.044 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
2,4-Dimethylphenol	mg/kg	16,000	**0.023 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
2,4-Dinitrophenol	mg/kg	1,600	0.19 R	2 U	0.21 U	0.18 U	0.22 U	0.19 UJ	0.21 UJ	1.9 U	2.3 U	1.8 UJ	0.26 UJ	0.19 UJ	0.22 UJ	0.17 U	0.21 U
2,4-Dinitrotoluene	mg/kg	7.40	**0.039 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
2-Chloronaphthalene	mg/kg	60,000	**0.11**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
2-Methylnaphthalene	mg/kg	3,000	**0.69**	**0.2**	0.0082 U	**0.039**	0.0087 U	**0.012**	**0.0023 J**	**0.019**	**0.37**	**0.033 J**	0.01 U	0.0077 U	0.0087 U	**0.34**	**0.023**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	**0.031 J**	1.6 U	0.17 U	0.15 U	0.17 U	0.15 U	0.17 U	1.5 U	1.9 U	1.4 U	0.2 U	0.15 U	0.17 U	0.13 U	0.17 U
3,3'-Dichlorobenzidine	mg/kg	5.10	0.077 R	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Acenaphthene	mg/kg	45,000	**0.039 J**	**2.8**	0.0082 U	**0.23**	0.0087 U	**0.33**	**0.0012 J**	**0.016**	**0.12**	**0.17**	0.01 U	0.0077 U	0.0087 U	**0.26**	**0.0016 J**
Acenaphthylene	mg/kg	45,000	**0.11 J**	**0.076**	0.0082 U	**0.071**	0.0087 U	**0.055 J**	0.0085 U	**0.017**	**0.23**	**0.19 J**	0.01 U	0.0077 U	0.0087 U	**0.052**	**0.0069 J**
Acetophenone	mg/kg	120,000	**0.075 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Anthracene	mg/kg	230,000	**0.096**	**9.5**	0.0082 U	**0.56**	**0.00096 J**	**0.59**	**0.0011 J**	**0.084**	**0.59**	**0.89**	**0.0017 J**	0.0077 U	0.0087 U	**0.73**	**0.01**
Benz[a]anthracene	mg/kg	21.0	**0.3**	**36.5**	**0.0033 J**	**2.6**	0.0087 U	**1.1**	**0.003 J**	**0.33**	**3.8**	**3.3**	**0.0078 J**	0.0077 U	0.0087 U	**1.2**	**0.049**
Benzaldehyde	mg/kg	120,000	**0.12 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 R	0.086 R	0.75 U	0.94 U	0.7 R	0.1 R	0.077 R	0.088 R	0.068 U	0.084 U
Benzo[a]pyrene	mg/kg	2.10	**0.27**	**30.3**	**0.0014 J**	**2**	**0.0012 J**	**0.45**	**0.0012 J**	**0.31**	**4.1**	**4**	**0.0078 J**	0.0077 U	0.0087 U	**1.1**	**0.045**
Benzo[b]fluoranthene	mg/kg	21.0	**0.62**	**39.6**	**0.0036 J**	**4.7**	**0.0015 J**	**0.89**	**0.0024 J**	**0.67**	**6.9**	**8.1**	**0.017**	0.0077 U	0.0087 U	**1.4**	**0.073**
Benzo[g,h,i]perylene	mg/kg		**0.12**	**5.6**	0.0082 U	**1.2**	**0.0016 J**	**0.18**	0.0085 U	**0.097**	**1.1**	**1.3**	**0.0031 J**	0.0077 U	0.0087 U	**0.5**	**0.02**
Benzo[k]fluoranthene	mg/kg	210	**0.55**	**10.2**	**0.0032 J**	**1.4**	0.0087 U	**0.37**	0.0085 U	**0.59**	**2**	**7.1**	**0.015**	0.0077 U	0.0087 U	**0.53**	**0.024**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.077 U	0.81 U	**0.027 J**	**0.026 J**	0.086 U	**0.067 J**	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	**0.019 J**	0.068 U	0.084 U
Caprolactam	mg/kg	400,000	**0.68 J**	2 U	0.21 U	0.18 U	0.22 U	0.19 U	0.21 U	1.9 U	2.3 U	1.8 U	0.26 U	0.19 U	0.22 U	0.17 U	0.21 U
Carbazole	mg/kg		**0.055 J**	**1.9**	0.083 U	**0.27**	0.086 U	**0.16**	0.086 U	0.75 U	**0.26 J**	0.7 U	0.1 U	0.077 U	0.088 U	**0.084**	0.084 U
Chrysene	mg/kg	2,100	**0.66**	**30.1**	**0.0026 J**	**2.7**	**0.0011 J**	**0.91**	**0.0032 J**	**0.33**	**4.3**	**3.1**	**0.0075 J**	0.0077 U	0.0087 U	**1.1**	**0.056**
Dibenz[a,h]anthracene	mg/kg	2.10	**0.07 J**	**2.9**	0.0082 U	**0.6**	0.0087 U	**0.088**	0.0085 U	**0.043**	**0.54**	**0.5**	0.01 U	0.0077 U	0.0087 U	**0.16**	**0.0071 J**
Di-n-butylphthalate	mg/kg	82,000	0.077 U	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Di-n-ocytlphthalate	mg/kg	8,200	0.077 UJ	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Fluoranthene	mg/kg	30,000	**0.48**	**71**	**0.0058 J**	**4.4**	**0.0024 J**	**7.8**	**0.0056 J**	**0.62**	**6.1**	**5.7**	**0.013**	**0.00066 J**	**0.00087 J**	**3.9**	**0.14**
Fluorene	mg/kg	30,000	**0.05 J**	**3**	0.0082 U	**0.18**	0.0087 U	**0.47**	**0.0011 J**	**0.02**	**0.09**	**0.13**	0.01 U	0.0077 U	0.0087 U	**0.29**	**0.0015 J**
Hexachlorobenzene	mg/kg	0.96	0.077 U	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Hexachloroethane	mg/kg	8.00	**0.028 J**	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21.0	**0.11**	**6.4**	0.0082 U	**1.3**	0.0087 U	**0.21**	0.0085 U	**0.11**	**1.1**	**1.4**	**0.0032 J**	0.0077 U	0.0087 U	**0.41**	**0.018**
Naphthalene	mg/kg	8.60	**0.51**	**0.19**	0.0082 U	**0.036**	**0.0077 J**	**0.0095**	**0.0049 J**	**0.023**	**0.53**	**0.041 J**	**0.0021 J**	0.0077 U	0.0087 U	**0.26**	**0.033**
N-Nitrosodiphenylamine	mg/kg	470	0.077 U	0.81 U	0.083 U	0.073 U	0.086 U	0.076 U	0.086 U	0.75 U	0.94 U	0.7 U	0.1 U	0.077 U	0.088 U	0.068 U	0.084 U
Pentachlorophenol	mg/kg	4.00	0.19 U	2 U	0.21 U	0.18 U	0.22 U	0.19 U	0.21 U	1.9 U	2.3 U	1.8 U	0.26 U	0.19 U	0.22 U	0.17 U	0.21 U
Phenanthrene	mg/kg		**1.2**	**60.2**	**0.0034 J**	**2.9**	**0.0027 J**	**8.2**	**0.0089**	**0.36**	**5.1**	**2.9**	**0.0073 J**	**0.00077 J**	**0.00089 J**	**4.9**	**0.093**
Pyrene	mg/kg	23,000	**0.44**	**58.8**	**0.0037 J**	**3.6**	**0.0021 J**	**5.6**	**0.0039 J**	**0.5**	**6.3**	**5.3**	**0.011**	0.0077 U	0.0087 U	**3.9**	**0.082**
PCBs																	
Aroclor 1242	mg/kg	0.97	N/A	0.02 U	N/A	0.018 U	N/A	0.019 U	N/A	0.019 U	N/A	0.017 U	N/A	0.19 U	N/A	0.017 U	N/A
Aroclor 1248	mg/kg	0.94	N/A	0.02 U	N/A	0.018 U	N/A	0.019 U	N/A	**0.18**	N/A	0.017 U	N/A	0.19 U	N/A	0.017 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	0.02 U	N/A	0.018 U	N/A	0.019 U	N/A	0.019 U	N/A	0.017 U	N/A	**0.76 J**	N/A	0.017 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	0.02 U	N/A	0.018 U	N/A	0.019 U	N/A	**0.13**	N/A	0.017 U	N/A	0.19 U	N/A	0.017 U	N/A
Aroclor 1262	mg/kg		N/A	0.02 U	N/A	0.018 U	N/A	0.019 U	N/A	0.019 U	N/A	0.017 U	N/A	0.19 U	N/A	0.017 U	N/A
Aroclor 1268	mg/kg		N/A	0.02 U	N/A	0.018 U	N/A	0.019 U	N/A	0.019 U	N/A	0.017 U	N/A	0.19 U	N/A	0.017 U	N/A
PCBs (total)	mg/kg	0.97	N/A	0.18 U	N/A	0.17 U	N/A	0.17 U	N/A	**0.31**	N/A	0.16 U	N/A	**0.76 J**	N/A	0.15 U	N/A
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**86.1 J**	**245**	**11.3**	**23.3**	**5.3 J**	**187 J**	**15.8 J**	**52.6**	**98.9**	**105 J**	**10.2 J**	**414 J**	8.3 B	**275**	**28.6**
Gasoline Range Organics	mg/kg	6,200	16.2 U	10.5 U	8.8 U	13.3 U	9.7 U	13.9 U	17.7 U	20.9 U	17.1 U	12.1 U	26.2 U	9.8 U	24.2 U	10.6 U	19.6 U
Oil & Grease	mg/kg	6,200	**273**	**441**	**194**	**265**	**315**	**233**	**267**	**567**	**1,130**	**1,770**	**264**	**19,200**	**215**	**531**	**301**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
*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.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence

Table 1 - Sub-Parcel B21-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B21-016-SB-4* 9/4/2018	B21-016-SB-5* 9/4/2018	B21-025-SB-2* 7/18/2018	B21-025-SB-7.5* 7/18/2018	B21-026-SB-2* 7/18/2018	B21-026-SB-5* 7/18/2018	B21-027-SB-1* 7/18/2018	B21-027-SB-5* 7/18/2018	B21-028-SB-1 7/19/2018	B21-028-SB-5 7/19/2018	B21-029-SB-1* 7/18/2018	B21-029-SB-5* 7/18/2018	B21-030-SB-2.5* 9/4/2018	B21-030-SB-5* 9/4/2018	B21-031-SB-1 7/19/2018
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16.0	N/A	N/A	N/A	0.0047 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	N/A	0.0047 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	N/A	0.0047 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11.0	N/A	N/A	N/A	0.0047 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	0.0095 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	N/A	N/A	N/A	0.64 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	0.0047 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Acetate	mg/kg	1,200,000	N/A	N/A	N/A	**0.088**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methyl tert-butyl ether (MTBE)	mg/kg	210	N/A	N/A	N/A	**0.00087 J**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
1,2,4,5-Tetrachlorobenzene	mg/kg	350	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
2,4-Dimethylphenol	mg/kg	16,000	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
2,4-Dinitrophenol	mg/kg	1,600	0.18 U	0.18 U	1.7 U	2.1 U	1.8 U	2 U	1.7 U	2.1 U	1.8 UJ	2 UJ	1.8 U	1.9 U	1.9 U	0.21 U	1.8 UJ
2,4-Dinitrotoluene	mg/kg	7.40	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
2-Chloronaphthalene	mg/kg	60,000	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
2-Methylnaphthalene	mg/kg	3,000	0.073 U	0.071 U	**0.0046 J**	**0.014**	**0.019**	**0.14**	**0.035**	**0.55**	**0.29**	**0.085 J**	**0.047**	**0.091**	**0.0029 J**	0.0083 U	**0.053**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 U	0.14 U	1.4 U	1.7 U	1.4 U	1.6 U	1.4 U	1.7 U	1.5 U	1.6 U	1.4 U	1.5 U	1.5 U	0.17 U	1.4 U
3,3'-Dichlorobenzidine	mg/kg	5.10	**0.026 J**	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Acenaphthene	mg/kg	45,000	0.073 U	0.071 U	**0.0075**	**0.0079 J**	**0.0041 J**	**0.037**	**0.02**	**0.048**	**0.68**	**0.12**	**0.11**	**0.0087**	0.0078 U	0.0083 U	**0.1**
Acenaphthylene	mg/kg	45,000	0.073 U	0.071 U	**0.0013 J**	**0.015**	**0.0024 J**	**0.035**	**0.051**	**2**	**0.041 J**	**0.057 J**	**0.032**	**0.017**	**0.0015 J**	0.0083 U	**0.025**
Acetophenone	mg/kg	120,000	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	**0.18 J**	0.77 U	0.76 U	0.084 U	0.71 U
Anthracene	mg/kg	230,000	0.073 U	0.071 U	**0.03**	**0.054**	**0.0074**	**0.42**	**0.12**	**4.9**	**0.84**	**0.12 J**	**0.31**	**0.035**	**0.0089**	0.0083 U	**0.22**
Benz[a]anthracene	mg/kg	21.0	0.073 U	0.071 U	**0.11**	**0.39**	**0.061**	**2.8**	**0.82**	**8.4**	**2.1**	**0.25 J**	**2.1**	**0.11**	**0.39**	0.0083 U	**1.8**
Benzaldehyde	mg/kg	120,000	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 UJ	0.78 UJ	0.72 U	0.77 U	0.76 U	0.084 U	0.71 UJ
Benzo[a]pyrene	mg/kg	2.10	**0.017 J**	0.071 U	**0.091**	**0.35**	**0.058**	**2.5**	**0.89**	**5.3**	**2**	**0.24 J**	**2.4**	**0.096**	**0.35**	0.0083 U	**2**
Benzo[b]fluoranthene	mg/kg	21.0	**0.035 J**	**0.026 J**	**0.14**	**0.51**	**0.086**	**3.9**	**1.3**	**9.5**	**3.2**	**0.37 J**	**4.9**	**0.27**	**0.59**	0.0083 U	**2.9**
Benzo[g,h,i]perylene	mg/kg		0.073 U	0.071 U	**0.053**	**0.21**	**0.031**	**0.82**	**0.29**	**2**	**0.85**	**0.085 J**	**0.76**	**0.033**	**0.15**	0.0083 U	**0.75**
Benzo[k]fluoranthene	mg/kg	210	**0.03 J**	0.071 U	**0.051**	**0.19**	**0.035**	**1.2**	**0.44**	**4.7**	**1.1**	**0.14 J**	**4.4**	**0.24**	**0.2**	0.0083 U	**0.89**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.27 B	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Caprolactam	mg/kg	400,000	0.18 U	0.18 U	1.7 U	2.1 U	1.8 U	2 U	1.7 U	2.1 U	1.8 U	2 U	1.8 U	1.9 U	1.9 U	0.21 U	1.8 U
Carbazole	mg/kg		0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	**0.29 J**	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Chrysene	mg/kg	2,100	**0.067 J**	0.071 U	**0.1**	**0.36**	**0.069**	**2.5**	**0.73**	**7.3**	**1.9**	**0.24 J**	**2**	**0.11**	**0.39**	0.0083 U	**1.8**
Dibenz[a,h]anthracene	mg/kg	2.10	0.073 U	0.071 U	**0.017**	**0.083**	**0.014**	**0.41**	**0.13**	**0.89**	**0.27**	**0.033 J**	**0.25**	**0.011**	**0.069**	0.0083 U	**0.26**
Di-n-butylphthalate	mg/kg	82,000	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Di-n-ocytlphthalate	mg/kg	8,200	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 UJ	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 UJ
Fluoranthene	mg/kg	30,000	**0.02 J**	**0.0061 J**	**0.26**	**0.57**	**0.086**	**4.5**	**1.1**	**30.1**	**3.6**	**0.46 J**	**2.5**	**0.17**	**0.29**	0.0083 U	**2.1**
Fluorene	mg/kg	30,000	0.073 U	0.071 U	**0.0077**	**0.0066 J**	**0.0034 J**	**0.016**	**0.024**	**0.13**	**0.72**	**0.081**	**0.087**	**0.011**	0.0078 U	0.0083 U	**0.07**
Hexachlorobenzene	mg/kg	0.96	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Hexachloroethane	mg/kg	8.00	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21.0	0.073 U	0.071 U	**0.049**	**0.19**	**0.028**	**0.9**	**0.31**	**2.3**	**0.76**	**0.089 J**	**0.69**	**0.032**	**0.15**	0.0083 U	**0.69**
Naphthalene	mg/kg	8.60	0.073 U	0.071 U	**0.0057 J**	**0.014**	**0.012**	**0.14**	**0.029**	**0.47**	**0.32**	**0.1 J**	**0.094**	**0.11**	**0.0024 J**	0.0083 U	**0.14**
N-Nitrosodiphenylamine	mg/kg	470	0.072 U	0.071 U	0.69 U	0.85 U	0.7 U	0.8 U	0.69 U	0.83 U	0.73 U	0.78 U	0.72 U	0.77 U	0.76 U	0.084 U	0.71 U
Pentachlorophenol	mg/kg	4.00	0.18 U	0.18 U	1.7 U	2.1 U	1.8 U	2 U	1.7 U	2.1 U	1.8 UJ	2 UJ	1.8 U	1.9 U	1.9 U	0.21 U	1.8 UJ
Phenanthrene	mg/kg		**0.053 J**	**0.008 J**	**0.2**	**0.24**	**0.066**	**3.8**	**0.52**	**32.8**	**3**	**0.32 J**	**0.91**	**0.09**	**0.027**	0.0083 U	**0.77**
Pyrene	mg/kg	23,000	**0.016 J**	0.071 U	**0.2**	**0.5**	**0.075**	**3.5**	**0.94**	**13.7**	**3.5**	**0.38 J**	**3.2**	**0.17**	**0.28**	0.0083 U	**2.6**
PCBs																	
Aroclor 1242	mg/kg	0.97	0.018 U	N/A	0.018 U	N/A	0.017 U	N/A	0.017 U	N/A	**0.65**	N/A	0.018 U	N/A	0.019 U	N/A	**0.94**
Aroclor 1248	mg/kg	0.94	0.018 U	N/A	0.018 U	N/A	0.017 U	N/A	0.017 U	N/A	0.091 U	N/A	**0.35**	N/A	0.019 U	N/A	0.09 U
Aroclor 1254	mg/kg	0.97	0.018 U	N/A	0.018 U	N/A	0.017 U	N/A	0.017 U	N/A	0.091 U	N/A	0.018 U	N/A	0.019 U	N/A	0.09 U
Aroclor 1260	mg/kg	0.99	0.018 U	N/A	0.018 U	N/A	0.017 U	N/A	0.017 U	N/A	**0.13 J**	N/A	**0.14**	N/A	0.019 U	N/A	**0.11 J**
Aroclor 1262	mg/kg		0.018 U	N/A	0.018 U	N/A	0.017 U	N/A	0.017 U	N/A	0.091 U	N/A	0.018 U	N/A	0.019 U	N/A	0.09 U
Aroclor 1268	mg/kg		0.018 U	N/A	0.018 U	N/A	0.017 U	N/A	0.017 U	N/A	0.091 U	N/A	0.018 U	N/A	0.019 U	N/A	0.09 U
PCBs (total)	mg/kg	0.97	0.17 U	N/A	0.16 U	N/A	0.16 U	N/A	0.16 U	N/A	**0.77 J**	N/A	**0.49**	N/A	0.17 U	N/A	**1.1**
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**680**	**1,040**	**23.5**	**45.6**	**27.9**	**128**	**47.2**	**34.5**	**142 J**	**79.1 J**	**143**	**60.8**	**42.5**	**7.4 J**	**132 J**
Gasoline Range Organics	mg/kg	6,200	16.3 U	14.8 U	9.8 U	14.3 U	19.9 U	13.3 U	10.1 U	11.9 U	10.8 U	10.9 U	11.1 U	10.7 U	11.4 U	11.4 U	11.5 U
Oil & Grease	mg/kg	6,200	**2,200**	**4,980**	**219**	**384**	**241**	**573**	**308**	**227**	**1,910**	**685**	**1,930**	**1,260**	**818**	**527**	**1,380**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
*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.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence

Table 1 - Sub-Parcel B21-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B21-031-SB-5 7/19/2018	B21-036-SB-2 7/19/2018	B21-036-SB-5 7/19/2018	B21-039-SB-2 7/19/2018	B21-039-SB-5 7/19/2018	B21-040-SB-6.5* 9/4/2018	B21-043-SB-1.5* 7/20/2018	B21-043-SB-5* 7/20/2018	B21-044-SB-2 7/19/2018	B21-044-SB-5 7/19/2018	B21-045-SB-3.5* 9/4/2018	B21-045-SB-4.5* 9/4/2018	B21-046-SB-2* 7/18/2018	B21-046-SB-6* 7/18/2018	B21-055-SB-2.5* 9/4/2018
Volatile Organic Compounds																	
1,1-Dichloroethane	mg/kg	16.0	N/A	N/A	N/A	N/A	N/A	N/A	0.0045 U	N/A	N/A	N/A	N/A	0.0058 U	N/A	0.0055 U	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	N/A	N/A	N/A	N/A	0.0045 U	N/A	N/A	N/A	N/A	0.0058 U	N/A	0.0055 U	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	N/A	N/A	N/A	N/A	0.0045 U	N/A	N/A	N/A	N/A	0.0058 U	N/A	0.0055 U	N/A
1,4-Dichlorobenzene	mg/kg	11.0	N/A	N/A	N/A	N/A	N/A	N/A	0.0045 U	N/A	N/A	N/A	N/A	0.0058 U	N/A	0.0055 U	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	N/A	N/A	N/A	N/A	0.009 U	N/A	N/A	N/A	N/A	0.012 U	N/A	0.011 U	N/A
Acetone	mg/kg	670,000	N/A	N/A	N/A	N/A	N/A	N/A	**0.23**	N/A	N/A	N/A	N/A	0.012 U	N/A	**0.12**	N/A
Carbon disulfide	mg/kg	3,500	N/A	N/A	N/A	N/A	N/A	N/A	0.0045 U	N/A	N/A	N/A	N/A	0.0058 U	N/A	0.0055 U	N/A
Methyl Acetate	mg/kg	1,200,000	N/A	N/A	N/A	N/A	N/A	N/A	**0.021 J**	N/A	N/A	N/A	N/A	0.058 U	N/A	**0.0053 J**	N/A
Methyl tert-butyl ether (MTBE)	mg/kg	210	N/A	N/A	N/A	N/A	N/A	N/A	0.0045 U	N/A	N/A	N/A	N/A	0.0058 U	N/A	0.0055 U	N/A
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
1,2,4,5-Tetrachlorobenzene	mg/kg	350	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
2,4-Dimethylphenol	mg/kg	16,000	0.076 U	0.085 U	0.081 U	0.094 R	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
2,4-Dinitrophenol	mg/kg	1,600	0.19 UJ	0.21 UJ	0.2 UJ	0.24 R	0.2 UJ	0.21 U	0.2 U	0.19 U	0.2 UJ	0.19 UJ	1.9 U	1.9 U	1.8 U	1.8 U	0.18 U
2,4-Dinitrotoluene	mg/kg	7.40	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
2-Chloronaphthalene	mg/kg	60,000	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
2-Methylnaphthalene	mg/kg	3,000	**0.0018 J**	**0.0018 J**	0.0083 U	**0.0082 J**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.073**	**0.15**	**0.49**	**0.56**	0.0072 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	0.17 U	0.16 U	0.19 R	0.16 U	0.16 U	0.16 U	0.15 U	0.16 U	0.15 U	1.5 U	1.5 U	1.4 U	1.4 U	0.15 U
3,3'-Dichlorobenzidine	mg/kg	5.10	0.076 U	0.085 U	0.081 U	**0.034 J**	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Acenaphthene	mg/kg	45,000	**0.00073 J**	**0.0035 J**	0.0083 U	**0.017**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.043**	**0.025**	**0.71**	**0.82**	**0.00067 J**
Acenaphthylene	mg/kg	45,000	**0.0032 J**	**0.0057 J**	0.0083 U	**0.0074 J**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.045**	**0.73**	**0.029**	**0.21**	**0.0017 J**
Acetophenone	mg/kg	120,000	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Anthracene	mg/kg	230,000	**0.004 J**	**0.053**	0.0083 U	**0.068**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.18**	**0.93**	**0.14**	**0.91**	**0.0043 J**
Benz[a]anthracene	mg/kg	21.0	**0.019**	**0.56**	0.0083 U	**0.21**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.51**	**5.7**	**0.17**	**1.7**	**0.019**
Benzaldehyde	mg/kg	120,000	0.076 UJ	0.085 UJ	0.081 UJ	0.094 UJ	0.08 UJ	0.082 U	0.079 U	0.077 U	0.081 UJ	0.075 UJ	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Benzo[a]pyrene	mg/kg	2.10	**0.016**	**0.45**	0.0083 U	**0.17**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.46**	4.2	**0.08**	**1.6**	**0.018**
Benzo[b]fluoranthene	mg/kg	21.0	**0.035**	**0.68**	0.0083 U	**0.28**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.74**	**8.4**	**0.18**	**3.7**	**0.043**
Benzo[g,h,i]perylene	mg/kg		**0.01**	**0.3**	0.0083 U	**0.11**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.24**	**1.8**	**0.067**	**0.5**	**0.0085**
Benzo[k]fluoranthene	mg/kg	210	**0.031**	**0.2**	0.0083 U	**0.1**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.3**	**3.1**	**0.077**	**3.2**	**0.037**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.076 U	0.026 B	0.019 B	0.094 B	0.08 U	0.082 U	**0.023 J**	0.077 U	0.018 B	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	**0.016 J**
Caprolactam	mg/kg	400,000	0.19 U	0.21 U	0.2 U	0.24 U	0.2 U	0.21 U	0.2 U	0.19 U	0.2 U	0.19 U	1.9 U	1.9 U	1.8 U	1.8 U	0.18 U
Carbazole	mg/kg		0.076 U	**0.041 J**	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	**1.5**	0.71 U	0.7 U	0.073 U
Chrysene	mg/kg	2,100	**0.018**	**0.55**	**0.00046 J**	**0.27**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.47**	**4.7**	**0.19**	**1.5**	**0.021**
Dibenz[a,h]anthracene	mg/kg	2.10	**0.0033 J**	**0.12**	0.0083 U	**0.039**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.1**	**1**	**0.025**	**0.22**	**0.003 J**
Di-n-butylphthalate	mg/kg	82,000	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Di-n-ocytlphthalate	mg/kg	8,200	0.076 U	0.085 UJ	0.081 U	**0.038 J**	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Fluoranthene	mg/kg	30,000	**0.024**	**0.55**	**0.0014 J**	**0.43**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.85**	**9.8**	**2**	**3.9**	**0.037**
Fluorene	mg/kg	30,000	**0.00091 J**	**0.0031 J**	0.0083 U	**0.024**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.046**	**0.04**	**0.28**	**0.43**	**0.00075 J**
Hexachlorobenzene	mg/kg	0.96	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Hexachloroethane	mg/kg	8.00	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21.0	**0.0085**	**0.25**	0.0083 U	**0.098**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.25**	**2.1**	**0.064**	**0.54**	**0.0082**
Naphthalene	mg/kg	8.60	**0.0027 J**	**0.0022 J**	0.0083 U	**0.006 J**	0.0081 U	**0.0025 J**	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.077**	**0.29**	**0.87**	**0.95**	**0.0016 J**
N-Nitrosodiphenylamine	mg/kg	470	0.076 U	0.085 U	0.081 U	0.094 U	0.08 U	0.082 U	0.079 U	0.077 U	0.081 U	0.075 U	0.74 U	0.74 U	0.71 U	0.7 U	0.073 U
Pentachlorophenol	mg/kg	4.00	0.19 UJ	0.21 UJ	0.2 UJ	0.24 R	0.2 UJ	0.21 U	0.2 U	0.19 U	0.2 UJ	0.19 UJ	1.9 U	1.9 U	1.8 U	1.8 U	0.18 U
Phenanthrene	mg/kg		**0.0099**	**0.16**	**0.0017 J**	**0.33**	**0.001 J**	**0.0013 J**	**0.00071 J**	**0.00095 J**	0.0082 U	0.0077 U	**0.7**	**6.1**	**4.2**	**5.2**	**0.016**
Pyrene	mg/kg	23,000	**0.027**	**0.59**	**0.0013 J**	**0.32**	0.0081 U	0.0083 U	0.008 U	0.0077 U	0.0082 U	0.0077 U	**0.61**	**6.6**	**0.97**	**2.8**	**0.03**
PCBs																	
Aroclor 1242	mg/kg	0.97	N/A	0.021 U	N/A	1.2 U	0.02 U	N/A	0.02 U	N/A	0.41 U	N/A	0.019 U	N/A	0.018 U	N/A	0.018 U
Aroclor 1248	mg/kg	0.94	N/A	0.021 U	N/A	1.2 U	0.02 U	N/A	0.02 U	N/A	0.41 U	N/A	0.019 U	N/A	0.018 U	N/A	0.018 U
Aroclor 1254	mg/kg	0.97	N/A	0.021 U	N/A	1.2 U	0.02 U	N/A	0.02 U	N/A	0.41 U	N/A	0.019 U	N/A	0.018 U	N/A	0.018 U
Aroclor 1260	mg/kg	0.99	N/A	0.021 U	N/A	15.9	**0.018 J**	N/A	**0.041**	N/A	4.2	N/A	0.019 U	N/A	**0.077**	N/A	**0.043**
Aroclor 1262	mg/kg		N/A	0.021 U	N/A	1.2 U	0.02 U	N/A	0.02 U	N/A	0.41 U	N/A	0.019 U	N/A	0.018 U	N/A	0.018 U
Aroclor 1268	mg/kg		N/A	0.021 U	N/A	1.2 U	0.02 U	N/A	0.02 U	N/A	0.41 U	N/A	0.019 U	N/A	0.018 U	N/A	0.018 U
PCBs (total)	mg/kg	0.97	N/A	0.19 U	N/A	15.9	0.18 U	N/A	**0.041 J**	N/A	4.2	N/A	0.17 U	N/A	**0.077 J**	N/A	**0.043 J**
TPH/Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	**7.9 J**	**45.6 J**	**33.6 J**	**69.7 J**	4.2 B	**9.3**	**6.1 J**	**4.8 J**	5.9 B	4.3 B	**66.3**	**109**	**27.4**	**118**	**45.3**
Gasoline Range Organics	mg/kg	6,200	9 U	17.4 U	9.8 U	24.2 U	9.9 U	12.5 U	9.7 U	8.6 U	10.3 U	10.3 U	12.8 U	13.7 U	10.6 U	11.9 U	19 U
Oil & Grease	mg/kg	6,200	**339**	**134**	**502**	**335**	**270**	**465**	**365**	**223**	**424**	**191**	**979**	**2,390**	**344**	**1,580**	**356**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
*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.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence

Table 1 - Sub-Parcel B21-1
Summary of Organics Detected in Soil

Parameter	Units	PAL	B21-057-SB-2* 7/18/2018	B21-057-SB-6* 7/18/2018	B21-058-SB-2.5* 9/4/2018	B21-065-SB-3 9/5/2018	B21-065-SB-5 9/5/2018	B21-066-SB-1 7/16/2018	B21-066-SB-7.5 7/16/2018	B21-067-SB-1 7/16/2018	B21-067-SB-5 7/16/2018	B21-068-SB-1 7/16/2018	B21-068-SB-5 7/16/2018	B23-036-SB-1 7/26/2018	B23-036-SB-4 7/26/2018
Volatile Organic Compounds															
1,1-Dichloroethane	mg/kg	16.0	N/A	N/A	0.0048 U	N/A	N/A	N/A	0.0053 U	N/A	N/A	N/A	N/A	N/A	N/A
1,2,3-Trichlorobenzene	mg/kg	930	N/A	N/A	0.0048 U	N/A	N/A	N/A	0.0053 U	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	mg/kg	110	N/A	N/A	0.0048 U	N/A	N/A	N/A	0.0053 U	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	mg/kg	11.0	N/A	N/A	0.0048 U	N/A	N/A	N/A	0.0053 U	N/A	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	N/A	N/A	0.0096 U	N/A	N/A	N/A	0.011 U	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	N/A	N/A	0.0096 U	N/A	N/A	N/A	**0.024**	N/A	N/A	N/A	N/A	N/A	N/A
Carbon disulfide	mg/kg	3,500	N/A	N/A	**0.0031 J**	N/A	N/A	N/A	0.0053 UJ	N/A	N/A	N/A	N/A	N/A	N/A
Methyl Acetate	mg/kg	1,200,000	N/A	N/A	0.048 U	N/A	N/A	N/A	0.053 U	N/A	N/A	N/A	N/A	N/A	N/A
Methyl tert-butyl ether (MTBE)	mg/kg	210	N/A	N/A	0.0048 U	N/A	N/A	N/A	0.0053 U	N/A	N/A	N/A	N/A	N/A	N/A
Semi-Volatile Organic Compounds^															
1,1-Biphenyl	mg/kg	200	**0.019 J**	0.76 U	0.74 U	0.74 U	**0.26 J**	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	**0.032 J**
1,2,4,5-Tetrachlorobenzene	mg/kg	350	**0.29**	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	0.08 U
2,4-Dimethylphenol	mg/kg	16,000	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	0.08 U
2,4-Dinitrophenol	mg/kg	1,600	**0.084 J**	1.9 U	1.9 U	1.9 UJ	2 UJ	3.4 UJ	3.5 UJ	3.4 UJ	4.6 UJ	3.4 UJ	3.7 UJ	0.18 U	0.2 U
2,4-Dinitrotoluene	mg/kg	7.40	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	**0.022 J**
2-Chloronaphthalene	mg/kg	60,000	**0.22**	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	**0.052 J**
2-Methylnaphthalene	mg/kg	3,000	**0.0031 J**	**0.048**	**0.032**	**0.35**	**5.2**	**0.025 J**	**0.024 J**	**0.036 J**	**0.025**	**0.11**	**0.34**	**0.11**	**0.1**
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	1.5 U	1.5 U	1.5 U	1.6 U	2.7 U	2.8 U	2.7 U	3.7 U	2.7 U	3 U	0.14 U	0.16 U
3,3'-Dichlorobenzidine	mg/kg	5.10	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	0.08 U
Acenaphthene	mg/kg	45,000	0.0077 U	**0.0027 J**	**0.008**	**0.04 J**	**0.095 J**	**0.01 J**	0.072 U	0.069 U	**0.0055 J**	**0.059 J**	**0.097**	**0.0082**	**0.0058 J**
Acenaphthylene	mg/kg	45,000	**0.14**	**0.045**	**0.0028 J**	**0.41**	**0.19**	**0.068 J**	**0.039 J**	**0.044 J**	**0.48 J**	**0.18 J**	**0.12 J**	**0.059**	**0.012**
Acetophenone	mg/kg	120,000	0.075 U	0.76 U	0.74 U	0.74 U	**0.32 J**	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	**0.073 J**
Anthracene	mg/kg	230,000	**0.012**	**0.051**	**0.021**	**0.29**	**0.11**	**0.046 J**	**0.035 J**	**0.028 J**	**0.26**	**0.26**	**0.17**	**0.075**	**0.014**
Benz[a]anthracene	mg/kg	21.0	**0.011**	**0.62**	**0.058**	**0.96**	**0.35**	**0.22**	**0.17**	**0.12**	**1.3**	**0.68**	**0.63**	**0.2**	**0.073**
Benzaldehyde	mg/kg	120,000	0.075 U	0.76 U	0.74 U	0.74 UJ	**0.32 J**	1.3 R	1.4 R	1.3 R	1.9 R	1.4 R	1.5 R	**0.027 J**	**0.055 J**
Benzo[a]pyrene	mg/kg	2.10	**0.014**	**0.77**	**0.05**	**1.6**	**0.27 J**	**0.3**	**0.22**	**0.13**	**2.4**	**0.79**	**0.66**	**0.27**	**0.072**
Benzo[b]fluoranthene	mg/kg	21.0	**0.023**	**1.3**	**0.093**	**3.3**	**0.51 J**	**0.63**	**0.47**	**0.22**	**3.4**	**1.7**	**1.1**	**0.84**	**0.2**
Benzo[g,h,i]perylene	mg/kg		**0.012**	**0.34**	**0.027**	**0.66**	**0.11 J**	**0.2**	**0.13**	**0.08**	**1.2**	**0.41**	**0.36**	**0.077**	**0.021**
Benzo[k]fluoranthene	mg/kg	210	**0.02**	**0.46**	**0.033**	**2.6**	**0.41 J**	**0.55**	**0.41**	**0.09**	**1.1**	**1.5**	**0.35**	**0.72**	**0.17**
bis(2-Ethylhexyl)phthalate	mg/kg	160	**0.019 J**	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.03 B	**0.12**
Caprolactam	mg/kg	400,000	0.19 U	1.9 U	1.9 U	1.9 U	**0.47 J**	3.4 UJ	3.5 UJ	3.4 U	4.6 U	3.4 UJ	3.7 U	0.18 U	**0.69**
Carbazole	mg/kg		0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	**0.023 J**	**0.025 J**
Chrysene	mg/kg	2,100	**0.0094**	**0.63**	**0.055**	**0.9**	**0.51**	**0.24**	**0.19**	**0.13**	**1.3**	**0.67**	**0.62**	**0.28**	**0.084**
Dibenz[a,h]anthracene	mg/kg	2.10	0.0077 U	**0.14**	**0.0098**	**0.3**	**0.064 J**	**0.078**	**0.053 J**	**0.028 J**	**0.51**	**0.15**	**0.15**	**0.032**	**0.009**
Di-n-butylphthalate	mg/kg	82,000	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	0.08 U
Di-n-ocytlphthalate	mg/kg	8,200	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 UJ	0.08 UJ
Fluoranthene	mg/kg	30,000	**0.045**	**0.58**	**0.12**	**1.1**	**0.49**	**0.32**	**0.26**	**0.2**	**1.7**	**1**	**1.1**	**0.38**	**0.11**
Fluorene	mg/kg	30,000	**0.003 J**	**0.0037 J**	**0.0057 J**	**0.062**	**0.13**	**0.0092 J**	**0.0073 J**	0.069 U	**0.037**	**0.061 J**	**0.088**	**0.012**	**0.0045 J**
Hexachlorobenzene	mg/kg	0.96	**1.1**	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	0.08 U
Hexachloroethane	mg/kg	8.00	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	0.08 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21.0	**0.0085**	**0.36**	**0.023**	**0.71**	**0.068 J**	**0.2**	**0.13**	**0.078**	**1.3**	**0.41**	**0.39**	**0.089**	**0.021**
Naphthalene	mg/kg	8.60	**0.17**	**0.063**	**0.016**	**0.36 J**	**2.9 J**	**0.039 J**	**0.065 J**	**0.03 J**	**0.15**	**0.087**	**0.36**	**0.12**	**0.044**
N-Nitrosodiphenylamine	mg/kg	470	0.075 U	0.76 U	0.74 U	0.74 U	0.79 U	1.3 U	1.4 U	1.3 U	1.9 U	1.4 U	1.5 U	0.071 U	**0.021 J**
Pentachlorophenol	mg/kg	4.00	**0.072 J**	1.9 U	1.9 U	1.9 UJ	2 UJ	3.4 U	3.5 U	3.4 U	4.6 U	3.4 U	3.7 U	**0.21**	**0.064 J**
Phenanthrene	mg/kg		**0.051**	**0.36**	**0.087**	**0.72**	**2.1**	**0.16**	**0.12**	**0.11**	**0.38**	**0.63**	**1.2**	**0.24**	**0.087**
Pyrene	mg/kg	23,000	**0.055**	**0.57**	**0.09**	**1**	**0.45**	**0.29**	**0.22**	**0.18**	**1.5**	**0.94**	**0.93**	**0.34**	**0.092**
PCBs															
Aroclor 1242	mg/kg	0.97	0.019 U	N/A	0.019 U	0.019 U	N/A	0.017 U	N/A	0.017 U	N/A	0.017 U	N/A	0.018 U	N/A
Aroclor 1248	mg/kg	0.94	0.019 U	N/A	0.019 U	0.019 U	N/A	0.017 U	N/A	0.017 U	N/A	0.017 U	N/A	0.018 U	N/A
Aroclor 1254	mg/kg	0.97	0.019 U	N/A	0.019 U	0.019 U	N/A	0.017 U	N/A	0.017 U	N/A	0.017 U	N/A	0.018 U	N/A
Aroclor 1260	mg/kg	0.99	0.019 U	N/A	0.019 U	0.019 UJ	N/A	0.017 U	N/A	**0.29 J**	N/A	0.017 U	N/A	**0.032 J**	N/A
Aroclor 1262	mg/kg		0.019 U	N/A	0.019 U	0.019 U	N/A	**0.094**	N/A	0.017 U	N/A	0.017 U	N/A	0.018 U	N/A
Aroclor 1268	mg/kg		0.019 U	N/A	0.019 U	0.019 UJ	N/A	**0.14**	N/A	0.017 U	N/A	0.017 U	N/A	**0.03 J**	N/A
PCBs (total)	mg/kg	0.97	0.17 U	N/A	0.17 U	0.17 U	N/A	**0.24**	N/A	**0.29 J**	N/A	0.15 U	N/A	**0.062 J**	N/A
TPH/Oil & Grease															
Diesel Range Organics	mg/kg	6,200	**11.9**	**19.6**	**62.7**	**143 J**	**152 J**	**37.5 J**	**77.8 J**	**33.2 J**	**131 J**	**54 J**	**53.7 J**	**63.5 J**	**191 J**
Gasoline Range Organics	mg/kg	6,200	16.6 U	10.2 U	10.7 U	22.9 U	**36.8**	14.2 U	12.3 U	10.4 U	20.1 U	8.5 U	26.4 U	9.3 U	9.4 U
Oil & Grease	mg/kg	6,200	**161**	**384**	**2,300**	**1,030 J-**	**2,880 J-**	**903 J+**	**812 J+**	**322 J+**	**260 J+**	**1,290 J+**	**367 J+**	**210**	**1,790**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
*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.
J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B2-026-SB-1 5/26/2017	B2-026-SB-5 5/26/2017	B2-026-SB-10 5/26/2017	B2-049-SB-1 6/22/2017	B2-049-SB-4 6/22/2017	B2-049-SB-10 6/22/2017	B2-050-SB-1 6/22/2017	B2-050-SB-5 6/22/2017	B2-051-SB-1 6/22/2017	B2-051-SB-5 6/22/2017
Metals												
Aluminum	mg/kg	1,100,000	**16,800**	**26,000**	N/A	**24,200**	**13,200**	N/A	**39,000**	**38,200**	**18,300**	**14,900**
Antimony	mg/kg	470	2.4 UJ	2.4 UJ	N/A	2.4 UJ	2.6 UJ	N/A	2.6 UJ	2.6 UJ	2.5 UJ	2.6 UJ
Arsenic	mg/kg	3	**3.4**	**6.1**	**5.7**	**2.8**	**5**	**13.8 J**	**5.2**	**3.3**	**2.5**	**16.3**
Barium	mg/kg	220,000	**95.1**	**286**	N/A	**184**	**36.3**	N/A	**743**	**798**	**127**	**90.2**
Beryllium	mg/kg	2,300	0.64 B	**1.9**	N/A	**2.6**	0.87 U	N/A	**4.1**	**3.3**	**1.8**	**0.18 J**
Cadmium	mg/kg	980	1.2 U	**0.4 J**	N/A	**0.38 J**	**0.48 J**	N/A	**1.9**	**0.44 J**	1.3 U	**0.55 J**
Chromium	mg/kg	120,000	**1,190**	**957**	N/A	**680 J**	**1,390 J**	N/A	**114 J**	**227 J**	**1,210 J**	**1,440 J**
Chromium VI	mg/kg	6.3	**3.1 J-**	0.68 B	N/A	**2.2 J-**	**8.5 J-**	1 B	0.65 B	0.71 B	**1.7 J-**	**2.6 J-**
Cobalt	mg/kg	350	0.52 B	**5.1**	N/A	**2 J**	**1.4 J**	N/A	**4.3 J**	**4.6 J**	**0.55 J**	**1.9 J**
Copper	mg/kg	47,000	**19 J**	**30.6 J**	N/A	**23.3 J**	**15.7 J**	N/A	**44 J**	**20.4 J**	**13.2 J**	**30.8 J**
Iron	mg/kg	820,000	**185,000**	**132,000**	N/A	**129,000 J**	**207,000 J**	N/A	**33,700 J**	**29,000 J**	**151,000 J**	**184,000 J**
Lead	mg/kg	800	**1.7 J**	**35.8**	N/A	**3.5 J**	2.2 UJ	N/A	**225 J**	**33.5 J**	2.1 UJ	**36.9 J**
Manganese	mg/kg	26,000	**29,600**	**31,100**	**551 J**	**16,500**	**33,900**	N/A	**9,710**	**7,310**	**27,700**	**37,400**
Mercury	mg/kg	350	0.0085 B	0.024 B	N/A	0.097 U	0.096 U	N/A	**0.014 J**	0.11 U	0.097 U	0.089 U
Nickel	mg/kg	22,000	**14.7 J**	**20.8 J**	N/A	**14.2 J**	**19.2 J**	N/A	**15.9 J**	**10.2 J**	**12.3 J**	**25.7 J**
Selenium	mg/kg	5,800	3.1 U	3.1 U	N/A	3.2 U	3.5 U	N/A	3.5 U	3.5 U	3.3 U	3.5 U
Silver	mg/kg	5,800	**21.7 J**	**29.3 J**	N/A	**16.6**	**25.1**	N/A	**26**	**14.9**	**25.3**	**29.3**
Thallium	mg/kg	12	7.9 UJ	7.9 UJ	N/A	7.9 U	8.7 U	N/A	8.8 U	8.7 U	8.4 U	8.7 U
Vanadium	mg/kg	5,800	**906**	**1,140**	N/A	**416**	**563**	N/A	**334**	**757**	**778**	**837**
Zinc	mg/kg	350,000	**55.4 J**	**70.7 J**	N/A	**48 J**	**13.7 J**	N/A	**568 J**	**51.5 J**	**37.5 J**	**95 J**
Other												
Cyanide	mg/kg	150	**0.15 J**	**1 J+**	N/A	**0.11 J-**	**0.089 J-**	N/A	**3.4 J-**	**0.92 J-**	**0.22 J-**	**0.33 J-**

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-001-SB-3* 9/4/2018	B21-001-SB-5* 9/4/2018	B21-002-SB-3.5 9/5/2018	B21-002-SB-5 9/5/2018	B21-003-SB-1 7/17/2018	B21-003-SB-5 7/17/2018	B21-004-SB-2.5 7/17/2018	B21-004-SB-5 7/17/2018	B21-004-SB-10* 7/17/2018	B21-005-SB-2* 7/20/2018
Metals												
Aluminum	mg/kg	1,100,000	**7,890**	**6,090**	**5,140**	**9,520**	**9,170**	**13,200**	**3,170**	**8,450**	N/A	**15,500**
Antimony	mg/kg	470	2.4 U	2.6 U	2.5 UJ	2.7 UJ	2.3 UJ	2.8 UJ	2.7 UJ	2.6 UJ	N/A	2.8 U
Arsenic	mg/kg	3	**2.9**	2.1 U	**7.1**	**4.4**	**4.4**	**4.1**	**8.2**	**16.8**	**7.7**	**5.8**
Barium	mg/kg	220,000	**57.2**	**48**	**55.2 J**	**280 J**	**65.8 J**	**130 J**	**40.9 J**	**106 J**	N/A	**65.4**
Beryllium	mg/kg	2,300	**0.32 J**	**0.29 J**	0.85 U	**0.24 J**	**0.3 J**	**0.68 J**	**0.33 J**	**0.83 J**	N/A	**0.64 J**
Cadmium	mg/kg	980	1.2 U	1.3 U	**0.58 J**	**0.57 J**	1.2 U	1.4 U	1.3 U	1.3 U	N/A	1.4 U
Chromium	mg/kg	120,000	**957**	**1,010**	**1,020**	**545**	**361**	**46.2**	**29.1**	**32.5**	N/A	**22.6**
Chromium VI	mg/kg	6.3	1 U	1.1 U	1.1 U	1.1 U	1 R	1.1 R	1.1 R	1.1 R	N/A	1.2 U
Cobalt	mg/kg	350	**1.7 J**	4.3 U	**1.2 J**	**3.6 J**	**3.5 J**	**4.2 J**	**14**	**13.5**	N/A	**5.9**
Copper	mg/kg	47,000	**32.7**	**28.8**	**24.8**	**84**	**50.5**	**66.5**	**164**	**192**	N/A	**10.9**
Iron	mg/kg	820,000	**159,000**	**161,000**	**147,000**	**73,600**	**71,100 J**	**15,000 J**	**61,200 J**	**40,400 J**	N/A	**16,300**
Lead	mg/kg	800	**15.5**	**9.9**	**16.9**	**37.6**	**87.5**	**73.5**	**14.8**	**49.8**	N/A	**17.9**
Manganese	mg/kg	26,000	**23,100**	**24,000**	**22,700**	**12,000**	**10,400**	**1,530**	**712**	**1,090**	N/A	**276**
Mercury	mg/kg	350	0.1 U	**0.13**	**0.009 J**	**0.1 J**	**0.064 J**	**0.23**	**0.014 J**	**0.03 J**	N/A	**0.0075 J**
Nickel	mg/kg	22,000	**10.5**	**22.2**	**12.5**	**24**	**21.4**	**23.2**	**46.7**	**40.9**	N/A	**13.5**
Selenium	mg/kg	5,800	3.2 U	3.4 U	**3 J**	3.6 U	3.1 UJ	3.7 UJ	3.6 UJ	3.5 UJ	N/A	3.7 U
Silver	mg/kg	5,800	2.4 U	2.6 U	**23.8**	**17.5**	**1.2 J**	2.8 U	2.7 U	2.6 U	N/A	2.8 U
Thallium	mg/kg	12	7.9 U	8.5 U	8.5 UJ	9 UJ	7.7 U	9.4 U	8.9 U	8.8 U	N/A	9.3 U
Vanadium	mg/kg	5,800	**552**	**692**	**634**	**330**	**197 J**	**21.2 J**	**24 J**	**28.2 J**	N/A	**29.4**
Zinc	mg/kg	350,000	**28.3**	**20**	**26.5**	**117**	**156**	**157**	**65.2**	**189**	N/A	**52.5**
Other												
Cyanide	mg/kg	150	**0.62 J**	**0.48 J**	**0.57 J-**	**0.55 J-**	**0.52 J-**	**0.76 J-**	1.1 UJ	**1.2 J-**	N/A	**0.31 J**

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-005-SB-7* 7/20/2018	B21-005-SB-10* 7/20/2018	B21-006-SB-2* 7/20/2018	B21-006-SB-8* 7/20/2018	B21-009-SB-2 7/17/2018	B21-009-SB-5 7/17/2018	B21-010-SB-2* 7/18/2018	B21-010-SB-5* 7/18/2018	B21-011-SB-1 7/17/2018	B21-011-SB-5 7/17/2018
Metals												
Aluminum	mg/kg	1,100,000	**13,400**	**18,500**	**35,800**	**16,200**	**26,700**	**22,100**	**11,800**	**17,300**	**25,900**	**53,600**
Antimony	mg/kg	470	2.9 U	3 U	2.1 U	2.8 U	3.1 UJ	2.8 UJ	2.9 U	4.2 U	2.5 UJ	3.7 UJ
Arsenic	mg/kg	3	2.4 U	**11.4**	**2.2**	**3.9**	**4.9**	**6.7**	**4.3**	**22.3**	**3.7**	**3.8**
Barium	mg/kg	220,000	**52.3**	**63.9**	**340**	**52.5**	**210 J**	**93.6 J**	**207**	**101**	**467 J**	**169 J**
Beryllium	mg/kg	2,300	**0.55 J**	**1.1**	**4**	**0.74 J**	**1.2**	**0.85 J**	**0.81 J**	**0.78 J**	**2.6**	**2.1**
Cadmium	mg/kg	980	1.5 U	1.5 U	1.1 U	1.4 U	**0.53 J**	**1.6**	**0.43 J**	2.1 U	**0.63 J**	1.8 U
Chromium	mg/kg	120,000	**18.4**	**38.7**	**23.1**	**25.3**	**101**	**201**	**67.7**	**240**	**45.3**	**469**
Chromium VI	mg/kg	6.3	1.2 U	N/A	1.1 U	1.3 U	1.2 R	1.3 R	1.1 U	1.4 U	1.1 R	1.6 R
Cobalt	mg/kg	350	**4.6 J**	**7.7**	**2.8 J**	**6**	**10.5**	**17.7**	**4.5 J**	**54.9**	**4.7**	**27.9**
Copper	mg/kg	47,000	**5.4**	**17.6**	**23.1**	**10.9**	**138**	**225**	**131**	**600**	**364**	**53.4**
Iron	mg/kg	820,000	**13,700**	**29,700**	**19,700**	**12,700**	**51,900 J**	**136,000 J**	**17,900**	**81,000**	**22,900 J**	**49,000 J**
Lead	mg/kg	800	**14**	**17.9**	**24.7**	**17.9**	**232**	**38.8**	**269**	**149**	**211**	**7.4**
Manganese	mg/kg	26,000	**42**	**86.6**	**3,000**	**66.3**	**5,610**	**31,200**	**810**	**30,300**	**4,570**	**1,570**
Mercury	mg/kg	350	0.11 U	**0.23**	**0.014 J**	0.11 U	**0.09 J**	**0.15**	**1.7**	**0.44**	**0.28**	**0.013 J**
Nickel	mg/kg	22,000	**8.4 J**	**15.8**	4.8 B	**12.7**	**41**	**56.9**	**15.6**	**313**	**13.5**	**214**
Selenium	mg/kg	5,800	3.9 U	4 U	2.8 U	3.7 U	4.2 UJ	3.7 UJ	3.8 U	5.7 U	3.3 UJ	**4.7 J-**
Silver	mg/kg	5,800	2.9 U	3 U	2.1 U	2.8 U	3.1 U	**5**	2.9 U	**4.8**	**0.53 J**	3.7 U
Thallium	mg/kg	12	9.8 U	9.9 U	7.1 U	9.3 U	10.4 U	9.2 U	9.6 U	14.2 U	8.3 U	12.3 U
Vanadium	mg/kg	5,800	**28.9**	**49.8**	**17.6**	**23.5**	**63.8 J**	**270 J**	**20.2**	**46.2**	**65.6 J**	**21.5 J**
Zinc	mg/kg	350,000	**26.4**	**60.3**	**64.3**	**42.6**	**6,750**	**127**	**541**	**920**	**235**	**14**
Other												
Cyanide	mg/kg	150	1.1 U	1.1 U	**0.44 J**	1.1 U	1.1 UJ	**0.33 J-**	**0.56 J**	**0.2 J**	**1 J-**	**0.85 J-**

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-012-SB-1 7/17/2018	B21-012-SB-5 7/17/2018	B21-015-SB-3* 9/4/2018	B21-015-SB-5* 9/4/2018	B21-016-SB-4* 9/4/2018	B21-016-SB-5* 9/4/2018	B21-025-SB-2* 7/18/2018	B21-025-SB-7.5* 7/18/2018	B21-026-SB-2* 7/18/2018	B21-026-SB-5* 7/18/2018
Metals												
Aluminum	mg/kg	1,100,000	**36,300**	**58,400**	**2,320**	**45,600**	**31,400**	**46,000**	**50,700**	**20,900**	**10,100**	**24,500**
Antimony	mg/kg	470	3 UJ	3.1 UJ	**13.9**	3 U	2.6 U	2.5 U	2.6 U	2.5 U	2.1 U	2.7 U
Arsenic	mg/kg	3	**6.2**	2.6 U	**5**	**4.5**	**4.7**	2.1 U	**2.6**	**2.8**	**1.7 J**	**9**
Barium	mg/kg	220,000	**418 J**	**218 J**	**23.8**	**1,700**	**567**	**946**	**949**	**123**	**157**	**162**
Beryllium	mg/kg	2,300	**4.4**	**2.2**	**0.15 J**	**4**	**1.8**	**2.7**	**5.2**	**0.98**	**1.1**	**1.4**
Cadmium	mg/kg	980	**0.73 J**	1.6 U	1.2 U	1.5 U	1.3 U	1.3 U	1.3 U	**0.33 J**	1.1 U	**0.87 J**
Chromium	mg/kg	120,000	**74.4**	**200**	**82.1**	**147**	**147**	**118**	**20.3**	**102**	**18**	**216**
Chromium VI	mg/kg	6.3	1.2 R	1.3 R	1 U	1.3 U	1.1 U	1.1 U	1 U	1.3 U	1 U	1.2 U
Cobalt	mg/kg	350	**7.6**	**9**	**22.5**	**9.7**	**65.8**	**13.3**	**3.8 J**	**12.3**	**1.7 J**	**10.4**
Copper	mg/kg	47,000	**239**	**25.1**	**195**	**51.2**	**180**	**27.1**	**24**	**76.3**	**35.3**	**205**
Iron	mg/kg	820,000	**56,200 J**	**12,900 J**	**137,000**	**14,100**	**56,600**	**13,200**	**27,200**	**23,500**	**9,890**	**42,100**
Lead	mg/kg	800	**139**	**5.3**	**74.4**	**66.7**	**20.4**	**7.1**	**22**	**97.6**	**36.6**	**251**
Manganese	mg/kg	26,000	**5,780**	**774**	**1,500**	**12,100**	**3,610**	**4,690**	**7,960**	**760**	**1,180**	**3,440**
Mercury	mg/kg	350	**0.026 J**	0.13 U	0.096 U	0.13 U	0.11 U	0.1 U	**0.047 J**	**0.06 J**	**0.04 J**	**0.1 J**
Nickel	mg/kg	22,000	**34.5**	**63.2**	**29.6**	**49.4**	**141**	**62**	**6.5 J**	**49.5**	**6 J**	**41.8**
Selenium	mg/kg	5,800	4 UJ	**5.2**	3.2 U	**3.6 J**	3.5 U	**5.5**	3.4 U	3.3 U	2.8 U	3.6 U
Silver	mg/kg	5,800	3 U	3.1 U	2.4 U	3 U	2.6 U	2.5 U	2.6 U	2.5 U	2.1 U	**0.76 J**
Thallium	mg/kg	12	10 U	10.4 U	7.9 U	9.8 U	8.7 U	8.3 U	8.6 U	8.3 U	7 U	8.9 U
Vanadium	mg/kg	5,800	**184 J**	**11.3 J**	**38.3**	**24.3**	**55.8**	**11.1**	**105**	**23.6**	**15.4**	**41**
Zinc	mg/kg	350,000	**578**	**2.8 J**	**26.9**	**122**	**60.8**	**30.6**	**32**	**306**	**53.4**	**1,110**
Other												
Cyanide	mg/kg	150	**0.24 J-**	1.2 UJ	0.95 U	**2.2**	**1.6**	**1.6**	**0.42 J**	**0.99 J**	**0.85 J**	1.2 U

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-027-SB-1* 7/18/2018	B21-027-SB-5* 7/18/2018	B21-028-SB-1 7/19/2018	B21-028-SB-5 7/19/2018	B21-029-SB-1* 7/18/2018	B21-029-SB-5* 7/18/2018	B21-030-SB-2.5* 9/4/2018	B21-030-SB-5* 9/4/2018	B21-030-SB-10* 9/4/2018	B21-031-SB-1 7/19/2018
Metals												
Aluminum	mg/kg	1,100,000	**2,360**	**19,300**	**20,600**	**24,400 J**	**15,000**	**33,900**	**19,600**	**15,100**	N/A	**15,000**
Antimony	mg/kg	470	2.4 U	3 U	2.5 UJ	2.7 UJ	2.4 U	2.7 U	2.7 U	2.9 U	N/A	2.3 UJ
Arsenic	mg/kg	3	2 U	**19.4**	**4.2**	**4.8**	**4.7**	**5.2**	2.2 U	**5.8**	2.5 U	**1.9 J**
Barium	mg/kg	220,000	**17.6**	**123**	**163 J**	**208 J**	**113**	**430**	**356**	**174**	N/A	**77.5 J**
Beryllium	mg/kg	2,300	**0.25 J**	**0.88 J**	**1.7**	**2.6**	**1.2**	**4.2**	**1.9**	**0.55 J**	N/A	**0.57 J**
Cadmium	mg/kg	980	1.2 U	**2.4**	**0.95 J**	**0.35 J**	1.2 U	**0.84 J**	1.3 U	1.4 U	N/A	1.2 U
Chromium	mg/kg	120,000	**29.7**	**177**	**229**	**97.8 J**	**154**	**103**	**119**	**23.1**	N/A	**24.1**
Chromium VI	mg/kg	6.3	**0.54 J**	1.3 U	1.1 R	1.2 R	1.1 U	1.1 U	1.2 U	1.3 U	N/A	1.1 R
Cobalt	mg/kg	350	**5.3**	**15.8**	**3.3 J**	**5.5**	**2.2 J**	**7.3**	**49**	**7.3**	N/A	**5.3**
Copper	mg/kg	47,000	**92.4**	**125**	**28.5**	**25.5**	**21.3**	**36.1**	**23.1**	**8**	N/A	**6.5**
Iron	mg/kg	820,000	**22,500**	**53,300**	**47,700**	**34,500 J**	**32,200**	**40,500**	**13,100**	**16,800**	N/A	**11,500**
Lead	mg/kg	800	**69.5**	**831**	**43.5**	**52 J**	**47.2**	**91.6**	**40.6**	**13.5**	N/A	**8.8**
Manganese	mg/kg	26,000	**202**	**4,770**	**5,650 J**	**3,600**	**4,070**	**5,180**	**1,620**	**94.8**	N/A	**43.2 J**
Mercury	mg/kg	350	**0.31**	**0.068 J**	**0.23**	**0.091 J**	**0.47**	**0.15**	**0.014 J**	**0.013 J**	N/A	**0.0059 J**
Nickel	mg/kg	22,000	**11.9**	**85.8**	**19.6**	**19.9 J**	**14.3**	**23.4**	**24.2**	**14.2**	N/A	**13.1**
Selenium	mg/kg	5,800	3.2 U	3.9 U	3.3 U	3.7 U	3.2 U	3.6 U	3.6 U	3.9 U	N/A	3.1 U
Silver	mg/kg	5,800	2.4 U	**1.8 J**	2.5 U	2.7 U	2.4 U	**0.44 J**	2.7 U	2.9 U	N/A	2.3 U
Thallium	mg/kg	12	8.1 U	9.9 U	8.3 U	9.2 U	**3.2 J**	9.1 U	8.9 U	9.6 U	N/A	7.8 U
Vanadium	mg/kg	5,800	**17.4**	**41.4**	**207**	**92.3 J**	**252**	**121**	**16.3**	**33.6**	N/A	**20.8**
Zinc	mg/kg	350,000	**167**	**1,890**	**332**	**196 J**	**351**	**269**	**65**	**36.2**	N/A	**40.4**
Other												
Cyanide	mg/kg	150	**0.15 J**	**0.45 J**	**0.71 J-**	**0.68 J-**	**0.65 J**	**0.53 J**	**2.9**	**0.4 J**	N/A	0.96 UJ

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-031-SB-5 7/19/2018	B21-036-SB-2 7/19/2018	B21-036-SB-5 7/19/2018	B21-039-SB-2 7/19/2018	B21-039-SB-5 7/19/2018	B21-040-SB-6.5* 9/4/2018	B21-040-SB-10* 9/4/2018	B21-043-SB-1.5* 7/20/2018	B21-043-SB-5* 7/20/2018	B21-044-SB-2 7/19/2018
Metals												
Aluminum	mg/kg	1,100,000	**6,340**	**37,500**	**14,800**	**60,200**	**15,400**	**20,800**	N/A	**10,700**	**13,700**	**15,600**
Antimony	mg/kg	470	2.6 UJ	3.2 UJ	2.7 UJ	3.3 UJ	3.1 UJ	3 U	N/A	2.5 U	3.3 U	2.4 UJ
Arsenic	mg/kg	3	**4.5**	2.6 U	**6.5**	**4.2**	2.6 U	**4.2**	**3.5**	**3.3**	2.7 U	**3.9**
Barium	mg/kg	220,000	**53.3 J**	**463 J**	**154 J**	**651 J**	**40.6 J**	**75.5**	N/A	**113**	**106**	**54.8 J**
Beryllium	mg/kg	2,300	**0.67 J**	**1.9**	**0.43 J**	**4.8**	**0.43 J**	**1.1**	N/A	**1.2**	**0.61 J**	**0.52 J**
Cadmium	mg/kg	980	1.3 U	1.6 U	1.4 U	1.7 U	1.6 U	1.5 U	N/A	1.2 U	1.6 U	1.2 U
Chromium	mg/kg	120,000	**32.6**	**130**	**609**	**185**	**17.4**	**24.2**	N/A	**12.2**	**15.9**	**19.3**
Chromium VI	mg/kg	6.3	1.1 R	1.2 R	**14.9 J-**	1.5 R	**0.79 J-**	1.3 U	N/A	1.2 U	**0.88 J**	1.2 R
Cobalt	mg/kg	350	**2.8 J**	**2.6 J**	**9**	**3.9 J**	**2.5 J**	**4.9 J**	N/A	**19.1**	**2.1 J**	**6.5**
Copper	mg/kg	47,000	**18.4**	**13.5**	**14.1**	**30.6**	**4.7 J-**	**11.4**	N/A	**7.1**	**7.8**	**6**
Iron	mg/kg	820,000	**15,400**	**7,740**	**14,600**	**12,400**	**18,700**	**17,800**	N/A	**9,890**	**5,220**	**14,400**
Lead	mg/kg	800	**35.1**	**57.4**	**8.1**	**16.2**	**8.2**	**16.6**	N/A	**11.3**	**14.1**	**8.1**
Manganese	mg/kg	26,000	**308 J**	**1,560 J**	**400 J**	**3,490 J**	**23.6 J**	**35**	N/A	**777**	**14.3**	**88.1 J**
Mercury	mg/kg	350	**0.065 J**	**0.14**	**0.047 J**	**0.055 J**	**0.13**	**0.032 J**	N/A	**0.033 J**	0.12 U	**0.041 J**
Nickel	mg/kg	22,000	**6.6 J**	**10.7**	**30.2**	**28.2**	**6.7 J**	**14.5**	N/A	**16**	**7.6 J**	**11.8**
Selenium	mg/kg	5,800	3.5 U	4.2 U	3.6 U	4.4 U	4.2 U	3.9 U	N/A	3.3 U	4.3 U	3.2 U
Silver	mg/kg	5,800	2.6 U	3.2 U	2.7 U	3.3 U	3.1 U	3 U	N/A	2.5 U	3.3 U	2.4 U
Thallium	mg/kg	12	8.6 U	10.5 U	9 U	11.1 U	10.4 U	9.8 U	N/A	8.3 U	10.9 U	8 U
Vanadium	mg/kg	5,800	**43.6**	**19.6**	**27**	**16.9**	**21.8**	**29.1**	N/A	**19.5**	**12.3**	**28.8**
Zinc	mg/kg	350,000	**40.7**	**29**	**101**	**54.5**	**18.4**	**24.6**	N/A	**73.5**	**12.2**	**125**
Other												
Cyanide	mg/kg	150	1.1 UJ	**1.6 J-**	**0.23 J-**	**17.3 J-**	1.1 UJ	1.2 U	N/A	1.1 U	1.1 U	1.1 UJ

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-044-SB-5 7/19/2018	B21-045-SB-3.5* 9/4/2018	B21-045-SB-4.5* 9/4/2018	B21-046-SB-2* 7/18/2018	B21-046-SB-6* 7/18/2018	B21-055-SB-2.5* 9/4/2018	B21-057-SB-2* 7/18/2018	B21-057-SB-6* 7/18/2018	B21-058-SB-2.5* 9/4/2018	B21-065-SB-3 9/5/2018
Metals												
Aluminum	mg/kg	1,100,000	**12,800**	**22,400**	**23,100**	**16,700**	**16,500**	**18,500**	**6,750**	**17,500**	**12,700**	**11,500**
Antimony	mg/kg	470	2.8 UJ	2.6 U	2.6 U	2.4 U	2.3 U	2.6 U	**3.8**	**2.1 J**	2.5 U	2.6 UJ
Arsenic	mg/kg	3	2.3 U	**40.1**	**18.6**	**3.3**	**6.9**	2.1 U	**31**	**12.2**	**5.9**	**7.2**
Barium	mg/kg	220,000	**56 J**	**259**	**397**	**252**	**285**	**207**	**303**	**287**	**199**	**185 J**
Beryllium	mg/kg	2,300	**0.43 J**	**2.1**	**1.7**	**1.2**	**1.1**	**2**	**1.2**	**1.5**	**1.1**	**0.9**
Cadmium	mg/kg	980	1.4 U	1.3 U	**0.46 J**	**1.6**	1.1 U	1.3 U	**0.79 J**	**3**	**1.2 J**	**1.4**
Chromium	mg/kg	120,000	**12.9**	**73.4**	**195**	**34**	**171**	**55.1**	**146**	**137**	**28.1**	**44.3**
Chromium VI	mg/kg	6.3	**0.79 J-**	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	**7.1**	1.2 U	1.1 U	1.1 U
Cobalt	mg/kg	350	**2.7 J**	**50.5**	**40.9**	**3.6 J**	**16**	**40.6**	**19.4**	**8.4**	**37**	**24.9**
Copper	mg/kg	47,000	**4.2 J-**	**538**	**321**	**160**	**474**	**30.4**	**906**	**725**	**482**	**398**
Iron	mg/kg	820,000	**6,940**	**118,000**	**36,100**	**15,500**	**78,300**	**15,600**	**193,000**	**39,900**	**38,000**	**39,400**
Lead	mg/kg	800	**11.4**	**101**	**107**	**113**	**82.1**	**17.1**	**494**	**332**	**631**	**163**
Manganese	mg/kg	26,000	**26.4 J**	**4,290**	**41,500**	**1,570**	**2,590**	**6,360**	**1,390**	**3,540**	**2,400**	**1,450**
Mercury	mg/kg	350	**0.007 J**	**0.071 J**	**0.076 J**	**0.062 J**	**0.089 J**	0.1 U	**0.95**	**0.087 J**	**0.43**	**0.089 J**
Nickel	mg/kg	22,000	**5.4 J**	**44.2**	**84.4**	**11.6**	**58.8**	**5.2 J**	**71.1**	**35.6**	**20.9**	**35.1**
Selenium	mg/kg	5,800	3.7 U	3.5 U	**3.2 J**	3.2 U	**2.6 J**	**2.6 J**	3.2 U	3.3 U	3.4 U	3.5 U
Silver	mg/kg	5,800	2.8 U	2.6 U	2.6 U	2.4 U	**0.48 J**	2.6 U	2.4 U	**1.4 J**	2.5 U	**7.8**
Thallium	mg/kg	12	9.2 U	8.8 U	8.7 U	7.9 U	7.5 U	8.6 U	8 U	8.3 U	8.5 U	8.8 UJ
Vanadium	mg/kg	5,800	**14.9**	**61.5**	**40.1**	**15.4**	**68.3**	**518**	**79.5**	**94.1**	**50.6**	**109**
Zinc	mg/kg	350,000	**18.3**	**357**	**287**	**520**	**193**	**33.4**	**851**	**938**	**227**	**347**
Other												
Cyanide	mg/kg	150	0.93 UJ	**0.51 J**	**1**	**0.19 J**	**1.4**	**0.63 J**	**0.23 J**	**0.92 J**	**0.35 J**	**0.59 J-**

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

Table 2 - Sub-Parcel B21-1
Summary of Inorganics Detected in Soil

Parameter	Units	PAL	B21-065-SB-5 9/5/2018	B21-065-SB-10* 9/4/2018	B21-066-SB-1 7/16/2018	B21-066-SB-7.5 7/16/2018	B21-067-SB-1 7/16/2018	B21-067-SB-5 7/16/2018	B21-068-SB-1 7/16/2018	B21-068-SB-5 7/16/2018	B23-036-SB-1 7/26/2018	B23-036-SB-4 7/26/2018
Metals												
Aluminum	mg/kg	1,100,000	**5,980**	N/A	**40,700**	**26,800**	**39,500**	**14,400**	**26,000**	**9,770**	**8,660**	**2,960**
Antimony	mg/kg	470	2.9 UJ	N/A	2.4 UJ	2.9 UJ	2.2 UJ	3 UJ	2 UJ	2.5 UJ	2.5 UJ	**6.6 J**
Arsenic	mg/kg	3	**9.7**	**2.2**	**2**	**5.1**	**3.8**	2.5 U	**5.8**	**10.5**	**46.6 J**	**7.6 J**
Barium	mg/kg	220,000	**106 J**	N/A	**430 J**	**295 J**	**527 J**	**50.6 J**	**256 J**	**204 J**	**132 J**	**99.5 J**
Beryllium	mg/kg	2,300	**0.52 J**	N/A	**4.9**	**3.2**	**4.2**	**0.41 J**	**3.8**	**0.68 J**	**0.57 J**	**0.19 J**
Cadmium	mg/kg	980	**0.38 J**	N/A	**0.41 J**	**0.71 J**	**1.3**	1.5 U	**0.77 J**	1.2 U	**1.8**	1.4 U
Chromium	mg/kg	120,000	**19.8**	N/A	**56.7**	**593**	**26**	**19.4**	**154**	**59.4**	**894**	**112**
Chromium VI	mg/kg	6.3	1.2 U	N/A	1 R	**0.68 J-**	1 R	1.4 R	1 R	1.1 R	1.1 U	**1.3**
Cobalt	mg/kg	350	**11.1**	N/A	**5.1**	**2 J**	**2.5 J**	**1.7 J**	**5.5**	**8.3**	**8**	**30.3**
Copper	mg/kg	47,000	**960**	N/A	**24.5**	**43.5**	**130**	**5.2**	**68.1**	**70.7**	**95.8 J**	**246 J**
Iron	mg/kg	820,000	**59,500**	N/A	**28,000 J**	**56,000 J**	**13,700 J**	**9,010 J**	**68,700 J**	**47,800 J**	**112,000 J**	**146,000 J**
Lead	mg/kg	800	**203**	N/A	**49.8**	**153**	**81.1**	**13.6**	**110**	**73.1**	**169 J**	**433 J**
Manganese	mg/kg	26,000	**340**	N/A	**6,940**	**18,500**	**6,390**	**15.8**	**5,230**	**1,100**	**27,100**	**1,760**
Mercury	mg/kg	350	**0.052 J**	N/A	**0.019 J**	**0.022 J**	**0.066 J**	**0.018 J**	**0.067 J**	**0.087 J**	**0.076**	**0.15**
Nickel	mg/kg	22,000	**26**	N/A	5.8 B	**13.5**	**11.5**	5.2 B	**25**	**32.5**	**32.2**	**38.1**
Selenium	mg/kg	5,800	3.8 U	N/A	3.1 UJ	3.9 UJ	2.9 UJ	4 UJ	2.7 UJ	3.3 UJ	3.3 U	3.7 U
Silver	mg/kg	5,800	**2.8 J**	N/A	2.4 U	2.9 U	2.2 U	3 U	**0.39 J**	2.5 U	**2.1 J**	2.7 U
Thallium	mg/kg	12	9.6 UJ	N/A	7.8 U	**64.1**	7.2 U	10.1 U	6.7 U	**3.2 J**	**12.4**	**4.8 J**
Vanadium	mg/kg	5,800	**27.8**	N/A	**94.9 J**	**3,940 J**	**53.3 J**	**20.3 J**	**126 J**	**133 J**	**1,260**	**276**
Zinc	mg/kg	350,000	**102**	N/A	**84.9**	**919**	**240**	**17.7**	**426**	**132**	**989 J**	**136 J**
Other												
Cyanide	mg/kg	150	1.2 UJ	N/A	**0.45 J-**	**0.3 J-**	**0.16 J-**	**0.47 J-**	**1.1 J-**	**0.45 J-**	**0.66 J**	1 U

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

Table 3 - Sub-Parcel B21-1
Summary of Organics Detected in Groundwater

Parameter	Units	PAL	B2-051-PZ*	FM-003-PZI	FM-003-PZS*	FM-016-PZI*	FM-016-PZS*	FM01-PZM003	FM01-PZM041	SW-057-MWS	SW-079-MWI*	SW-079-MWS*
			6/23/2017	6/16/2016	6/17/2016	6/27/2016	6/27/2016	12/10/2015	2/18/2016	2/5/2016	6/28/2016	6/27/2016
Volatile Organic Compounds												
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	**6.6**	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	1 U	**0.94 J**	**20.1**	**0.78 J**	**7.9**	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	**131**	1 U	**0.82 J**	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	5	1 U	1 U	**22.8**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	µg/L	14,000	10 U	10 U	**54.5**	10 U	10 U	10 R	10 R	10 U	**3.8 J**	**3 J**
Benzene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**14**	1 U	**0.25 J**
Carbon disulfide	µg/L	810	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.79 J**	**0.94 J**	1 U
Chloroform	µg/L	0.22	1 U	**1.8**	1 U	1 U	**1.8**	**27.9**	1 U	1 U	**2.4**	1 U
Toluene	µg/L	1,000	**0.84 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.23 J**	**0.21 J**
Vinyl chloride	µg/L	2	1 U	1 U	**0.92 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Semi-Volatile Organic Compounds^												
1,4-Dioxane	µg/L	0.46	**0.025 J**	**17.7**	**89.6**	**0.62**	**15.8**	0.1 U	0.1 U	**0.16**	0.1 U	**0.094 J**
2,4-Dimethylphenol	µg/L	360	**0.52 J**	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	**0.55**	**0.021 J**	**0.18**	0.1 U	0.1 U	0.1 U	0.1 U	**0.14**	**0.046 J**	**0.26**
2-Methylphenol	µg/L	930	**0.31 J**	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	**0.85 J**	2 U	2.7 U	2 U	2.1 U	2.1 U	2 U	2 U	2.1 U	2 U
Acenaphthene	µg/L	530	**0.49**	0.1 U	**0.028 J**	0.1 U	0.1 U	0.1 U	0.1 U	**0.11**	**0.14**	**0.7**
Acenaphthylene	µg/L	530	**0.42**	0.1 U	0.14 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.028 J**	**0.049 J**	**0.11**
Anthracene	µg/L	1,800	**0.27**	**0.016 J**	0.14 U	0.1 U	0.1 U	**0.014 J**	0.1 U	**0.042 J**	**0.048 J**	**0.22**
Benz[a]anthracene	µg/L	0.03	**0.056 J**	0.1 U	**0.026 J**	0.1 U	0.1 U	**0.022 J**	0.1 U	0.1 U	**0.02 J**	**0.037 J**
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 UJ	**0.011 J**	0.1 U	0.1 U	**0.014 J**	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	0.1 U	0.1 UJ	**0.027 J**	0.1 U	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	0.1 U	0.1 UJ	**0.024 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.013 J**
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	**0.7 J**	**0.39 J**	1 U	1 U	1 U	1 UJ	0.25 B	1 U	1 U
Caprolactam	µg/L	9,900	2.6 U	2.6 U	**0.67 J**	2.6 U	2.6 U	2.6 UJ	2.5 U	2.5 U	2.6 U	2.6 U
Carbazole	µg/L		**1.6**	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.98 J**
Chrysene	µg/L	25	0.1 U	0.1 U	**0.013 J**	0.1 U	**0.011 J**	**0.012 J**	0.1 U	0.1 U	**0.0088 J**	**0.027 J**
Diethylphthalate	µg/L	15,000	1 U	1 U	**1.1 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	µg/L	900	1 U	**0.13 J**	1.4 U	**0.15 J**	1 U	1 U	1 U	1 U	1 U	1 U
Fluoranthene	µg/L	800	**0.45**	**0.018 J**	**0.033 J**	0.1 U	**0.02 J**	**0.059 J**	0.1 U	**0.049 J**	**0.12**	**0.38**
Fluorene	µg/L	290	**0.99**	0.1 U	**0.031 J**	0.1 U	0.1 U	0.1 U	0.1 U	**0.12**	**0.099 J**	**0.53**
Naphthalene	µg/L	0.12	4.1 B	0.055 B	0.1 B	0.029 B	0.032 B	0.052 B	0.023 B	**0.47**	0.18 B	**12**
Pentachlorophenol	µg/L	1	2.6 U	2.6 U	3.4 U	**0.82 J**	**0.83 J**	2.6 U	2.5 U	**1 J**	2.6 U	2.6 U
Phenanthrene	µg/L		**1.8**	**0.025 J**	**0.068 J**	0.1 U	**0.02 J**	**0.056 J**	0.1 U	**0.12**	**0.25**	**0.96**
Phenol	µg/L	5,800	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	**0.42 J**	1 U	1 U
Pyrene	µg/L	120	**0.28**	0.1 U	**0.033 J**	0.1 U	**0.013 J**	**0.05 J**	0.1 U	**0.038 J**	**0.078 J**	**0.24**
TPH												
Diesel Range Organics	µg/L	47	**198**	**278 J**	**197**	**70.5 J**	**59.1 J**	47.9 B	**49.6 J**	**1,170 J**	**74 J**	**408**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
^PAH compounds were analyzed via SIM
*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.
B: This analyte was not detected substantially above the level of the associated method or field blank.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this analyte in the sample.

Table 4 - Sub-Parcel B21-1
Summary of Inorganics Detected in Groundwater

Parameter	Units	PAL	B2-051-PZ* 6/23/2017	FM-003-PZI 6/16/2016	FM-003-PZS* 6/17/2016	FM-016-PZI* 6/27/2016	FM-016-PZS* 6/27/2016	FM01-PZM003 12/10/2015	FM01-PZM041 2/18/2016	SW-057-MWS 2/5/2016	SW-079-MWI* 6/28/2016	SW-079-MWS* 6/27/2016
Total Metals												
Aluminum	µg/L	20,000	N/A	N/A	N/A	N/A	N/A	**118**	**101**	**537**	**132**	**109**
Antimony	µg/L	6	N/A	N/A	N/A	N/A	N/A	6 U	6 U	6 U	6 U	**3.3 J**
Arsenic	µg/L	10	N/A	N/A	N/A	N/A	N/A	5 U	**40.6**	**3.7 J**	**5.8**	5 U
Barium	µg/L	2,000	N/A	N/A	N/A	N/A	N/A	**25.8**	**656**	**60.7**	**304**	**64.2**
Cadmium	µg/L	5	N/A	N/A	N/A	N/A	N/A	3 U	**0.65 J**	3 U	**0.49 J**	3 U
Chromium	µg/L	100	N/A	N/A	N/A	N/A	N/A	1.6 B	5 U	2.6 B	**1.4 J**	**1.5 J**
Cobalt	µg/L	6	N/A	N/A	N/A	N/A	N/A	5 U	5 U	**3.7 J**	5 U	5 U
Copper	µg/L	1,300	N/A	N/A	N/A	N/A	N/A	1.7 B	**2.2 J**	5 U	5 U	5 U
Iron	µg/L	14,000	N/A	N/A	N/A	N/A	N/A	50 B	**46,600**	**15,600**	**67,000**	**110**
Manganese	µg/L	430	N/A	N/A	N/A	N/A	N/A	**7.6**	**137**	**2,190**	**3,520**	**56.2**
Mercury	µg/L	2	N/A	N/A	N/A	N/A	N/A	0.06 B	0.2 U	0.2 UJ	0.2 U	0.2 U
Nickel	µg/L	390	N/A	N/A	N/A	N/A	N/A	**0.71 J**	10 U	5.7 B	10 U	**0.73 J**
Silver	µg/L	94	N/A	N/A	N/A	N/A	N/A	6 U	6 U	6 U	**0.79 J**	6 U
Vanadium	µg/L	86	N/A	N/A	N/A	N/A	N/A	**224**	2.1 B	**53.3**	**3 J**	**217**
Zinc	µg/L	6,000	N/A	N/A	N/A	N/A	N/A	10 U	10 U	**18.9**	0.74 B	3.4 B
Dissolved Metals												
Aluminum, Dissolved	µg/L	20,000	**1,130**	50 U	**21.6 J**	**35.7 J**	**64.4**	**102**	50 U	**38.1 J**	**27.1 J**	**88.8**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	2.6 B	6 U	6 U	**3.5 J**	**4.2 J**
Arsenic, Dissolved	µg/L	10	**5.1**	**4.7 J**	5 U	5 U	5 U	5 U	**35.8**	**6.4**	**4.9 J**	**2.9 J**
Barium, Dissolved	µg/L	2,000	**100**	**204**	**127**	**253**	22.8 B	**25.7**	**624**	**50.6**	**331**	**64.6**
Cadmium, Dissolved	µg/L	5	3 U	3 U	**0.54 J**	**0.58 J**	3 U	3 U	**0.53 J**	3 U	3 U	3 U
Chromium VI, Dissolved	µg/L	0.035	8.5 B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	**1 J**	5 U	**2 J**	5 U	**2.3 J**	1.3 B	5 U	1.6 B	5 U	**1.1 J**
Cobalt, Dissolved	µg/L	6	5 U	5 U	**60.9**	5 U	5 U	5 U	5 U	**2.9 J**	5 U	5 U
Copper, Dissolved	µg/L	1,300	5 U	5 U	**2.6 J**	5 U	5 U	5 U	**2.4 J**	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**121**	**69,500**	**34,600**	**56,800**	**1,800**	**23.9 J**	**45,800**	**13,600**	**69,500**	**49.5 J**
Manganese, Dissolved	µg/L	430	**5.6**	**1,560**	**2,200**	**2,630**	**742**	**5.8 J**	**128**	**2,110**	**3,700**	**51.9**
Nickel, Dissolved	µg/L	390	10 U	1.6 B	**92.4**	10 U	**3.3 J**	10 U	10 U	4.7 B	10 U	10 U
Selenium, Dissolved	µg/L	50	8 U	8 U	**6 J**	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	**0.62 J**	6 U	**1 J**	6 U	6 U	6 U	0.62 B	**1.1 J**	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**4.8 J**
Vanadium, Dissolved	µg/L	86	**110**	**1.4 J**	**1.6 J**	**2.3 J**	**1.1 J**	**233**	1.3 B	**29.3**	**2.7 J**	**228**
Zinc, Dissolved	µg/L	6,000	3.9 B	5.1 B	**112**	**138**	9.4 B	0.94 B	10 U	3.2 B	10 U	1.6 B
Other												
Cyanide	µg/L	200	**16**	**2.4 J**	10 U	10 U	**6.2 J**	10 U	10 U	10 U	10 U	**31.4**

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

Table 5 - Sub-Parcel B21-1
Cumulative Vapor Intrusion Comparison

				B2-051-PZ		FM-003-PZI		FM-003-PZS		FM-016-PZI		FM-016-PZS		FM01-PZM003		FM01-PZM041		SW-057-MWS		SW-079-MWI		SW-079-MWS	
				6/23/2017		6/16/2016		6/17/2016		6/27/2016		6/27/2016		12/10/2015		2/18/2016		2/5/2016		6/28/2016		6/27/2016	
Parameter	Type	Organ Systems	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																							
1,4-Dioxane	SVOC		130,000	0.025 J	1.9E-12	17.7	1.4E-09	89.6	6.9E-09	0.62	4.8E-11	15.8	1.2E-09	0.1 U	0	0.1 U	0	0.16	1.2E-11	0.1 U	0	0.094 J	7.2E-12
Naphthalene	SVOC		200	4.1 B	0	0.055 B	0	0.1 B	0	0.029 B	0	0.032 B	0	0.052 B	0	0.023 B	0	0.47	2.4E-08	0.18 B	0	12	6.0E-07
1,1-Dichloroethane	VOC		330	1 U	0	0.94 J	2.8E-08	20.1	6.1E-07	0.78 J	2.4E-08	7.9	2.4E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,2-Dichloroethane	VOC		98	1 U	0	1 U	0	22.8	2.3E-06	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Benzene	VOC		69	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	14	2.0E-06	1 U	0	0.25 J	3.6E-08
Chloroform	VOC		36	1 U	0	1.8	5.0E-07	1 U	0	1 U	0	1.8	5.0E-07	27.9	7.8E-06	1 U	0	1 U	0	2.4	6.7E-07	1 U	0
Vinyl chloride	VOC		25	1 U	0	1 U	0	0.92 J	3.7E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Cancer Risk					2E-12		5E-07		3E-06		2E-08		7E-07		8E-06		0		2E-06		7E-07		6E-07
Non-Cancer Risk																							
1,1-Dichloroethene	VOC	Hepatic	820	1 U	0	1 U	0	131	0.16	1 U	0	0.82 J	0.001	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0		0		0		0		0		0

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

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

Table 6 - Sub-Parcel B21-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	B21-065-SB-5	0.26	J	0.019	0.07	73	9.59	410	20	no
1,1-Dichloroethane	75-34-3	B21-001-SB-5	0.0055	J	0.0055	0.006	14	7.14	16	23,000	no
1,2,3-Trichlorobenzene	87-61-6	B2-026-SB-5	0.0034	J	0.0034	0.003	14	7.14		93	no
1,2,4,5-Tetrachlorobenzene	95-94-3	B21-057-SB-2	0.29		0.044	0.17	73	2.74		35	no
1,2,4-Trichlorobenzene	120-82-1	B2-026-SB-5	0.011		0.0036	0.007	14	14.29	110	26	no
1,4-Dichlorobenzene	106-46-7	B21-001-SB-5	0.0016	J	0.0016	0.002	14	7.14	11	2,500	no
2,4-Dimethylphenol	105-67-9	B21-004-SB-5	0.023	J	0.023	0.02	65	1.54		1,600	no
2,4-Dinitrophenol	51-28-5	B21-057-SB-2	0.084	J	0.084	0.08	63	1.59		160	no
2,4-Dinitrotoluene	121-14-2	B21-004-SB-5	0.039	J	0.022	0.03	73	2.74	7.4	160	no
2-Butanone (MEK)	78-93-3	B21-001-SB-5	0.008	J	0.008	0.008	14	7.14		19,000	no
2-Chloronaphthalene	91-58-7	B21-057-SB-2	0.22		0.052	0.13	73	5.48		6,000	no
2-Methylnaphthalene	91-57-6	B21-065-SB-5	5.2		0.0018	0.21	73	78.08		300	no
3,3'-Dichlorobenzidine	91-94-1	B21-039-SB-2	0.034	J	0.026	0.03	72	2.78	5.1		no
Acenaphthene	83-32-9	B21-005-SB-2	2.8		0.00067	0.19	73	69.86		4,500	no
Acenaphthylene	208-96-8	B21-027-SB-5	2		0.00092	0.14	73	73.97			no
Acetone	67-64-1	B21-043-SB-1.5	0.23		0.0074	0.09	14	71.43		67,000	no
Acetophenone	98-86-2	B21-065-SB-5	0.32	J	0.029	0.14	73	6.85		12,000	no
Aluminum	7429-90-5	B21-039-SB-2	60,200		2,320	20,673	74	100.00		110,000	no
Anthracene	120-12-7	B21-005-SB-2	9.5		0.0009	0.54	73	79.45		23,000	no
Antimony	7440-36-0	B21-015-SB-3	13.9		2.1	6.60	74	5.41		47	no
Aroclor 1242	53469-21-9	B21-031-SB-1	0.94		0.65	0.80	40	5.00	0.95		no
Aroclor 1248	12672-29-6	B21-029-SB-1	0.35		0.023	0.12	40	12.50	0.95		no
Aroclor 1254	11097-69-1	B21-012-SB-1	0.76	J	0.76	0.76	40	2.50	0.97	1.5	no
Aroclor 1260	11096-82-5	B21-039-SB-2	15.9		0.018	1.42	40	37.50	0.99		YES (C)
Arsenic	7440-38-2	B23-036-SB-1	46.6	J	1.7	7.76	80	83.75	3	48	YES (C)
Barium	7440-39-3	B21-015-SB-5	1,700		17.6	245	74	100.00		22,000	no
Benz[a]anthracene	56-55-3	B21-005-SB-2	36.5		0.0016	2.04	73	82.19	21		YES (C)
Benzaldehyde	100-52-7	B21-065-SB-5	0.32	J	0.027	0.11	52	9.62	820	12,000	no
Benzo[a]pyrene	50-32-8	B21-003-SB-5	32.8		0.0012	1.83	73	84.93	2.1	22	YES (C/NC)
Benzo[b]fluoranthene	205-99-2	B21-003-SB-5	40.7		0.0015	2.80	73	86.30	21		YES (C)
Benzo[g,h,i]perylene	191-24-2	B21-003-SB-5	7.6		0.0015	0.57	73	80.82			no
Benzo[k]fluoranthene	207-08-9	B21-003-SB-5	16.9		0.0015	1.35	73	82.19	210		no
Beryllium	7440-41-7	B21-025-SB-2	5.2		0.15	1.60	74	95.95	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	B23-036-SB-4	0.12		0.016	0.04	73	12.33	160	1,600	no
Cadmium	7440-43-9	B21-057-SB-6	3		0.33	0.93	74	41.89	9,300	98	no
Caprolactam	105-60-2	B23-036-SB-4	0.69		0.16	0.50	73	5.48		40,000	no
Carbazole	86-74-8	B21-005-SB-2	1.9		0.021	0.37	73	23.29			no
Carbon disulfide	75-15-0	B21-001-SB-5	0.028		0.0031	0.01	14	28.57		350	no
Chromium	7440-47-3	B2-051-SB-5	1,440	J	12.2	249	74	100.00		180,000	no
Chromium VI	18540-29-9	B21-036-SB-5	14.9	J-	0.54	3.47	52	25.00	6.3	350	YES (C)

Table 6 - Sub-Parcel B21-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Chrysene	218-01-9	B21-005-SB-2	30.1		0.00046	1.72	73	86.30	2,100		no
Cobalt	7440-48-4	B21-016-SB-4	65.8		0.55	11.6	74	97.30	1,900	35	YES (NC)
Copper	7440-50-8	B21-065-SB-5	960		4.2	130	74	100.00		4,700	no
Cyanide	57-12-5	B21-039-SB-2	17.3	J-	0.089	1.03	74	75.68		120	no
Dibenz[a,h]anthracene	53-70-3	B21-003-SB-5	3.1		0.0025	0.27	73	72.60	2.1		YES (C)
Di-n-ocytlphthalate	117-84-0	B21-039-SB-2	0.038	J	0.038	0.04	73	1.37		820	no
Fluoranthene	206-44-0	B21-005-SB-2	71		0.00066	3.75	73	90.41		3,000	no
Fluorene	86-73-7	B21-005-SB-2	3		0.00074	0.17	73	71.23		3,000	no
Hexachlorobenzene	118-74-1	B21-057-SB-2	1.1		1.1	1.10	73	1.37	0.96	93	YES (C)†
Hexachloroethane	67-72-1	B21-004-SB-5	0.028	J	0.018	0.02	73	2.74	8	46	no
Indeno[1,2,3-c,d]pyrene	193-39-5	B21-003-SB-5	8.3		0.0028	0.63	73	76.71	21		no
Iron	7439-89-6	B2-049-SB-4	207,000	J	5,220	55,840	74	100.00		82,000	YES (NC)
Lead^	7439-92-1	B21-027-SB-5	831		1.7	98.2	74	97.30		800	YES (NC)
Manganese	7439-96-5	B21-045-SB-4.5	41,500		14.3	7,641	75	100.00		2,600	YES (NC)
Mercury	7439-97-6	B21-010-SB-2	1.7		0.0059	0.14	74	77.03		35	no
Methyl Acetate	79-20-9	B21-025-SB-7.5	0.088		0.0053	0.03	14	35.71		120,000	no
Methyl tert-butyl ether (MTBE)	1634-04-4	B21-025-SB-7.5	0.00087	J	0.00087	0.0009	14	7.14	210	6,400	no
Naphthalene	91-20-3	B21-065-SB-5	2.9	J	0.0016	0.19	73	78.08	8.6	59	no
Nickel	7440-02-0	B21-010-SB-5	313		5.2	34.3	74	95.95	64,000	2,200	no
N-Nitrosodiphenylamine	86-30-6	B23-036-SB-4	0.021	J	0.021	0.02	73	1.37	470		no
PCBs (total)*	1336-36-3	B21-039-SB-2	15.9		0.041	1.46	40	42.50	0.94		YES (C)
Pentachlorophenol	87-86-5	B23-036-SB-1	0.21		0.064	0.12	64	4.69	4	280	no
Phenanthrene	85-01-8	B21-005-SB-2	60.2		0.00071	2.80	73	95.89			no
Pyrene	129-00-0	B21-005-SB-2	58.8		0.0013	3.13	73	86.30		2,300	no
Selenium	7782-49-2	B21-016-SB-5	5.5		2.6	3.80	74	10.81		580	no
Silver	7440-22-4	B2-026-SB-5	29.3	J	0.39	11.3	74	31.08		580	no
Silver	7440-22-4	B2-051-SB-5	29.3		0.39	11.3	74	31.08		580	no
Thallium	7440-28-0	B21-066-SB-7.5	64.1		3.2	17.5	74	6.76		1.2	YES (NC)
Vanadium	7440-62-2	B21-066-SB-7.5	3,940	J	11.1	235	74	100.00		580	YES (NC)
Zinc	7440-66-6	B21-009-SB-2	6,750		2.8	318	74	100.00		35,000	no

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

COPC = Constituent of Potential Concern
TR = Target Risk
HQ = Hazard Quotient

C = Compound was identified as a cancer COPC
NC = Compound was identified as a non-cancer COPC

*PCBs (total) include the sum of all detected aroclor mixtures, including those without RSLs (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^Lead is assessed separately through the ALM and IEUBK models.
†Hexachlorobenzene was identified as a COPC but is not included as an EPC due to a frequency of detection below 5%.

Table 7 - Sub-Parcel B21-1
Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
EU1 (30.5 ac.)	Surface	494	94.5
	Sub-Surface	831	92.4
	Pooled	831	93.2
EU1-EXP (31.6 ac.)	Surface	494	94.5
	Sub-Surface	831	96.3
	Pooled	831	95.6

Table 8 - Sub-Parcel B21-1
Soil Exposure Point Concentrations

	EU1 (30.5 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% KM (Chebyshev) UCL	14.4	KM H-UCL	8.64	95% KM (Chebyshev) UCL	10.8
Chromium VI	95% KM (t) UCL	2.21	Gamma Adjusted KM-UCL	2.73	95% KM Approximate Gamma UCL	2.21
Cobalt	95% GROS Adjusted Gamma UCL	7.52	Gamma Adjusted KM-UCL	20.1	KM H-UCL	14.8
Iron	95% H-UCL	80,997	95% Adjusted Gamma UCL	75,511	95% Chebyshev (Mean, Sd) UCL	84,181
Manganese	95% Adjusted Gamma UCL	11,270	95% Adjusted Gamma UCL	13,017	95% Adjusted Gamma UCL	10,698
Thallium*	**Maximum Value**	**12.4**	95% KM (t) UCL	8.28	95% KM Approximate Gamma UCL	6.51
Vanadium	95% Adjusted Gamma UCL	324	95% Chebyshev (Mean, Sd) UCL	669	95% Chebyshev (Mean, Sd) UCL	509
Total PCBs	95% KM (Chebyshev) UCL	3.59	95% KM (t) UCL	0.12	95% KM (Chebyshev) UCL	2.52
Benz[a]anthracene	Gamma Adjusted KM-UCL	8.42	97.5% KM (Chebyshev) UCL	6.23	KM H-UCL	13.1
Benzo[a]pyrene	Gamma Adjusted KM-UCL	6.82	97.5% KM (Chebyshev) UCL	6.06	KM H-UCL	21.2
Benzo[b]fluoranthene	Gamma Adjusted KM-UCL	8.78	97.5% KM (Chebyshev) UCL	7.97	KM H-UCL	34.0
Dibenz[a,h]anthracene	Gamma Adjusted KM-UCL	0.63	Gamma Adjusted KM-UCL	0.42	KM H-UCL	0.46

Bold indicates maximum value used as the EPC
*The maximum value has been utilized as the EPC for Thallium due to the limited detections (two) in the soil dataset

Table 8 - Sub-Parcel B21-1
Soil Exposure Point Concentrations

	EU1-EXP (31.6 ac.)					
	EPCs - Surface Soils		**EPCs - Sub-Surface Soils**		**EPCs - Pooled Soils**	
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	95% KM (Chebyshev) UCL	14.4	KM H-UCL	8.53	95% KM (Chebyshev) UCL	10.6
Chromium VI	95% KM (t) UCL	2.21	Gamma Adjusted KM-UCL	2.60	95% KM Approximate Gamma UCL	2.15
Cobalt	95% GROS Adjusted Gamma UCL	7.52	Gamma Adjusted KM-UCL	19.9	KM H-UCL	15.1
Iron	95% H-UCL	80,997	95% Adjusted Gamma UCL	74,178	95% H-UCL	72,903
Manganese	95% Adjusted Gamma UCL	11,270	95% Adjusted Gamma UCL	12,389	95% Adjusted Gamma UCL	10,400
Thallium*	**Maximum Value**	**12.4**	95% KM (t) UCL	8.12	95% KM Approximate Gamma UCL	6.42
Vanadium	95% Adjusted Gamma UCL	324	95% Chebyshev (Mean, Sd) UCL	644	95% Chebyshev (Mean, Sd) UCL	498
Total PCBs	95% KM (Chebyshev) UCL	3.59	95% KM (t) UCL	0.12	95% KM (Chebyshev) UCL	2.46
Benz[a]anthracene	Gamma Adjusted KM-UCL	8.42	97.5% KM (Chebyshev) UCL	5.98	KM H-UCL	12.5
Benzo[a]pyrene	Gamma Adjusted KM-UCL	6.82	97.5% KM (Chebyshev) UCL	5.83	KM H-UCL	20.68
Benzo[b]fluoranthene	Gamma Adjusted KM-UCL	8.78	97.5% KM (Chebyshev) UCL	7.71	KM H-UCL	33.5
Dibenz[a,h]anthracene	Gamma Adjusted KM-UCL	0.63	Gamma Adjusted KM-UCL	0.41	KM H-UCL	0.46

Bold indicates maximum value used as the EPC
*The maximum value has been utilized as the EPC for Thallium due to the limited detections (two) in the soil dataset

Table 9 - Sub-Parcel B21-1
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (30.5 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	14.4	3.00	480	4.8E-06	0.03
Chromium VI	**Respiratory**	2.21	6.30	3,500	3.5E-07	0.0006
Cobalt	**Thyroid**	7.52	1,900	350	4.0E-09	0.02
Iron	**Gastrointestinal**	80,997		820,000		0.1
Manganese	**Nervous**	11,270		26,000		0.4
Thallium*	**Dermal**	**12.4**		12.0		1
Vanadium	**Dermal**	324		5,800		0.06
PCBs (Total)		3.59	0.94		3.8E-06	
Benz(a)anthracene		8.42	21.0		4.0E-07	
Benzo(a)pyrene	**Developmental**	6.82	2.10	220	3.2E-06	0.03
Benzo(b)fluoranthene		8.78	21.0		4.2E-07	
Dibenz(a,h)anthracene		0.63	2.10		3.0E-07	
					1E-05	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Bold indicates maximum value

EPC: Exposure Point Concentration

HQ: Hazard Quotient

HI: Hazard Index

*The maximum value has been utilized as the EPC for Thallium due to the limited detections (two) in the soil dataset

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

Table 10 - Sub-Parcel B21-1
Subsurface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (30.5 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	8.64	3.00	480	2.9E-06	0.02
Chromium VI	**Respiratory**	2.73	6.30	3,500	4.3E-07	0.0008
Cobalt	**Thyroid**	20.1	1,900	350	1.1E-08	0.06
Iron	**Gastrointestinal**	75,511		820,000		0.09
Manganese	**Nervous**	13,017		26,000		0.5
Thallium	**Dermal**	8.28		12.0		0.7
Vanadium	**Dermal**	669		5,800		0.1
PCBs (Total)		0.12	0.94		1.3E-07	
Benz(a)anthracene		6.23	21.0		3.0E-07	
Benzo(a)pyrene	**Developmental**	6.06	2.10	220	2.9E-06	0.03
Benzo(b)fluoranthene		7.97	21.0		3.8E-07	
Dibenz(a,h)anthracene		0.42	2.10		2.0E-07	
					7E-06	↓

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

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

Table 11 - Sub-Parcel B21-1
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organs	EU1 (30.5 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	10.8	3.00	480	3.6E-06	0.02
Chromium VI	**Respiratory**	2.21	6.30	3,500	3.5E-07	0.0006
Cobalt	**Thyroid**	14.8	1,900	350	7.8E-09	0.04
Iron	**Gastrointestinal**	84,181		820,000		0.1
Manganese	**Nervous**	10,698		26,000		0.4
Thallium	**Dermal**	6.51		12.0		0.5
Vanadium	**Dermal**	509		5,800		0.09
PCBs (Total)		2.52	0.94		2.7E-06	
Benz(a)anthracene		13.1	21.0		6.2E-07	
Benzo(a)pyrene	**Developmental**	21.2	2.10	220	1.0E-05	0.1
Benzo(b)fluoranthene		34.0	21.0		1.6E-06	
Dibenz(a,h)anthracene		0.46	2.10		2.2E-07	
					2E-05	↓

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

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

Table 12 - Sub-Parcel B21-1
Surface Soils
Construction Worker Risk Ratios

125 Day		EU1-EXP (31.6 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	14.4	30.3	193	4.8E-07	0.07
Chromium VI	Respiratory	2.21	43.0	1,601	5.1E-08	0.001
Cobalt	Thyroid	7.52	8,766	1,889	8.6E-10	0.004
Iron	Gastrointestinal	80,997		481,083		0.2
Manganese	Nervous	11,270		8,281		1
Thallium	Dermal	**12.4**		27.5		0.5
Vanadium	Dermal	324		3,193		0.1
PCBs (Total)		3.59	9.57		3.8E-07	
Benz(a)anthracene		8.42	294		2.9E-08	
Benzo(a)pyrene	Developmental	6.82	34.3	13.9	2.0E-07	0.5
Benzo(b)fluoranthene		8.78	341		2.6E-08	
Dibenz(a,h)anthracene		0.63	35.6		1.8E-08	
					1E-06	↓

Bold indicates maximum value
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	1
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 13 - Sub-Parcel B21-1
Subsurface Soils
Construction Worker Risk Ratios

125 Day		EU1-EXP (31.6 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	8.53	30.3	193	2.8E-07	0.04
Chromium VI	Respiratory	2.60	43.0	1,601	6.0E-08	0.002
Cobalt	Thyroid	19.9	8,766	1,889	2.3E-09	0.01
Iron	Gastrointestinal	74,178		481,083		0.2
Manganese	Nervous	12,389		8,281		1
Thallium	Dermal	8.12		27.5		0.3
Vanadium	Dermal	644		3,193		0.2
PCBs (Total)		0.12	9.57		1.3E-08	
Benz(a)anthracene		5.98	294		2.0E-08	
Benzo(a)pyrene	Developmental	5.83	34.3	13.9	1.7E-07	0.4
Benzo(b)fluoranthene		7.71	341		2.3E-08	
Dibenz(a,h)anthracene		0.41	35.6		1.2E-08	
					6E-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	1
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0
	Respiratory	0

Table 14 - Sub-Parcel B21-1
Pooled Soils
Construction Worker Risk Ratios

125 Day		EU1-EXP (31.6 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	10.6	30.3	193	3.5E-07	0.05
Chromium VI	Respiratory	2.15	43.0	1,601	5.0E-08	0.001
Cobalt	Thyroid	15.1	8,766	1,889	1.7E-09	0.008
Iron	Gastrointestinal	72,903		481,083		0.2
Manganese	Nervous	10,400		8,281		1
Thallium	Dermal	6.42		27.5		0.2
Vanadium	Dermal	498		3,193		0.2
PCBs (Total)		2.46	9.57		2.6E-07	
Benz(a)anthracene		12.5	294		4.3E-08	
Benzo(a)pyrene	Developmental	20.68	34.3	13.9	6.0E-07	1
Benzo(b)fluoranthene		33.5	341		9.8E-08	
Dibenz(a,h)anthracene		0.46	35.6		1.3E-08	
					1E-06	↓

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
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	1
	Respiratory	0

APPENDIX A

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

September 16, 2021

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review
Tradepoint Atlantic Parcel B21-1

Dear Ms. Brown:

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

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

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

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel B21-1 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

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

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

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

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

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

Thank you,

Peter Haid

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

APPENDIX B

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B21-1

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

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel B21-1

Area of site (ac)	Ac	31.6 → EU1-EXP
Overall duration of construction (wk/yr)	EW	25
Exposure frequency (day/yr)	EF	**125**
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	**13.9**
Overall duration of construction (hr)	tc	**4,200**
Overall duration of traffic (s)	Tt	**3,600,000**
Surface area (m2)	AR	**127,881**
Length (m)	LR	**358**
Distance traveled (km)	ΣVKT	**447**
Particulate emission factor (m3/kg)	PEFsc	**128,656,862**
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**7.04**
Total time of construction (s)	Tcv	**3,600,000**

Input
Calculation

Chemical	RfD & RfC Sources	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				30.3	18,347	30.3	195	16,906	193
Chromium(VI)	A/C/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	0.01	1			-	1.90E+01				45.0	939	43.0	1,609	338,110	1,601
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	0.01	1			-	4.50E+01					8,766	8,766	2,062	22,541	1,889
Iron	P	-	-	7.00E-01	-	1	7.00E-01	0.01	1			-	2.50E+01							481,083		481,083
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	0.01	1			-	6.50E+01							9,708	56,352	8,281
Thallium (Soluble Salts)	P	-	-	4.00E-05	-	1	4.00E-05	0.01	1			-	7.10E+01							27.5		27.5
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							3,287	112,703	3,193
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	1.97E+4	17.4	21.2	9.57			
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	1.65E+5	356	1,679	294			
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	8.76E+5	35.6	889	34.3	153	15.2	13.9
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	7.90E+5	356	8,024	341			
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	2.10E+6	35.6	131,487	35.6			

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

APPENDIX C

Sparrows Point Development - PPE Standard Operational Procedure, Revision 3

Planning, Tracking/Supervision, Enforcement, and Documentation

Planning

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

Tracking/Supervision

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

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

Work Zones Delineation

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

Documentation

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

Enforcement

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

Unknown and/or Unexpected Conditions

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

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

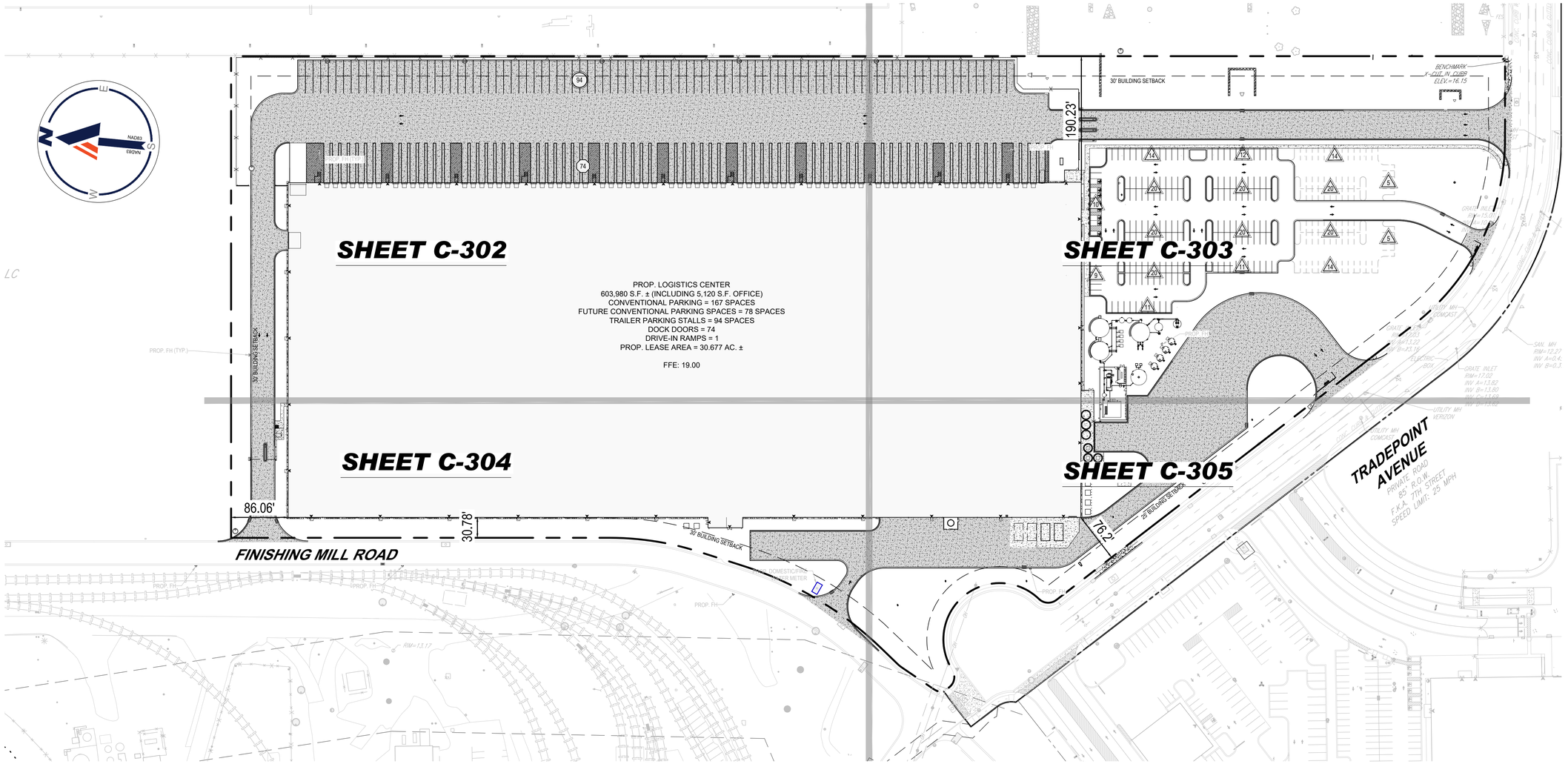
Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

Modified Level D PPE

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

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

APPENDIX D



LC

LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT
	ONSITE PROPERTY LINE / R.O.W. LINE
	CONCRETE CURB & GUTTER

PROPOSED NOTE

CURB AND GUTTER

SPILL CURB

LEGEND

- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED BUILDING
- HEAVY DUTY ASPHALT PAVEMENT
- STANDARD DUTY ASPHALT PAVEMENT
- CONCRETE SIDEWALK

80 40 20 0 80

1"= 80'

ARCHITECTURAL REFERENCE

THIS PLAN IS BASED ON ARCHITECTURAL PLANS PREPARED BY MERRIMAN PITT ANDERSON, INC., ENTITLED "PROJECT SCHOONER"; JOB NO.: 20-045; DATED: 08/16/2021

SITE NOTES

1. TOTAL SITE AREA: 132,225,998 S.F. OR 3,035.49 AC.
2. PROPERTY SITE AREA: 1,336,300 S.F. OR 30.68 AC.
3. PROPOSED FLOOR AREA: 603,980 S.F.± (INCLUDES 5,120 S.F. OFFICE)
4. DEED REFERENCE: LIBER 35478, FOLIO 379
5. ELECTION DISTRICT: 15TH
6. COUNCILMANIC DISTRICT: 7TH
7. TAX MAP 111, GRID 14, PARCEL 318
8. TAX. ACCT. NOS.: 1502024000
9. OWNER:
   TRADEPOINT ATLANTIC, LLC.
   1600 SPARROWS POINT BLVD
   BALTIMORE, MD 21219
10. DEVELOPER/APPLICANT:
    THE KEITH CORPORATION
    4500 CAMERON VALLEY PARKWAY
    SUITE 400
    CHARLOTTE, NC 28211
    CONTACT: RAY JASINSKI
    PHONE: 704-365-6000
11. ZONE: MH-IM (MANUFACTURING - HEAVY - INDUSTRIAL - MAJOR)
12. PREVIOUS ZONING CASES: NONE
12. WATERSHED: BALTIMORE HARBOR
13. CENSUS TRACT: 9800.00
14. ALL SOILS ARE URBAN LAND, UDORTHENTS, 0 TO 8% SLOPES
15. EXISTING USE: VACANT
16. PROPOSED USE: DISTRIBUTION WAREHOUSE AND OFFICES
17. PARKING
    • REQUIRED: WAREHOUSE:1 PER EMPLOYEE ON LARGEST SHIFT = ### SPACES AND OFFICE: 3.3 SPACES PER 1,000 S.F. = 17 SPACES
    TOTAL REQUIRED = ### SPACES
    •• PROVIDED: 167 SPACES PLUS 78 FUTURE SPACES
    ••• INCLUDING 8 ADA SPACES
18. STRUCTURE HEIGHT
    • REQUIRED: UNLIMITED
    • PROPOSED: ####±
19. THIS SITE WILL BE SERVED BY PUBLIC WATER AND SEWER SYSTEMS.
20. THERE ARE NO KNOWN WELLS OR SEPTIC SYSTEMS LOCATED WITHIN THE PROPOSED LEASE AREA.

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

TRACKING # DRC-2021-0080; DRC# 060121C; DIST 15C7

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

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-SPPD-0

PROJECT:

PROJECT PRETZEL

FOR

THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

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

SHEET TITLE:

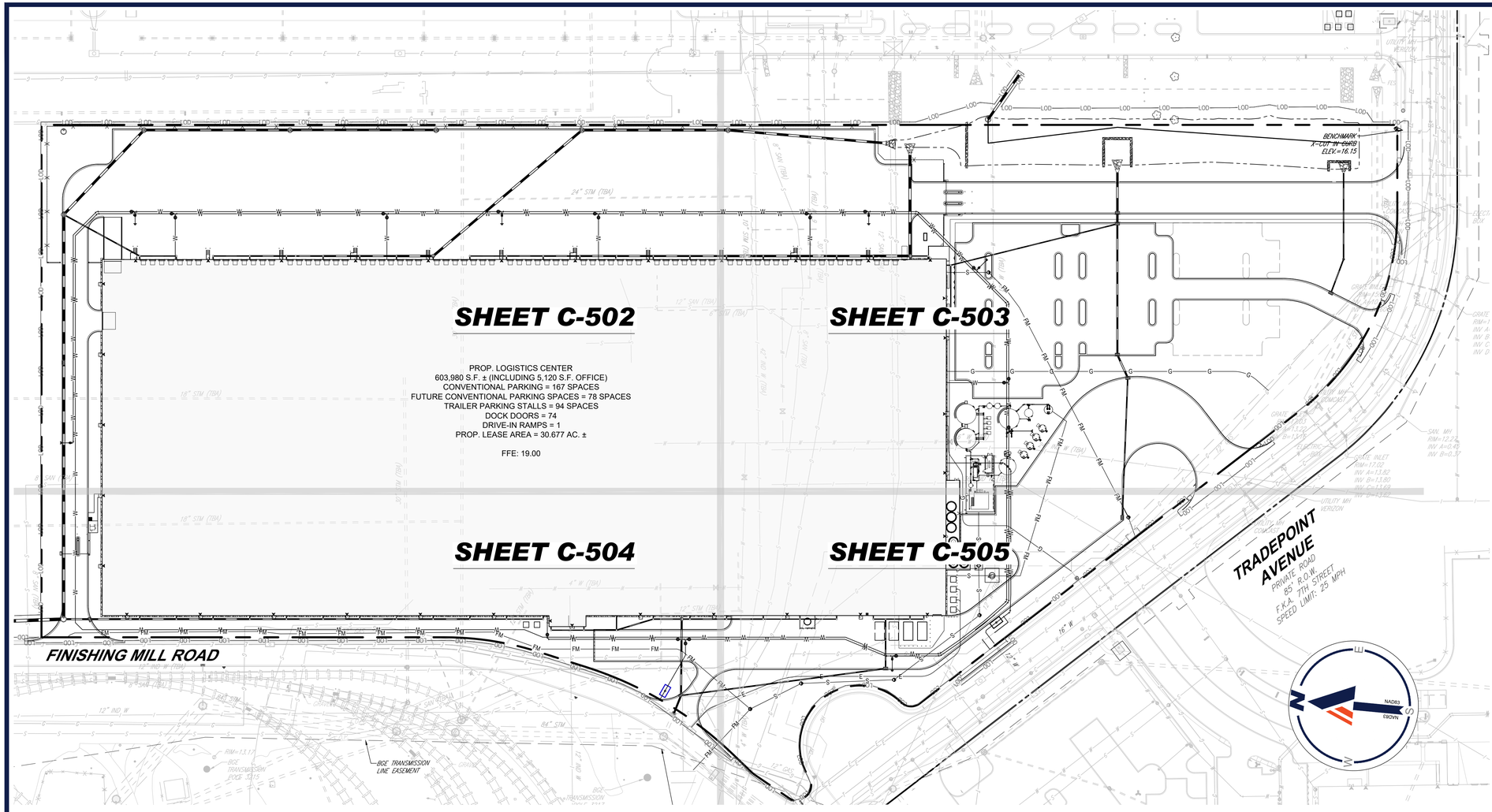
OVERALL SITE PLAN

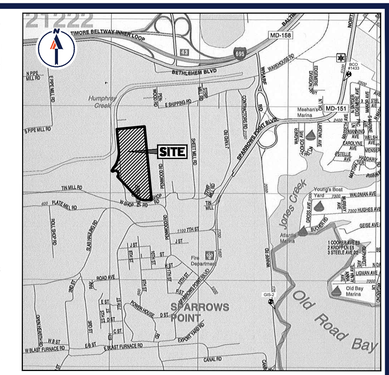
SHEET NUMBER:

C-301

MDE # 21-SF-0086

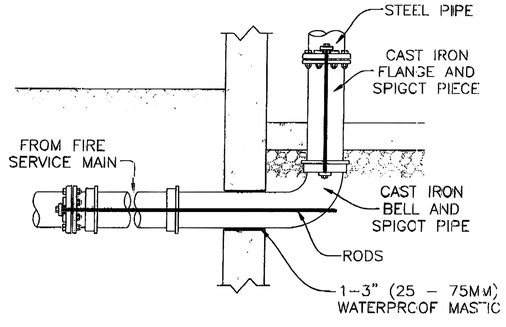
Sep 09, 2021
H:\200\MD202047\DRAWING\SPLAN SET\PHASE 2 PLANS\MD202047 SPPD-0—LAYOUT C-301 - OVERALL SITE PLAN
MJG





LOCATION MAP

SCALE: 1"=2000'



TYPICAL CONNECTION TO STANDPIPE RISER

NOT TO SCALE

BALTIMORE COUNTY FIRE LINE UTILITY NOTES

1. THE OVERALL INSTALLATION AND DESIGN SHALL BE IN COMPLIANCE WITH NFPA 24, 2007 EDITION, "STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES"; THE BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS, "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION;; AND THE BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS "DESIGN MANUAL".
2. ALL RODDING, CLAMPS, NUTS, BOLTS, AND OTHER RESTRAINING DEVICES EXCEPT THRUST BLOCKS, SHALL BE CLEANED AND COATED WITH BITUMINOUS OR ASPHALT. NFPA 24, 2007 EDITION, SECTION 10.8.3.5.
3. FERROUS METAL PIPING, IF UTILIZED, SHALL BE LINED, AND STEEL PIPE SHALL BE COATED AND WRAPPED. NFPA 24, 2007 EDITION, SECTIONS 10.1.2, 10.1.3, 10.1.6, 10.1.6.2.
4. ALL PIPING , FITTINGS, AND JOINTS SHALL MEET THE REQUIREMENTS SET FORTH IN NFPA 24, 2007 EDITION, SECTION 10.1 THROUGH 10.3.5.
5. THRUST BLOCKS SHALL BE PROVIDED AT ALL CHANGES IN DIRECTION IN THE PIPELINE, AND AT ALL TEES, PLUGS, CAPS, AND BENDS. THRUST BLOCKS SHALL CONFORM TO THE BEARING AREAS NOTED IN THE TEXT OF THE STANDARD AND CONFIGURATIONS NOTED IN THE APPENDIX. NFPA 24, 2007 EDITION, SECTIONS 10.8.1.1 AND 10.8.2.
6. ALL VALVES (>2") CONTROLLING WATER SUPPLIES SHALL BE INSTALLED IN STANDARD VAULTS AS DETAILED BY THE BCDPW "STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION" MANUAL, OR SHALL UTILIZE APPROVED POST INDICATOR VALVES. ROADWAY BOXES ARE NOT ACCEPTABLE. NFPA 24, 2007 EDITION, SECTIONS 6.1, 6.3 AND 6.4; BCDPW "DESIGN MANUAL", WATER MAIN SECTION, SECTION 2-4.7.
7. FIRE HYDRANTS, PUBLIC AND PRIVATE SHALL BE UL LISTED OR BE FM OR BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS APPROVED THREE (3) OUTLET HYDRANTS. OUTLETS SHALL BE 2-2 ½" NST AND 1-4 ½" BALTIMORE COUNTY STEAMER THREAD. NFPA 24, 2007 EDITION, SECTION 7.1.1 AND 7.1.1.2 BCDPW "DESIGN MANUAL", SECTION 2-4.4 STEAMER THREAD, AS DETAILED ON BCDPW PLATE W-3C, DATED 3/5/82. BALTIMORE COUNTY BILL 48-10 SECTION 1:18.3.3.1(3) AND 1:18.3.5.2.
8. FIRE HYDRANTS SHALL HAVE A CENTERLINE SET BACK FROM THE CURB OF 24" AND SHALL HAVE THE CENTERLINE OF THE 4-1/2" STEAMER CONNECTION NO LESS THAN 17" NOR MORE THAN 30" ABOVE FINISHED GRADE, FACING THE ACCESS DRIVE. BCDPW "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION", PLATE W-3A, W-3B.
9. FIRELINES ARE SUBJECT TO A MINIMUM OF A 200-PSI HYDROSTATIC TEST IN ACCORDANCE WITH NFPA 24, 2007 EDITION, SECTION 10.10.2.2.1. ALL THRUST BLOCKS, TIE RODS, VALVES, FITTINGS, AND HYDRANT DRAIN FIELDS SHALL BE EXPOSED FOR FIRE DEPARTMENT INSPECTION AT THE TIME OF THE TEST. PIPE JOINTS MAY BE COVERED AT THE TIME OF THE TEST.
10. THE MINIMUM DEPTH OF COVER FOR ALL UNDERGROUND FIRE LINES SHALL BE A MINIMUM OF 4'-0" MEASURED FROM THE TOP OF THE PIPE. NFPA 24, 2007 EDITION, SECTION 10.4 AND TABLE A10.5.1.
11. PIPE SHALL NOT BE RUN MORE THAN ONE PIPE LENGTH (APPROXIMATELY 20 FEET) UNDER BUILDINGS. FITTINGS SHALL NOT BE LOCATED WITHIN THE BEARING AREA OF ANY FOUNDATIONS UNLESS APPROVED BY THE DESIGN ENGINEER. NFPA 24, 2007 EDITION, SECTION 10.6.
12. SPOOL PIECES ON VERTICAL RISES OR HORIZONTAL STUB-INS SHALL BE WELDED OR SCREWED FLANGE, OR LISTED UNIFLANGE TYPE FITTING. NOTE: UNIFLANGE TYPE FITTINGS SHALL BE SPECIFICALLY LISTED FOR ABOVEGROUND USE.
13. ON SITE (PRIVATE) HYDRANTS SHALL BE PAINTED RED, IN ORDER TO DISTINGUISH THEM FROM (ORANGE) PUBLIC HYDRANTS. BALTIMORE COUNTY BILL 48-10, SECTION 1:18.3.5.2.
14. COORDINATE HYDROSTATIC TEST AND FLUSH WITH CONTRACTOR INSTALLING STUB-IN, SUCH THAT ENTIRE LEAD-IN IS TESTED AS A SINGLE UNIT.
15. COORDINATE HYDROSTATIC TEST AND FLUSH WITH CONTRACTOR INSTALLING LEAD-IN SUCH THAT ENTIRE LEAD TO THE BASE OF THE RISER IS TESTED AS A SINGLE UNIT.
16. RESTRAINED JOINT SYSTEMS. FIRE MAINS UTILIZING RESTRAINED JOINT SYSTEMS SHALL INCLUDE THE FOLLOWING PER NFPA 24, 2007 EDITION, SECTION 10.8.3:

    A. LOCKING MECHANICAL OR PUSH-ON JOINTS
    B. MECHANICAL JOINTS UTILIZING SETSCREW RETAINER GLANDS
    C. BOLTED FLANGE JOINTS
    D. HEAT-FUSED OR WELDED JOINTS
    E. PIPE CLAMPS AND TIE RODS
    F. OTHER APPROVED METHODS OR DEVICES.

17. PRIVATE HYDRANTS SUPPLIED BY FIRE PUMPS: PRIVATE FIRE HYDRANTS LOCATED ON THE DISCHARGE SIDE OF THE FIRE PUMPS SHALL HAVE THEIR BONNETS PAINTED WHITE IN ORDER TO INDICATE THAT SAID HYDRANTS ARE OFF THE DISCHARGE SIDE OF A FIRE PUMP. EXCEPTIONS FOR PRESENTLY EXISTING SYSTEMS MAY BE GRANTED AT THE DISCRETION OF THE CHIEF OF FIRE DEPARTMENT OF DESIGNEE. BALTIMORE COUNTY BILL 48-10 SECTION 1:18.3.5.1.
18. ALL UNDERGROUND PIPING SHALL BE FLUSHED PRIOR TO HYDROSTATIC TESTING IN ACCORDANCE TO NFPA 24, 2007 EDITION, SECTION 10.10.2.1.

LEGEND

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
	ONSITE PROPERTY LINE / R.O.W. LINE	
S S	SANITARY SEWER LINE	SL S
W W	UNDERGROUND WATER LINE	W
I I	INDUSTRIAL WATER LINE	I
E E	UNDERGROUND ELECTRIC LINE	E
G G	UNDERGROUND GAS LINE	G
OH OH	OVERHEAD WIRE	OH
T T	UNDERGROUND TELEPHONE LINE	T
	STORM SEWER	
FM FM	SANITARY SEWER FORCE MAIN	FM
LOD LOD	LIMIT OF DISTURBANCE	LOD LOD
FB FB	FOREST BUFFER	
	CONCRETE CURB & GUTTER	CURB AND GUTTER / SPILL CURB

BENCHMARK INFORMATION

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

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

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

TEST PIT NOTE

TP CONTRACTOR TO TEST PIT 2 FEET BELOW PROPOSED UTILITY OR UNTIL EXACT LOCATION OF EXISTING UTILITY IS IDENTIFIED AND SUBMIT ANY DISCREPANCIES TO BOHLER IN WRITING.

SITE SPECIFIC UTILITY NOTES

1. ADDITIONAL EXISTING UTILITIES 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 OR TRADEPOINT DEVELOPMENT.
2. EXISTING UTILITIES NOTED AS "TO REMAIN" WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED DEVELOPMENT.

OWNER
TRADEPOINT ATLANTIC, LLC
1600 SPARROWS POINT BLVD
BALTIMORE, MD 21219
CONTACT: CHRISTINE BREEN, P.E.
PHONE: 443-649-5065

DEVELOPER/ APPLICANT
THE KEITH CORPORATION
4500 CAMERON VALLEY PKWY
SUITE 400
CHARLOTTE, NC 28211
CONTACT: RAY JASINSKI
PHONE: 704-365-6000

MARYLAND COORDINATE SYSTEM (MCS)

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

TRACKING # DRC-2021-0080; DRC# 060121C; DIST 15C7

80 40 20 0 80
1"= 80'

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

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-UTIL-0

PROJECT:

PROJECT PRETZEL

FOR

THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

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

SHEET TITLE:

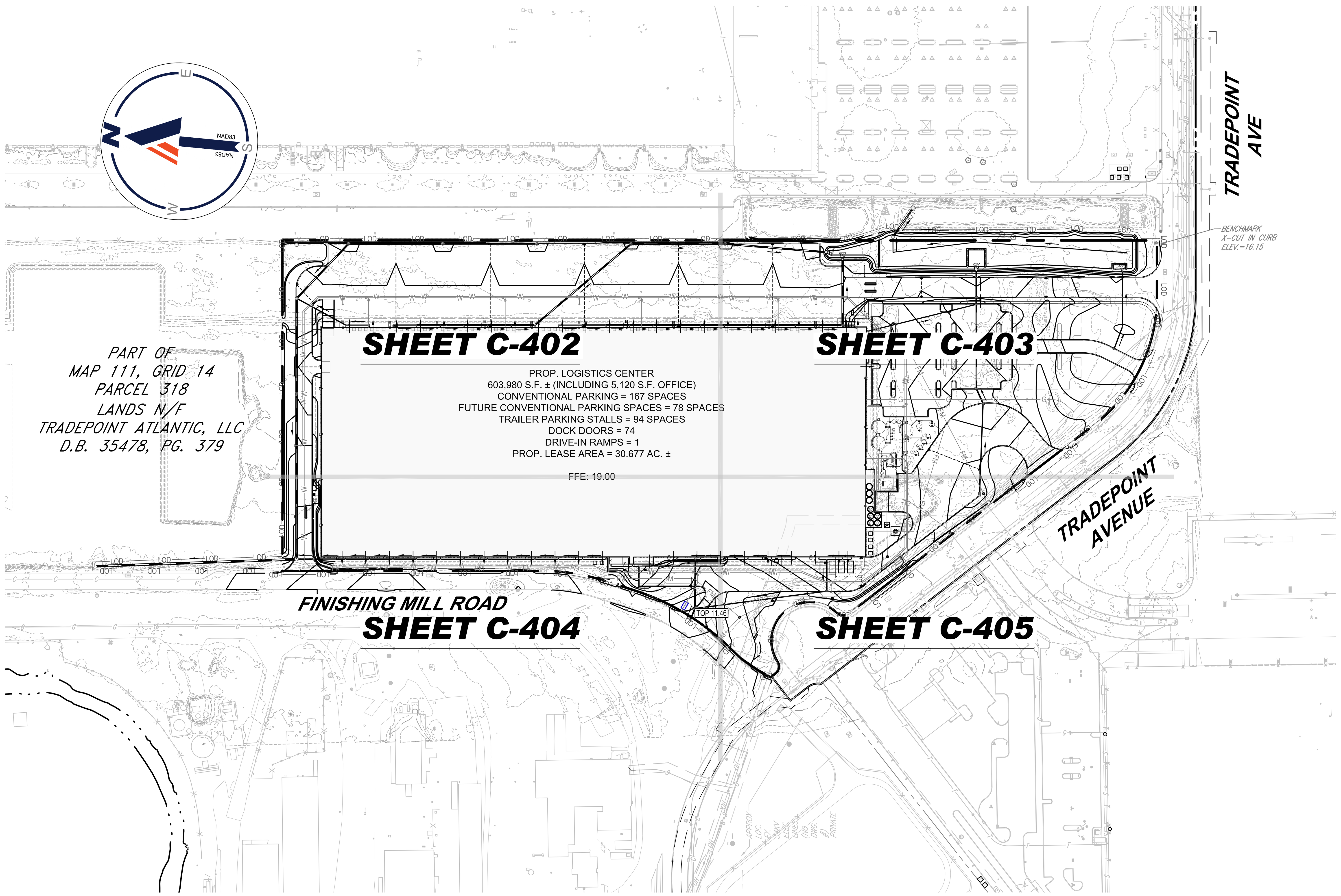
OVERALL UTILITY PLAN

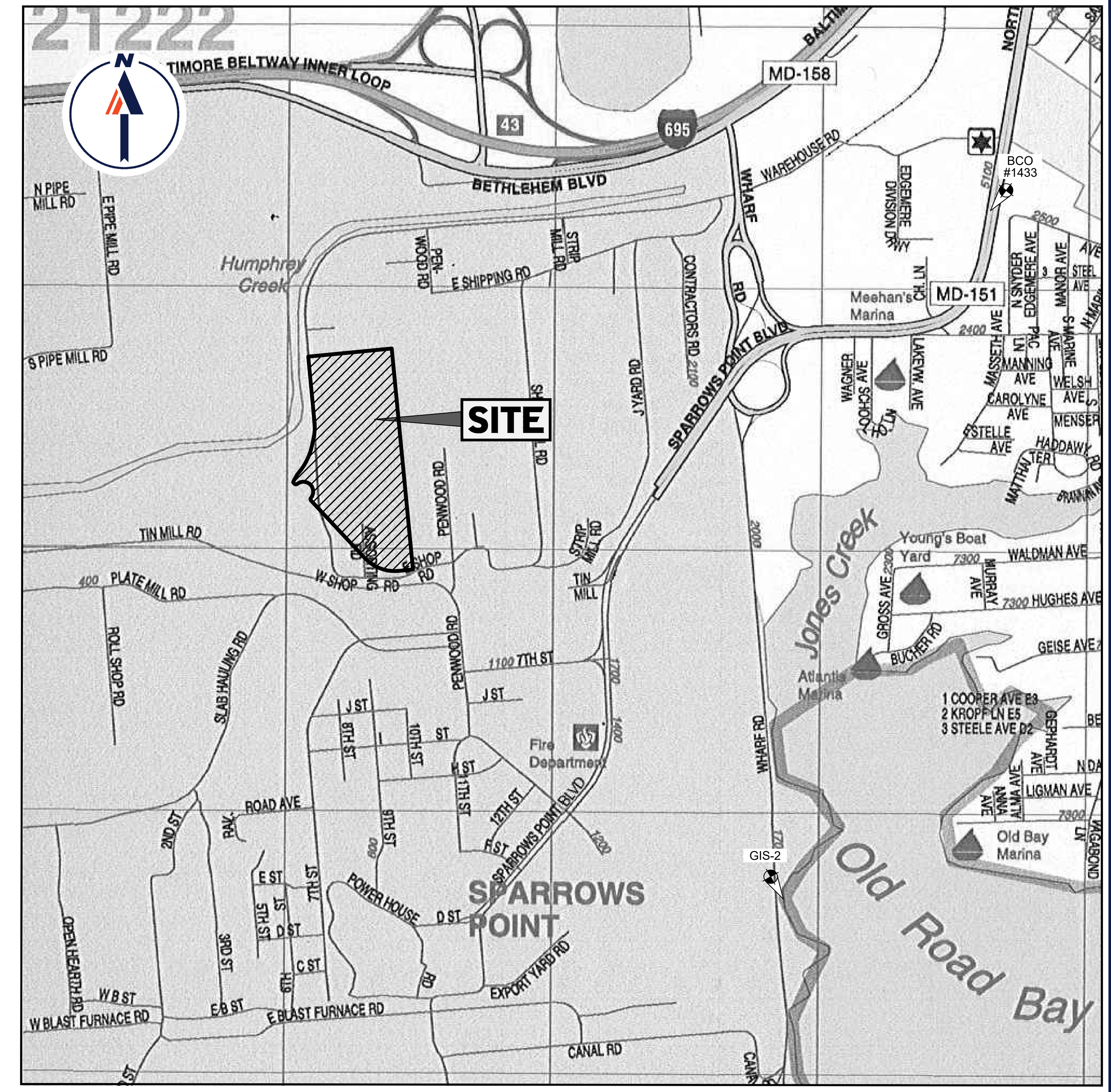
SHEET NUMBER:

C-501

MDE # 21-SF-0086

Sep 09, 2021
H:\2020\MD202047\DRAWINGS\PLAN SETS\PHASE 2 PLANS\MD202047-UTIL-0---LAYOUT C-501 - OVERALL UTILITY PLAN
MJG





LOCATION MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=1000'

LEGEND

EXISTING NOTE — TYPICAL NOTE TEXT — PROPOSED NOTE

- ONSITE PROPERTY LINE / R.O.W. LINE
- CONTOUR LINE (120, 121)
- SPOT ELEVATIONS (TC 516.4 OR 516.4; TC 516.00; 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
- RIDGE LINE
- CONCRETE CURB & GUTTER (CURB AND GUTTER; SPILL CURB)

BENCHMARK INFORMATION

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

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

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

GENERAL GRADING NOTES

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

BALTIMORE COUNTY STANDARD GRADING PLAN NOTES

1. THE PROPOSED GRADING SHOWN ON THIS PLAN MEETS THE REQUIREMENTS SET FORTH BY BALTIMORE COUNTY DEPARTMENT ON ENVIRONMENTAL PROTECTION AND SUSTAINABILITY AND COMPLIES WITH ARTICLE 33, TITLE 5 OF THE BALTIMORE COUNTY CODE. HOWEVER, DUE TO BUILDING TYPES AND LAYOUT, SOME FIELD ADJUSTMENTS MAY BE REQUIRED. ALL CHANGES MUST COMPLY WITH THE ABOVE MENTIONED REQUIREMENTS.
2. ALL SWALES HAVE BEEN DESIGNED BY THE ENGINEER TO CONVEY RUNOFF ACCORDING TO BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS DESIGN STANDARDS.
3. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT OR OTHER FOREST RETENTION AREAS, EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
4. STORMWATER MANAGEMENT HAS BEEN ADDRESSED THROUGH PAYMENT OF A FEE-IN-LIEU TO THE BALTIMORE COUNTY STORMWATER MANAGEMENT FUND FOR 22.85 ACRES OF IMPERVIOUS AREA BASED ON AN LOD OF 46.01 ACRES.

SITE SPECIFIC GRADING NOTES

1. ALL UTILITIES SHOWN ARE PRIVATE UNLESS OTHERWISE NOTED.
2. THE SUBJECT DEVELOPMENT AREA IS LOCATED IN FLOOD ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, BALTIMORE COUNTY, MARYLAND (UNINCORPORATED AREAS) PANEL 555 OF 580", MAP NUMBER 240010555G, MAP REVISED MAY 5, 2014, AND PLAN PREPARED BY PAI, DEV. PLANS REVIEW, DATED SEPTEMBER 21, 2016, PER MAP 0555F, DATED SEPTEMBER 26, 2008
3. ADDITIONAL EXISTING UTILITIES AND SITE FEATURES LOCATED WITHIN THE LIMIT OF DISTURBANCE NOT IDENTIFIED AS "TO BE REMOVED" OR "TO BE RELOCATED" MAY REQUIRE REMOVAL, TO BE FILLED WITH GROUT, OR RELOCATION AS DIRECTED BY THE GEOTECHNICAL ENGINEER OR TRADEPOINT DEVELOPMENT. CONTRACTOR TO REFER TO THE GEOTECHNICAL REPORT AND COORDINATE WITH THE GEOTECHNICAL ENGINEER TO DETERMINE WHICH EXISTING UTILITIES SHOULD BE GROUTED.
4. EXISTING UTILITIES NOTED AS "TO REMAIN" WITHIN THE LIMIT OF DISTURBANCE MUST BE MAINTAINED TO PROVIDE SERVICE FOR THE PROPOSED DEVELOPMENT.
5. ANY BENCHMARK THAT IS LOCATED WITHIN THE LOD AND WILL BE DISTURBED DURING CONSTRUCTION IS TO BE RESET PRIOR TO BEGINNING CONSTRUCTION.
6. EXISTING GRADES SHOWN ON THIS PLAN ARE FROM THE AN AERIAL SURVEY PROVIDED BY TRADEPOINT ATLANTIC. IF ACTUAL EXISTING GRADES DIFFER FROM WHAT IS SHOWN ON THESE PLANS, CONTRACTOR IS TO NOTIFY BOHLER IN WRITING.
7. 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.
8. FINISHING MILL ROAD IMPROVEMENTS ARE BEING CONSTRUCTED UNDER A SEPARATE PERMIT NUMBER. SITE CONTRACTOR IS TO COORDINATE WITH THE FINISHING MILL ROAD CONTRACTOR TO ENSURE THAT PROPER GRADES AT THE ENTRANCES AND ALONG THE SITE BOUNDARY ARE MET. IF THERE ARE ANY DISCREPANCIES BETWEEN THESE GRADING PLANS AND THE FINISHING MILL ROAD GRADING PLANS, CONTRACTOR IS TO NOTIFY BOHLER IN WRITING.
9. EXISTING CONCRETE SLABS THAT ARE TO BE FILLED OVER AND REMAIN IN PLACE SHALL HAVE DRAINAGE HOLES PUNCHED IN THEM EVERY 10' O.C. PER THE GEOTECHNICAL ENGINEER.
10. EXISTING SURFACE SHOWN IS BASED UPON AERIAL TOPOGRPAHY RECEVIED FROM TRADEPOINT DEVELOPMENT ON 10/23/20. THIS SURFACE HAS BEEN MODIFIED TO AS REQUESTED BY TRADEPOINT DEVELOPMENT TO SHOW THE BUILDING PAD AT ELEVATION 18.58, A 10-FOOT OVERBUILD AROUND THE BUILDING PERIMETER AT ELEVATION 18.58 AND THE PREVIOUS BUILDING PAD EAST OF THE PROPOSED BUILDING PAD REMOVED.

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

STORMWATER MANAGEMENT PERMIT NOT REQUIRED

BALTIMORE COUNTY
DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY
APPROVED FOR GRADING
DATE

150 75 37.5 0 150
1"=150'

GRADING 1 OF 7

MARYLAND COORDINATE SYSTEM (MCS)

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2
TRACKING # DRC-2021-0080; DRC# 060121C; DIST 15C7

OWNER

TRADEPOINT ATLANTIC, LLC
1600 SPARROWS POINT BLVD
BALTIMORE, MD 21219
CONTACT: CHRISTINE BREEN, P.E.
PHONE: 443-649-5065

DEVELOPER/APPLICANT

THE KEITH CORPORATION
4500 CAMERON VALLEY PKWY
SUITE 400
CHARLOTTE, NC 28211
CONTACT: RAY JASINSKI
PHONE: 704-365-6000

LIMIT OF DISTURBANCE: 1,391,368 S.F. OR 31.94 AC.

BOHLER //
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-GRAD-0

PROJECT:

PROJECT PRETZEL

FOR

THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

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

SHEET TITLE:

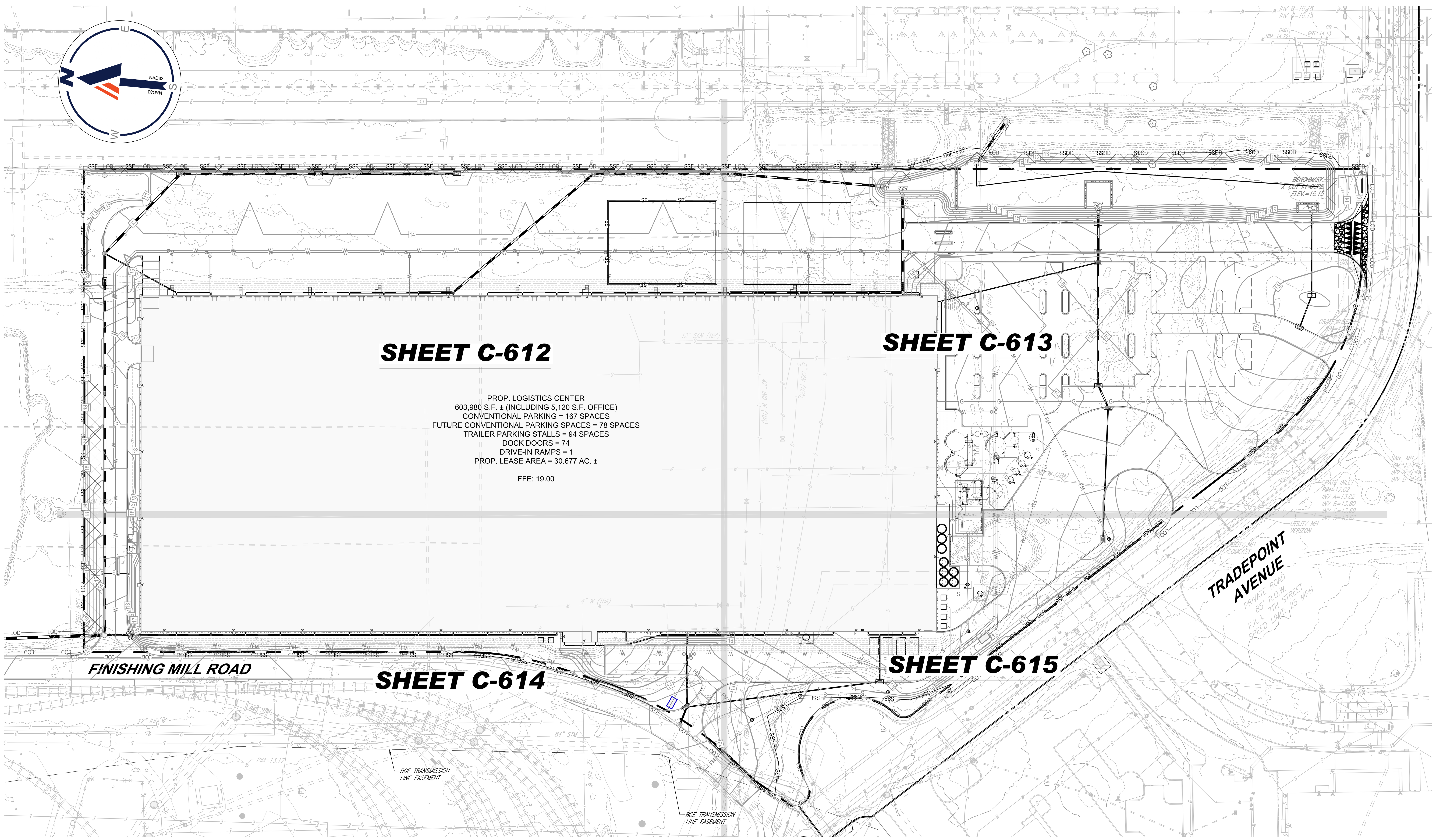
OVERALL FINAL GRADING PLAN

SHEET NUMBER:

C-401

MDE # 21-SF-0086

Sep 09, 2021
H:\20\MD202047\DRAWINGS\PLAN SETS\PHASE 2 PLANS\MD202047-GRAD-0----->LAYOUT: C-401 - OVERALL FINAL GRADING PLAN
MG



BENCHMARK INFORMATION

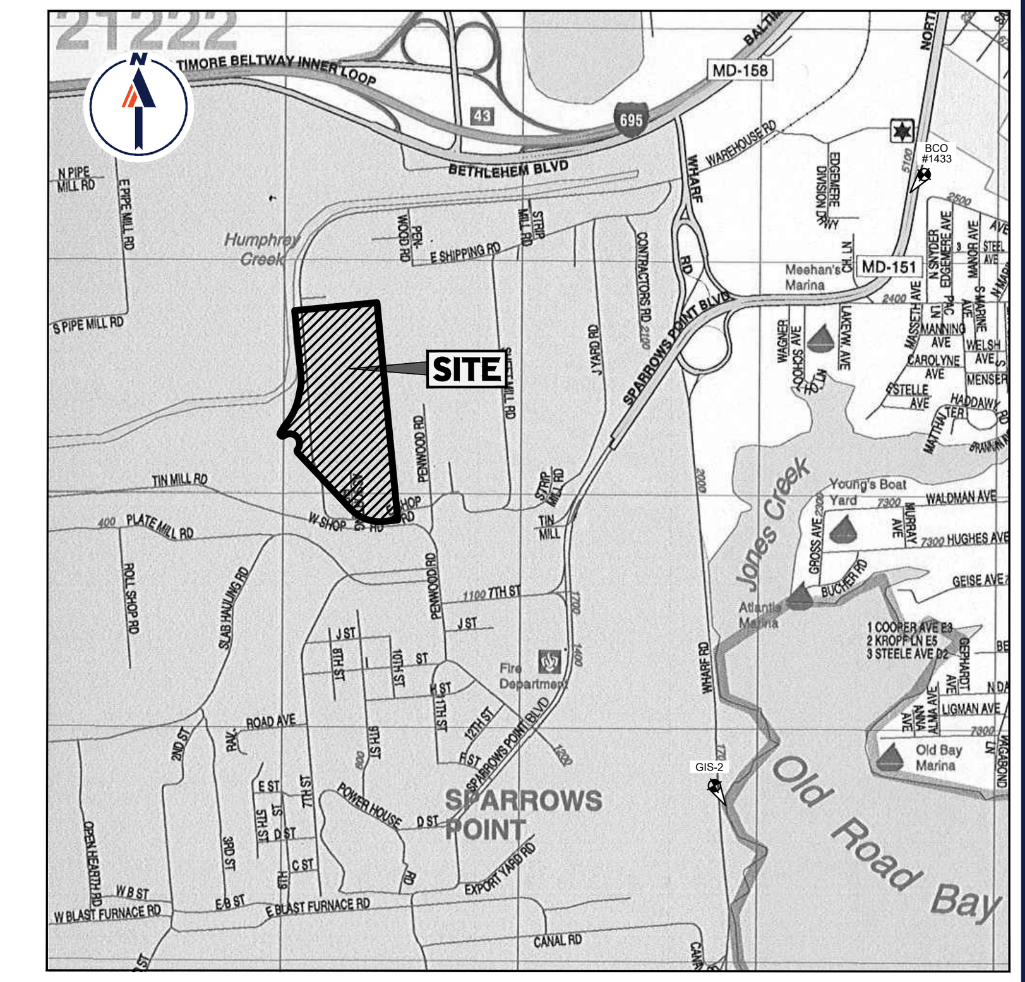
ELEVATIONS ARE BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER THE FOLLOWING MONUMENTS:

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

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

FINISHING MILL ROAD NOTE

IMPROVEMENTS TO FINISHING MILL ROAD ARE COVERED UNDER MDE #21-SF-0060. IF CONDITIONS OF FINISHING MILL ROAD SHOWN ON THIS PLAN DIFFER FROM ACTUAL FIELD CONDITIONS, CONTRACTOR IS TO NOTIFY BOHLER IN WRITING.



LOCATION MAP

COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=2000'

80 40 20 0 80
1"= 80'

E&S 8 OF 15

MARYLAND COORDINATE SYSTEM (MCS)

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

TRACKING # DRC-2021-0080; DRC# 060121C; DIST 15C7

OWNER

TRADEPOINT ATLANTIC, LLC
1600 SPARROWS POINT BLVD
BALTIMORE, MD 21219
CONTACT: CHRISTINE BREEN, P.E.
PHONE: 443-649-5065

DEVELOPER/APPLICANT

THE KEITH CORPORATION
4500 CAMERON VALLEY PKWY
SUITE 400
CHARLOTTE, NC 28211
CONTACT: RAY JASINSKI
PHONE: 704-365-6000

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-UDORTHENTS COMPLEX	0% TO 8%	NOT RATED	D	NA

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

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY ______ DATE ______

MARYLAND DEPARTMENT OF THE ENVIRONMENT

LIMIT OF DISTURBANCE: 1,391,368 S.F. OR 31.94 AC.

BOHLER

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

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-ERO2-0

PROJECT:

PROJECT PRETZEL

FOR

THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

M.J. GESELL

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

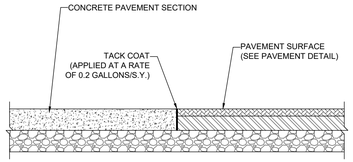
SHEET TITLE:

OVERALL PHASE II EROSION & SEDIMENT CONTROL PLAN

SHEET NUMBER:

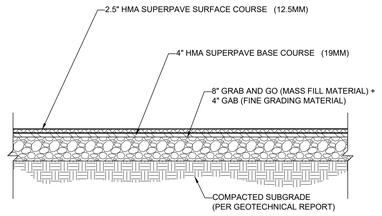
C-611

MDE # 21-SF-0086



CONCRETE-TO-ASPHALT DETAIL

NOT TO SCALE

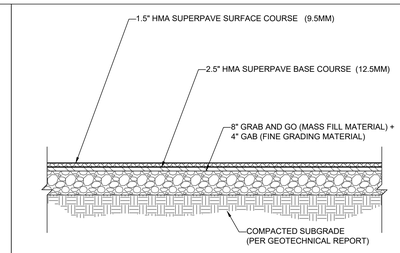


NOTE:

1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF 15 PER GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, ENTITLED "GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC LOGISTICS CENTER III; TRADEPOINT ATLANTIC; BALTIMORE COUNTY, MARYLAND" DATED OCTOBER 29, 2020 (PROJECT #20257A). FINAL DESIGN TO BE PROVIDED BY GEOTECHNICAL ENGINEER ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

HEAVY DUTY ASPHALT PAVEMENT SECTION

NOT TO SCALE

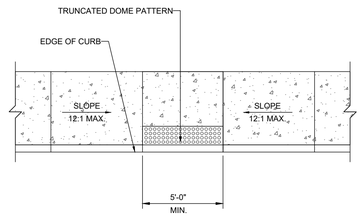


NOTE:

1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF 15 PER GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, ENTITLED "GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC LOGISTICS CENTER III; TRADEPOINT ATLANTIC; BALTIMORE COUNTY, MARYLAND" DATED OCTOBER 29, 2020 (PROJECT #20257A). FINAL DESIGN TO BE PROVIDED BY GEOTECHNICAL ENGINEER ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

STANDARD DUTY ASPHALT PAVEMENT SECTION

NOT TO SCALE

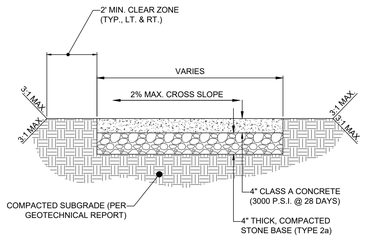


NOTE:

ADA ACCESSIBLE RAMP CONSTRUCTION SHALL CONFORM TO CURRENT ADA ACCESSIBLE GUIDELINES.

ADA ACCESSIBLE RAMP DETAIL

NOT TO SCALE

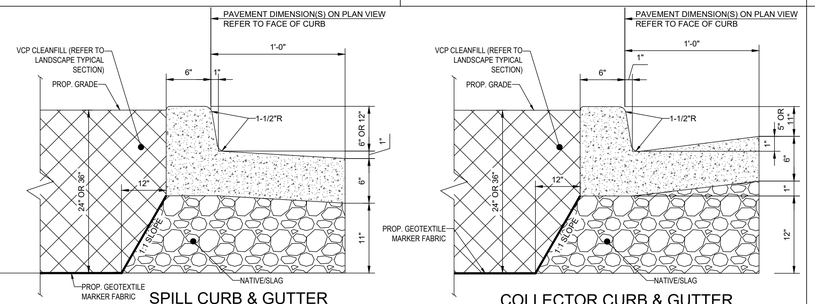


NOTE:

1. EXPANSION JOINTS 1/2" WIDE PREMOLDED BIT. MATERIAL SHALL BE INSTALLED AT 30' INTERVALS, CRACK CONTROL JOINTS TO BE SPACED AT INTERVALS EQUAL TO SIDEWALK WIDTH.

CONCRETE SIDEWALK DETAIL

NOT TO SCALE

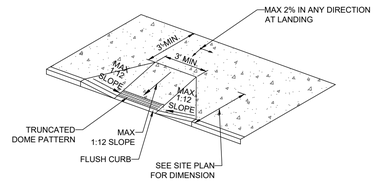


NOTES:

1. CONCRETE FOR CURBING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. @ 28 DAYS.
2. CONSTRUCTION STAKING FOR CURB INSTALLATION SHALL BE REFERENCED (CUT OR FILL) TO THE TOP OF CURB.
3. AT CONTRACTOR'S OPTION, THE GUTTER THICKNESS MAY BE INCREASED AT THE EDGE OF PAVEMENT TO MAKE BOTTOM OF GUTTER CONTIGUOUS WITH BOTTOM OF ASPHALT PAVEMENT.
4. CONTRACTION JOINTS SHALL BE PLACED @ 10'-0" O.C. TOOLED 1/4" (±1/16") WIDE, 1" DEEP. EXPANSION JOINTS SHALL BE PLACED @ 40'-0" INTERVALS, MAXIMUM, AND ALL P.C.'S.
5. GUTTER PAN SLOPE TO BE ADJUSTED WITHIN ACCESSIBLE PARKING SPACES TO MATCH SLOPE BETWEEN SPOT ELEVATIONS.

CONCRETE CURB & GUTTER DETAIL

NOT TO SCALE

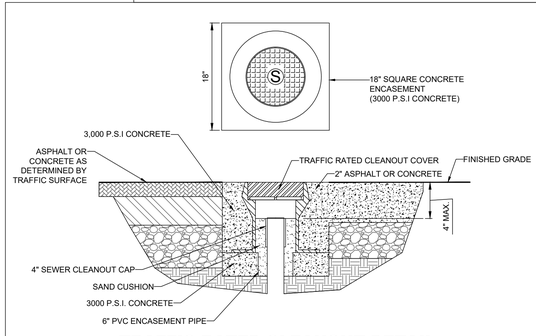


NOTE:

1. ADA ACCESSIBLE RAMP CONSTRUCTION SHALL CONFORM TO CURRENT ADA ACCESSIBLE GUIDELINES.

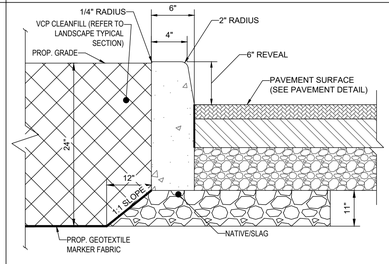
ADA ACCESSIBLE RAMP DETAIL

NOT TO SCALE



TRAFFIC RATED CLEANOUT DETAIL

NOT TO SCALE

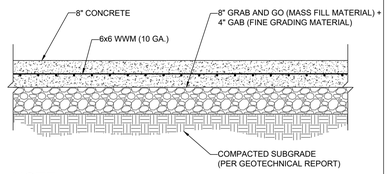


NOTES:

1. EXPANSION JOINTS TO BE INSTALLED AT 20' INTERVALS.
2. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
3. CONCRETE TO BE CLASS A3 IF CAST IN PLACE OR 4000 P.S.I. IF PRECAST.

HEADER CURB DETAIL

NOT TO SCALE



NOTE:

1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF 15 PER GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, ENTITLED "GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC LOGISTICS CENTER III; TRADEPOINT ATLANTIC; BALTIMORE COUNTY, MARYLAND" DATED OCTOBER 29, 2020 (PROJECT #20257A). FINAL DESIGN TO BE PROVIDED BY GEOTECHNICAL ENGINEER ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

HEAVY DUTY CONCRETE SECTION

NOT TO SCALE

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

TRACKING # DRC-2021-0080; DRC# 060121C; DIST 15C7

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

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

Know what's below. Call before you dig.

ALWAYS CALL 811

It's fast. It's free. It's the law.

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-CNDS-0

PROJECT:

PROJECT PRETZEL

FOR

THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

M.J. GESELL

PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 5/9/23

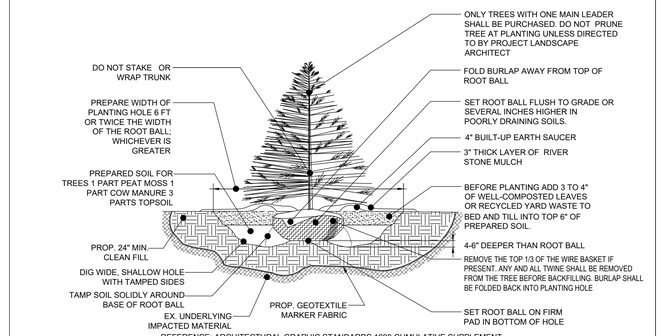
SHEET TITLE:

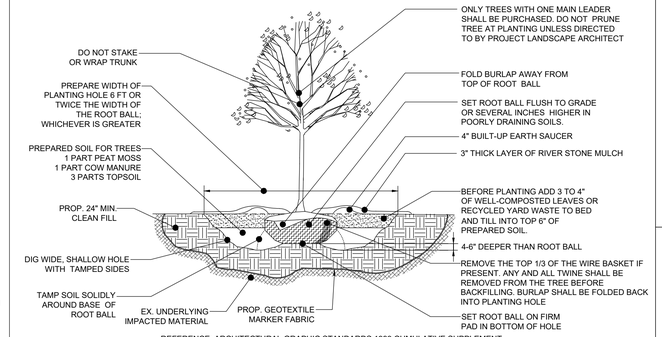
CONSTRUCTION DETAILS

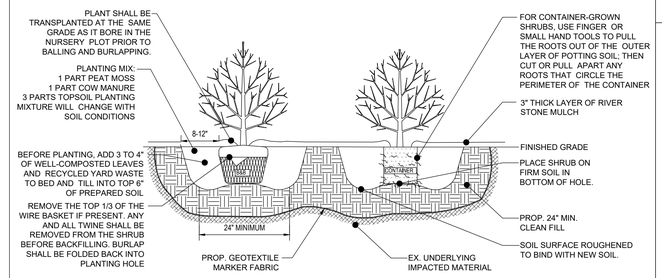
SHEET NUMBER:

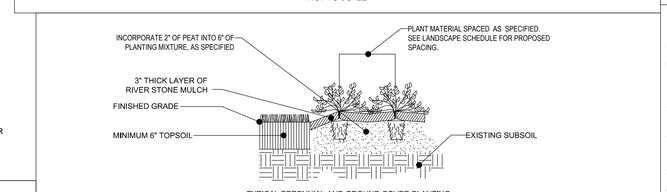
C-903

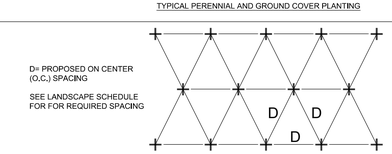
MDE # 21-SF-0086

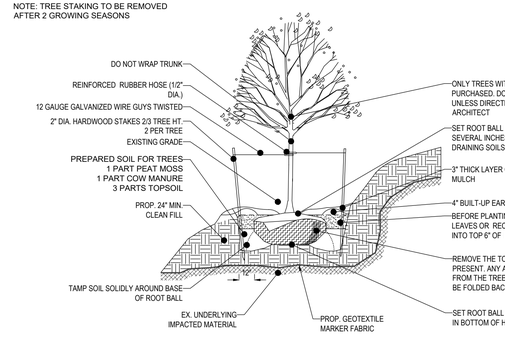


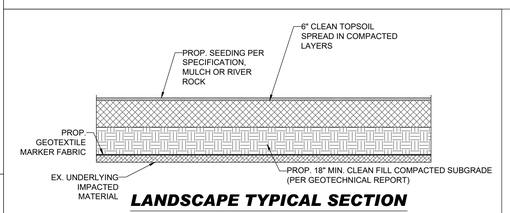












LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS

A. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM SIX INCH (6") THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES.
  1.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
  1.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS.
  1.3. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH - THE MULCH AROUND THE PERIMETER OF THE BUILDING SHALL BE A 3" LAYER OF RIVER STONE MULCH.

E. FERTILIZER
  1.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
  1.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
  1.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
  1.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
  1.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
  1.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED.PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
  1.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
  1.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
  1.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
  1.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES

A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS

A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION

A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR 15 FEET FROM THE TRUNK OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS

A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
  1.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
  1.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
  1.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING

A. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING

A. CONTRACTOR SHALL PROVIDE A SIX INCH (6") THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

D. ALL PLANTING AND LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA):
  1.1. 20 POUNDS 'GROW POWER' OR APPROVED EQUAL
  1.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING

A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
  1.1. PLANTS: MARCH 15 TO DECEMBER 15
  1.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

G. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

H. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULOUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBER STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

I. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
- 1 PART PEAT MOSS
- 1 PART COMPOSTED COW MANURE BY VOLUME
- 3 PARTS TOPSOIL BY VOLUME
- 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
  - A) 2 TABLETS PER 1 GALLON PLANT
  - B) 3 TABLETS PER 5 GALLON PLANT
  - C) 4 TABLETS PER 15 GALLON PLANT
  - D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

J. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

K. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

L. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

M. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

N. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

O. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

P. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)

A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING

A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE

A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP

A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

SEEDING SPECIFICATIONS

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:

PERENNIAL RYEGRASS	1/2 LB/1,000 SQ FT
KENTUCKY BLUEGRASS	1 LB/1,000 SQ FT
RED FESCUE	1 1/2 LBS/1,000 SQ FT
SPREADING FESCUE	1 1/2 LBS/1,000 SQ FT
FERTILIZER (20:10:10)	14 LBS/1,000 SQ FT
MULCH	90 LBS/1,000 SQ FT

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

TYPICAL PERENNIAL AND GROUND COVER PLANTING

TYPICAL PERENNIAL AND GROUND COVER SPACING & LAYOUT

PERENNIAL/GROUND COVER PLANTING DETAIL

NOT TO SCALE

NOTE: TREE STAKING TO BE REMOVED AFTER 2 GROWING SEASONS

TREE PLANTING ON SLOPE DETAIL

NOT TO SCALE

OWNER MAINTENANCE RESPONSIBILITIES

UPON OWNER'S (OR OWNER CONTRACTOR'S) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREE, BUSHES, SHRUBS, GRASSES, GRASS, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PEDESTRIAN SURFACES) OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
- TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVELED SURFACES), OR AS OTHERWISE INDICATED ON THE PLANS.
- VEGETATIVE GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVEL SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS-EGRESS WAYS.
- FALLEN PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.

THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEES THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.

LANDSCAPE TYPICAL SECTION (LAWN AREA)

NOT TO SCALE

NOTES:
1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN.
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.

ROOT BARRIER DETAIL

NOT TO SCALE

BALTIMORE COUNTY MINIMUM LANDSCAPE MAINTENANCE REQUIREMENTS

1. LAWN AREAS SHALL BE MOWED TO A HEIGHT OF 2 TO 3 INCHES AND NOT ALLOWED TO REACH A HEIGHT OF 5 INCHES BEFORE MOWING.
2. ALL CURBS AND WALKS SHALL BE EDGED AS NEEDED.
3. ALL LAWN AREAS ADJACENT TO BUILDING FACES OR STRUCTURES SHALL BE TRIMMED.
4. A SLOW RELEASE NITROGEN BALANCED FERTILIZER WITH A 2-1-1 RATIO SHALL BE APPLIED AT A RATE OF 2 POUNDS OF NITROGEN PER 1000 SQUARE FEET IN SEPTEMBER, OCTOBER, AND FEBRUARY.
5. LIME SHALL BE APPLIED AT THE RATE DETERMINED BY A SOILS REPORT.
6. IT IS RECOMMENDED THAT LAWN AREAS BE TREATED IN MID-MARCH TO EARLY APRIL WITH PRE-EMERGENT HERBICIDE (BETASAN) OR EQUAL APPLIED AT THE MANUFACTURER'S RECOMMENDED RATE.
7. A POST-EMERGENT HERBICIDE (TRIMEC) OR EQUAL IS RECOMMENDED TO BE SPRAYED ON LAWN AREAS IN THE LATE SPRING OR THE EARLY FALL. FOLLOW MANUFACTURER'S RATES AND RECOMMENDATIONS.
8. INSECTICIDES AND FUNGICIDES ARE RECOMMENDED FOR INSECT AND DISEASE CONTROL.
9. RESEED BARE AREAS OF LAWN AS NECESSARY. YEARLY AERATION IS RECOMMENDED.
10. ALL TRASH, LITTER, AND DEBRIS SHALL BE REMOVED FROM LAWN AREAS, PARKING LOTS, AND SHRUB BEDS AS NEEDED.
11. MULCH ALL SHRUB AND GROUNDCOVER BEDS YEARLY WITH 3 INCHES OF SHREDDED HARDWOOD BARK.
12. PERMIT SHRUBS AND TREES TO GROW AND ENLARGE TO THEIR DESIGN SIZE. CONSULT PROJECT LANDSCAPE ARCHITECT FOR DETAILS.
13. PRUNE TREES IN ACCORDANCE WITH LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS.

FINAL LANDSCAPE PLAN
LANDSCAPE CERTIFICATION FORM

IT IS CERTIFIED THAT THIS LANDSCAPE PLAN IS IN COMPLIANCE WITH ALL PLANS PREVIOUSLY APPROVED BY BALTIMORE COUNTY COMMENTS ATTENDANT THERETO.

SIGNATURE PRINT NAME

DATE AFFIX SEAL

FINAL LANDSCAPE PLAN
OWNER CERTIFICATION FORM

I CERTIFY THAT I HAVE REVIEWED THIS FINAL LANDSCAPE PLAN; THAT I AM AWARE OF THE REGULATIONS PRESENTED IN THE BALTIMORE COUNTY LANDSCAPE MANUAL; AND I AGREE TO COMPLY WITH THESE REGULATIONS AND ALL APPLICABLE POLICY, GUIDELINES AND ORDINANCES. I AGREE TO CERTIFY THE IMPLEMENTATION OF THIS APPROVED FINAL LANDSCAPE PLAN UPON COMPLETION OF THE LANDSCAPE INSTALLATION PRIOR TO PWA CLOSEOUT IF APPLICABLE OR NOT LATER THAN ONE (1) YEAR FROM THE DATE OF APPROVAL OF THIS PLAN TO THE DEPARTMENT OF PERMITS, APPROVALS AND INSPECTIONS, DEVELOPMENT PLANS REVIEW, ROOM 119, COUNTY OFFICE BUILDING, 111 W. CHESAPEAKE AVENUE, TOWSON, MD 21204.

APPLICANT SIGNATURE DATE PRINT NAME

COMPANY (PRINT) STREET PHONE #

CITY STATE ZIP

DRC# PERMIT#

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

TRACKING # DRC-2021-0080; DRC# 066121C; DIST 15C7

BOHLER //

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

REVISIONS

REV	DATE	COMMENT	DRAWN BY CHECKED BY

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

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-LSCP-0

PROJECT:

PROJECT PRETZEL
TRACKING # DRC-2020-00106
DRC # 063020E; DIST. 15C7
— FOR —
THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

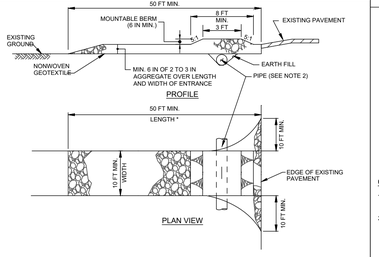
E.R. McWILLIAMS

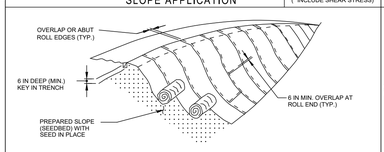
REGISTERED LANDSCAPE ARCHITECT
MARYLAND LICENSE No. 3697
PROFESSIONAL CERTIFICATION
I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/20/22

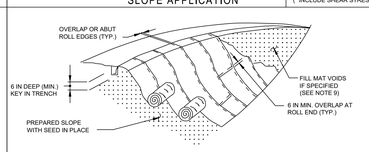
SHEET TITLE:
FINAL LANDSCAPE NOTES & DETAILS

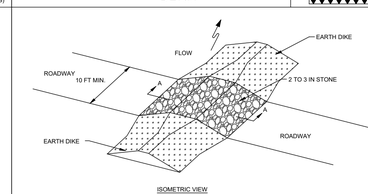
SHEET NUMBER:
C-706

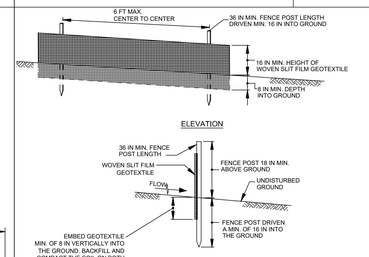
MDE # 21-SF-0086

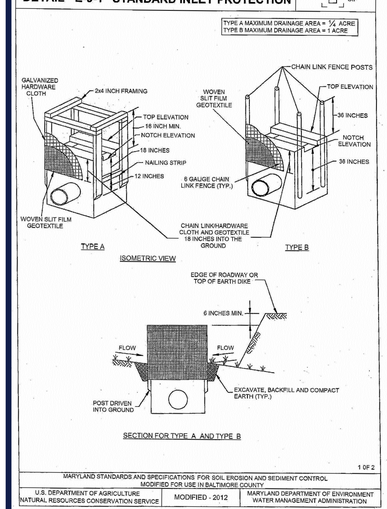


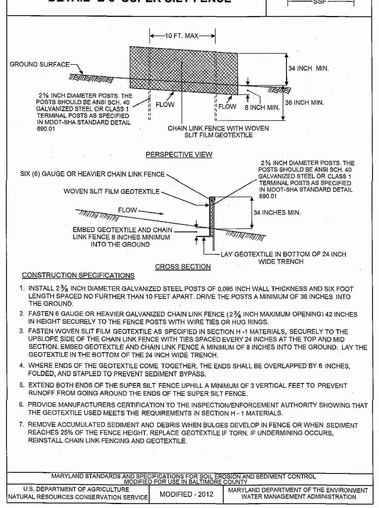


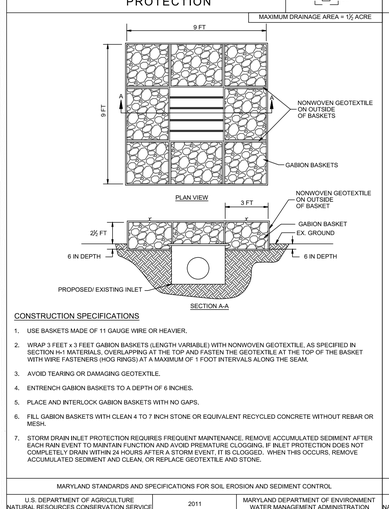


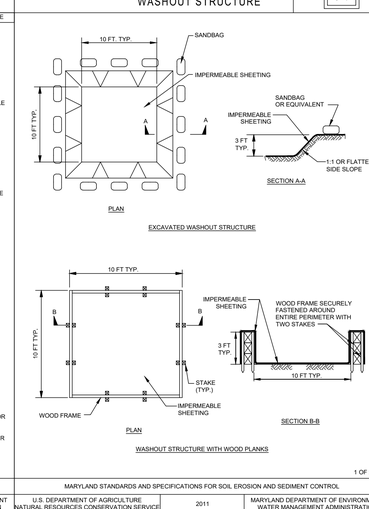


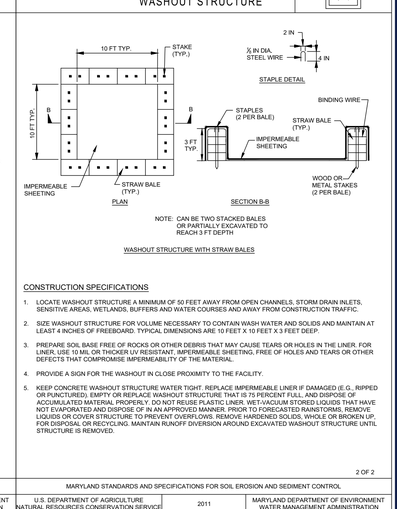












DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL SCE

CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL

TSSMS - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL

PSSMS - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL MB

CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL SF

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1⁄16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MODIFIED FOR USE IN BALTIMORE COUNTY

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	MODIFIED - 2012	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN GEOTEXTILE (AS INDICATED ON THE STANDARD INLET PROTECTION DETAIL) AS SPECIFIED IN SECTION H - 1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2x4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2x4 INCH FRAME AS SHOWN. STRETCH ¼ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 6 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE, REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 of 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MODIFIED FOR USE IN BALTIMORE COUNTY

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	MODIFIED - 2012	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL SSF

CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 6 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H -1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND. LAY THE GEOTEXTILE IN THE BOTTOM OF THE 24 INCH WIDE TRENCH.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BYPASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE UPHILL A MINIMUM OF 3 VERTICAL FEET TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURERS CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H - 1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF THE FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MODIFIED FOR USE IN BALTIMORE COUNTY

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	MODIFIED - 2012	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-7 GABION INLET PROTECTION

STANDARD SYMBOL GIP

MAXIMUM DRAINAGE AREA = 1½ ACRE

CONSTRUCTION SPECIFICATIONS

1. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
2. WRAP 3 FEET x 3 FEET GABION BASKETS (LENGTH VARIABLE) WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVERLAPPING AT THE TOP AND FASTEN THE GEOTEXTILE AT THE TOP OF THE BASKET WITH WIRE FASTENERS (HOG RINGS) AT A MAXIMUM OF 1 FOOT INTERVALS ALONG THE SEAM.
3. AVOID TEARING OR DAMAGING GEOTEXTILE.
4. ENTRENCH GABION BASKETS TO A DEPTH OF 6 INCHES.
5. PLACE AND INTERLOCK GABION BASKETS WITH NO GAPS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR MESH.
7. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL H-6 ONSITE CONCRETE WASHOUT STRUCTURE

STANDARD SYMBOL CWS

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL H-6 ONSITE CONCRETE WASHOUT STRUCTURE

STANDARD SYMBOL CWS

NOTE: CAN BE TWO STACKED BALES OR PARTIALLY EXCAVATED TO REACH 3 FT DEPTH

WASHOUT STRUCTURE WITH STRAW BALES

CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEQUENCE OF CONSTRUCTION PHASE 1:

1. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL (410-887-3226) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON SITE. HIGH VISIBILITY ORANGE SAFETY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMIT OF DISTURBANCE (LOD) WHEREVER THE LOD IS WITHIN 50 FEET OF ANY FOREST BUFFER OR FOREST CONSERVATION EASEMENT. THIS FENCE SHALL BE INSPECTED BY DEPS AT THE PRECONSTRUCTION MEETING.
2. STAKE OVERALL LIMIT OF DISTURBANCE PER THE APPROVED EROSION AND SEDIMENT CONTROL PLANS. INSTALL SAFETY FENCE AS NECESSARY.
3. CLEAR, GRUB AND REMOVE ANY NECESSARY EXISTING FEATURES INTERFERING WITH PERIMETER SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES ONLY. INSTALL SILT FENCE AND SUPER SILT FENCE AS DIRECTED BY THE BALTIMORE COUNTY SEDIMENT CONTROL INSPECTOR AS SHOWN ON PLAN. SILT FENCE AND SUPER SILT FENCE SHALL BE INSPECTED & MAINTAINED EACH DAY AND AFTER EACH STORM EVENT. MAINTENANCE SHALL INCLUDE BUT NOT BE LIMITED TO REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO ENSURE PROPER FUNCTION.
4. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL UPON COMPLETION OF INSPECTION AND NECESSARY SEDIMENT CONTROL REPAIRS.

SEQUENCE OF CONSTRUCTION PHASE 2:

1. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, BEGIN DEMOLITION OF PAVEMENT AND OTHER ITEMS AS NEEDED. DISPOSAL MATERIAL WILL EITHER NEED TO BE TAKEN TO A RUBBLE LANDFILL WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN, OR AN EXISTING ASPHALT RECYCLING FACILITY SUBJECT TO THE SAME.
2. IMMEDIATELY AFTER DEMOLITION ACTIVITIES HAVE OCCURRED, BEGIN ROUGH GRADING THE SITE.
3. BEGIN INSTALLATION OF STORM DRAIN STRUCTURES ALONG WITH ASSOCIATED STORM DRAIN PIPES. IMMEDIATELY INSTALL INLET PROTECTION ON PROPOSED INLETS. CONTRACTOR SHALL PERFORM SUFFICIENT GRADING SURROUNDING INLETS TO ENSURE THAT THEY ARE CAPABLE OF FUNCTIONING AND CAPTURING ALL UPSLOPE FLOWS.
4. BEGIN INSTALLATION OF REMAINING UNDERGROUND UTILITIES. ALL WORK OUTSIDE PERIMETER CONTROLS SHALL BE DONE IN ACCORDANCE WITH THE "WORK OUTSIDE PERIMETER CONTROLS" NOTE ON THE APPROVED SEDIMENT CONTROL PLANS.
5. ONCE SUBGRADES ARE REACHED, BEGIN CONSTRUCTION OF WAREHOUSE AND CONCRETE CURB AND GUTTER. CONTINUE CONSTRUCTION OF UNDERGROUND UTILITIES. GRADES AROUND THE BUILDING SHOULD BE DESIGNED SUCH THAT ALL RUNOFF WILL FLOW AROUND THE BUILDING.
6. COMPLETE FINE GRADING OF SITE. SITE SHALL BE BROUGHT TO GRADE AS SOON AS POSSIBLE AND STABILIZED WITH EITHER STONE SUBBASE OR PERMANENT SEED AND MULCH. AREAS WITH SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH PERMANENT SEED AND SOIL STABILIZATION MATTING.
7. INSTALL ANY REMAINING STONE SUBBASE AND BEGIN PAVING.
8. INSTALL LANDSCAPING PER THE APPROVED LANDSCAPING PLAN.
9. FLUSH STORMDRAIN SYSTEM AND TAKE THE SPOIL TO A SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.
10. UPON STABILIZATION OF THE SITE WITH ESTABLISHED VEGETATION AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS.

BALTIMORE COUNTY EROSION AND SEDIMENT CONTROL NOTES

1. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN.
2. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE CONTROL OF ANY SEDIMENT. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
3. AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT IN OPERATIONAL CONDITION.
4. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1), AND B) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.
5. ANY CHANGE TO THE GRADING PROPOSED ON THIS PLAN REQUIRES RE-SUBMISSION TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR APPROVAL.
6. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL," PG. H-22, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL.
7. ANY VARIATIONS FROM THE SEQUENCE OF OPERATIONS STATED ON THIS PLAN REQUIRES THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT PRIOR TO THE INITIATION OF THE CHANGE.
8. EXCESS CUT OR BORROW MATERIAL SHALL GO TO, OR COME FROM, RESPECTIVELY, A SITE WITH AN OPEN GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN.
9. THE FOLLOWING ITEM MAY BE USED AS APPLICABLE: REFER TO "MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION" BY THE WATER MANAGEMENT ADMINISTRATION OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, REVISED NOVEMBER, 2000, FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN FOR WATERWAY CONSTRUCTION.
10. PUMPING SEDIMENT-LADEN WATER INTO WATERS OF THE STATE IS STRICTLY PROHIBITED. ANY PORTABLE DEWATERING DEVICE MUST BE WITHIN THE LIMIT OF DISTURBANCE.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

PURPOSE
TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA:

I. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 317 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHO11LD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

MAINTENANCE
THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2: 1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2: 1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4: 1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

H-1 STANDARDS AND SPECIFICATIONS FOR MATERIALS

Table H.1: Geotextile Fabrics

PROPERTY	TEST METHOD	WOVEN SLIT FILM GEOTEXTILE MD	WOVEN SLIT FILM GEOTEXTILE CD	WOVEN MONOFILAMENT GEOTEXTILE MD	WOVEN MONOFILAMENT GEOTEXTILE CD	NONWOVEN GEOTEXTILE MD	NONWOVEN GEOTEXTILE CD
		MINIMUM AVERAGE ROLL VALUE[1]					
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450 lb		900 lb		450 lb	
Apparent Opening Size[2]	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permittivity	ASTM D-4491	0.05 sec^{-1}		0.28 sec^{-1}		1.1 sec^{-1}	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

[1] All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

[2] Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

TEMPORARY STOCKPILE DETAIL

NOT TO SCALE

REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105

BY DATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

E&S 15 OF 15

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

TRACKING # DRC-2021-0080; DRC# 060121C; DIST 15C7

BOHLER

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

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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

ISSUED FOR MUNICIPAL & AGENCY REVIEW & APPROVAL

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.:	MD202047
DRAWN BY:	CQ
CHECKED BY:	MJG
DATE:	08/20/2021
CAD I.D.:	MD202047-CNDS-0

PROJECT:

PROJECT PRETZEL

FOR

THE KEITH CORPORATION

PHASE II PLANS

LOCATION OF SITE
7020 TRADEPOINT AVENUE
TAX MAP 111, PARCEL 318
BALTIMORE, MD 21219
BALTIMORE COUNTY

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

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

SHEET TITLE:
EROSION & SEDIMENT CONTROL NOTES & DETAILS

SHEET NUMBER:
C-622

MDE # 21-SF-0086

APPENDIX E

Well/Piezometer Abandonment Form

Well/Piezometer ID: FM01 - PZM041

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B21 FM

Abandonment Date: 5/4/20

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → Pulled / Split / Perforated / Left-In-Place Did not abandon
2. Abandoned → Grout / Bentonite Chips

Field Equipment: Geoprobe 7822DT / Trimble GPS

ARM Representative(s): Lisa Perrin

Well Diameter: _____

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log):	Depth to Water (TOC):
Measured:	Depth to NAPL (TOC):

Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

Did not abandon; could not locate
Used shovel to dig dirt + grass

ARM Group Inc.
Earth Resource Engineers and Consultants
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

Well/Piezometer Abandonment Form

Well/Piezometer ID: FM01-pzm003

General Project Information:

Client: EAG

Site Location: Sparrows Point, MD

Parcel ID: B21 FM

Abandonment Date: 5/4/20

Abandonment Contractor: GSI

Abandonment Method (circle appropriate):

1. PVC → (Pulled) / Split / Perforated / Left-In-Place Pulled 13' screen/riser
2. Abandoned → Grout / (Bentonite Chips)

Field Equipment: Geoprobe 7822DT

ARM Representative(s): L Perrin

Well Diameter: 2"

Depth to Bottom (TOC)	Final Gauging Prior to Abandonment:
Reported (historical/log): —	Depth to Water (TOC): 7.22
Measured: 11.83 TOC	Depth to NAPL (TOC): NO DNAPL/LNAPL

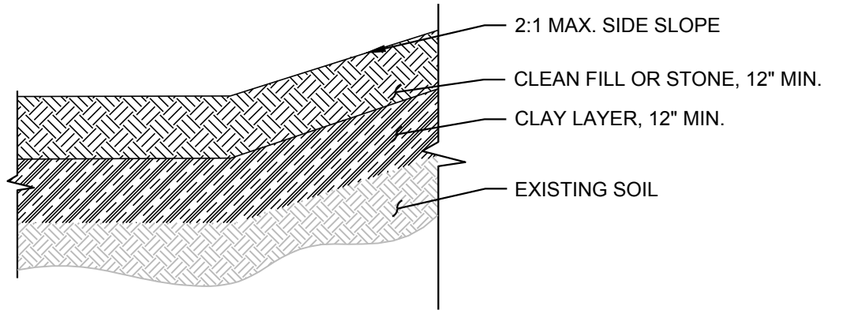
Please note if this abandonment is for a known NAPL delineation/monitoring area or individual NAPL screening piezometer and identify the name of the delineation area (e.g., B6-066 NAPL Area or B5-144 Screening Piezometer): _____

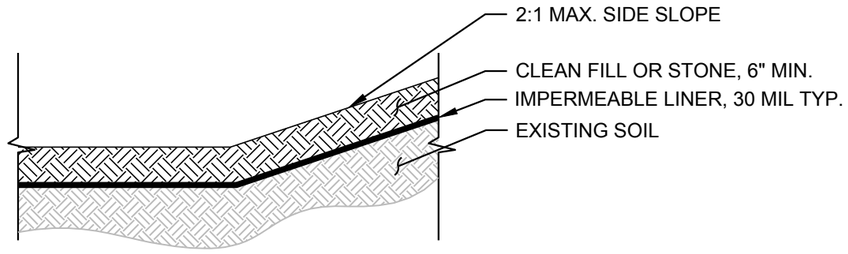
Please Note: If NAPL is identified in a piezometer, the Project Manager should be notified and the piezometer may not be abandoned unless the presence of NAPL is already known and a decision has been made to abandon the NAPL monitoring network.

Additional Comments (if any):

ARM Group Inc.
Earth Resource Engineers and Consultants
9175 Guilford Road - Suite 310
Columbia, Maryland 21046
(410) 290-7775 FAX: (410) 290-7775

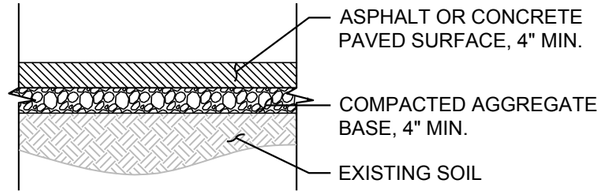
APPENDIX F



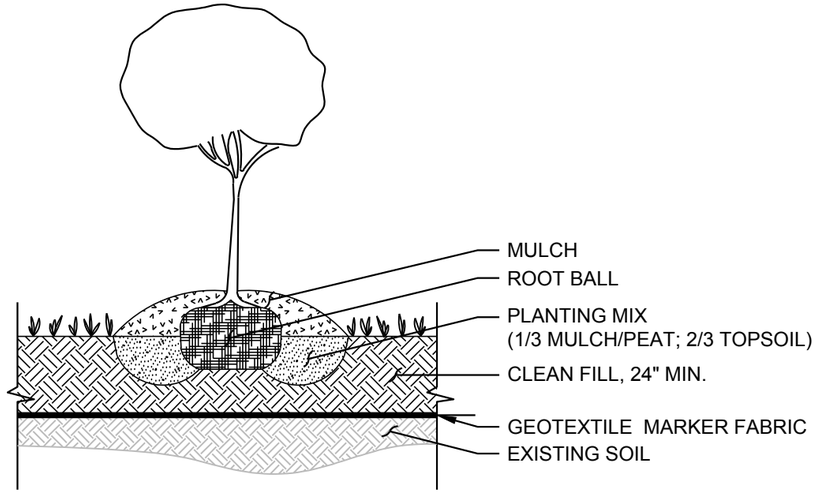


TYPICAL POND SECTIONS
NOT TO SCALE

TYPICAL LANDSCAPE SECTION
NOT TO SCALE



TYPICAL PAVING SECTION
NOT TO SCALE



TYPICAL PLANTING SECTION
NOT TO SCALE

GEOTEXTILE MARKER FABRIC SPECIFICATIONS

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

TABLE 1

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

ARM Group LLC
Engineers and Scientists

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

drawing title: MINIMUM CAPPING SECTION DETAILS
project title: SPARROWS POINT TRADEPOINT ATLANTIC
SPARROWS POINT
BALT. COUNTY, MARYLAND

Sheet 1

APPENDIX G

GENERAL NOTES:

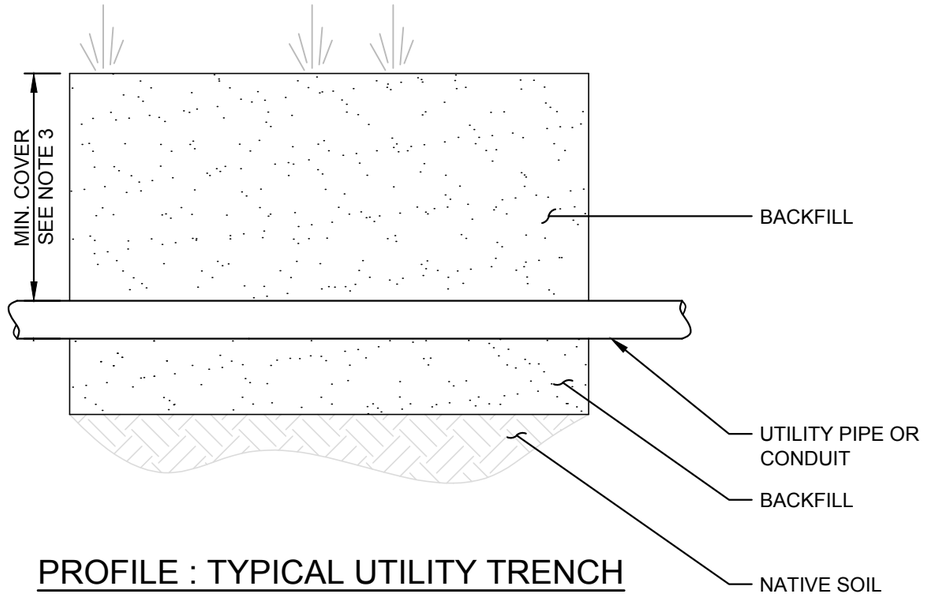
1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

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

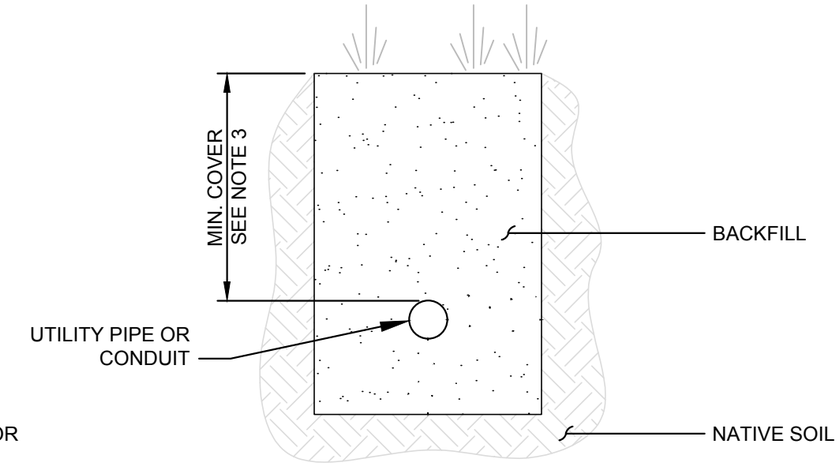
3. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

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

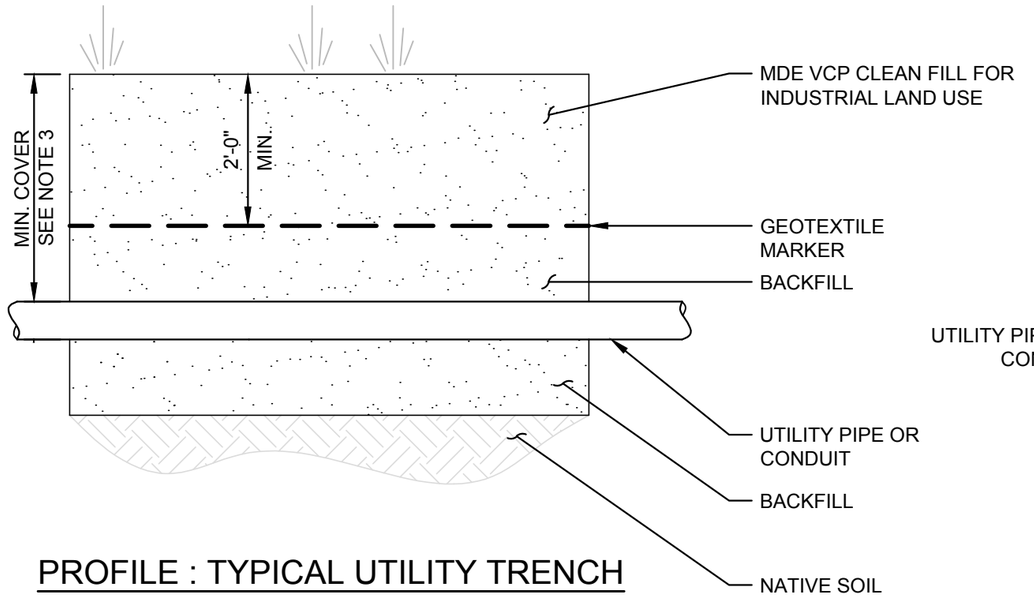
5. FOR ANY UTILITY SEGMENT WHICH GOES THROUGH AN AREA WHICH IS DESIGNATED TO RECEIVE A LANDSCAPED CAP, THE UPPER 2 FEET OF BACKFILL MUST MEET THE REQUIREMENTS OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE. IN THIS CASE THE MDE VCP CLEAN FILL WILL BE UNDERLAIN BY A GEOTEXTILE MARKER FABRIC. UTILITY SEGMENTS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



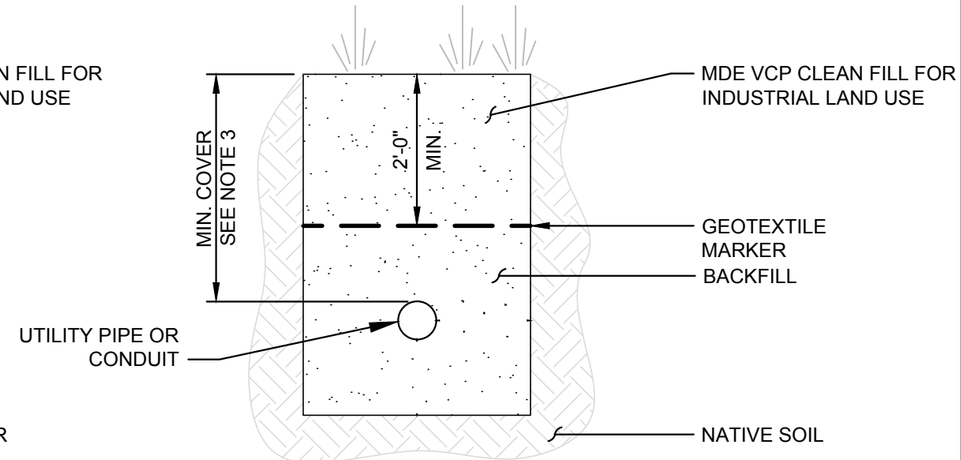
PROFILE : TYPICAL UTILITY TRENCH



SECTION : TYPICAL UTILITY



PROFILE : TYPICAL UTILITY TRENCH
(SEE NOTE 5)



SECTION : TYPICAL UTILITY
(SEE NOTE 5)

ARM Group LLC
Engineers and Scientists

TYPICAL UTILITY
CROSS SECTIONS
Sparrows Point Site
Tradepoint Atlantic

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

APPENDIX H

Utility Excavation NAPL Contingency Plan

Revision 4 – June 19, 2017

Introduction:

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

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

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

Objectives:

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

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

Identification of Oil & Grease and Petroleum Contaminated Soil:

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

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

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

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

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

Soil Excavation, Staging, Sampling and Disposal:

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

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

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

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

Initial Reporting:

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

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

Utility Installations in Impacted Areas:

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

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

Attachment 1 - PetroFLAG™ Procedure

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

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

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

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

References:

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

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

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

GENERAL NOTES:

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

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

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

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

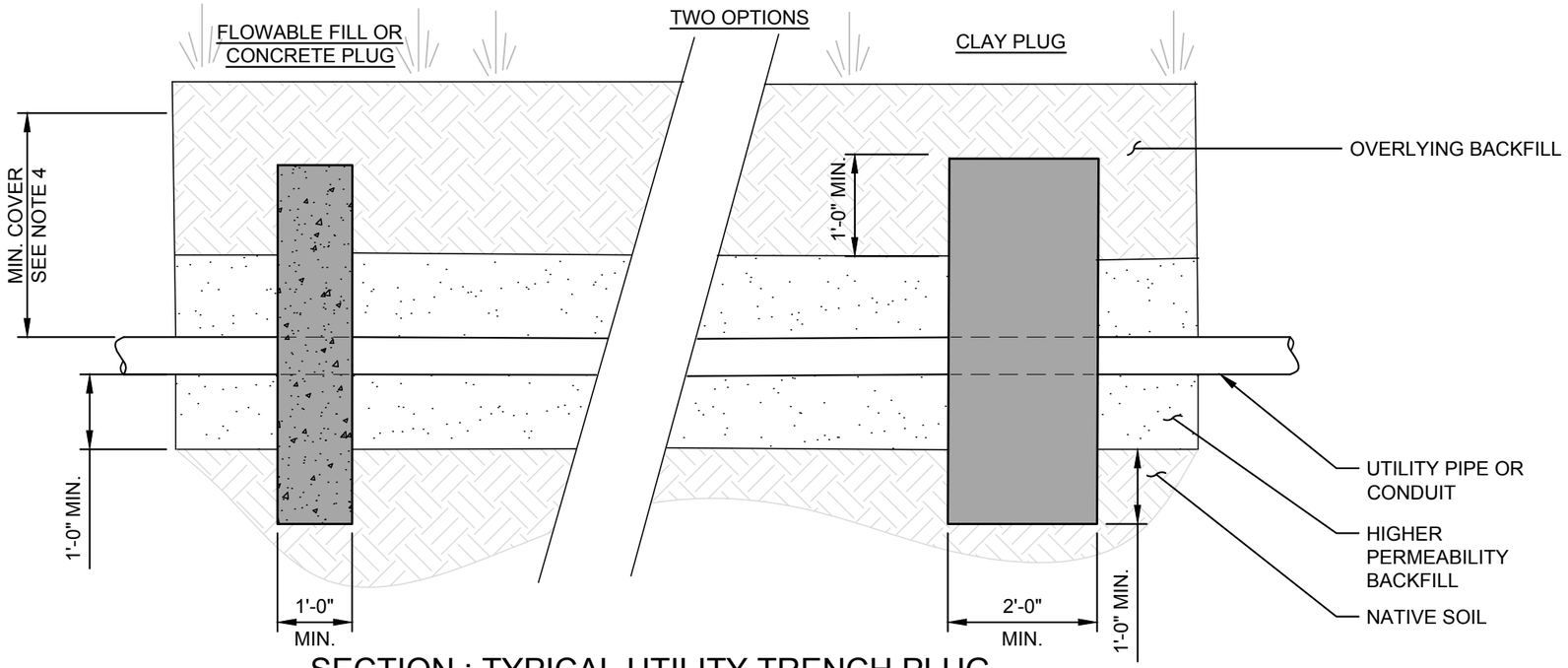
5. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

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

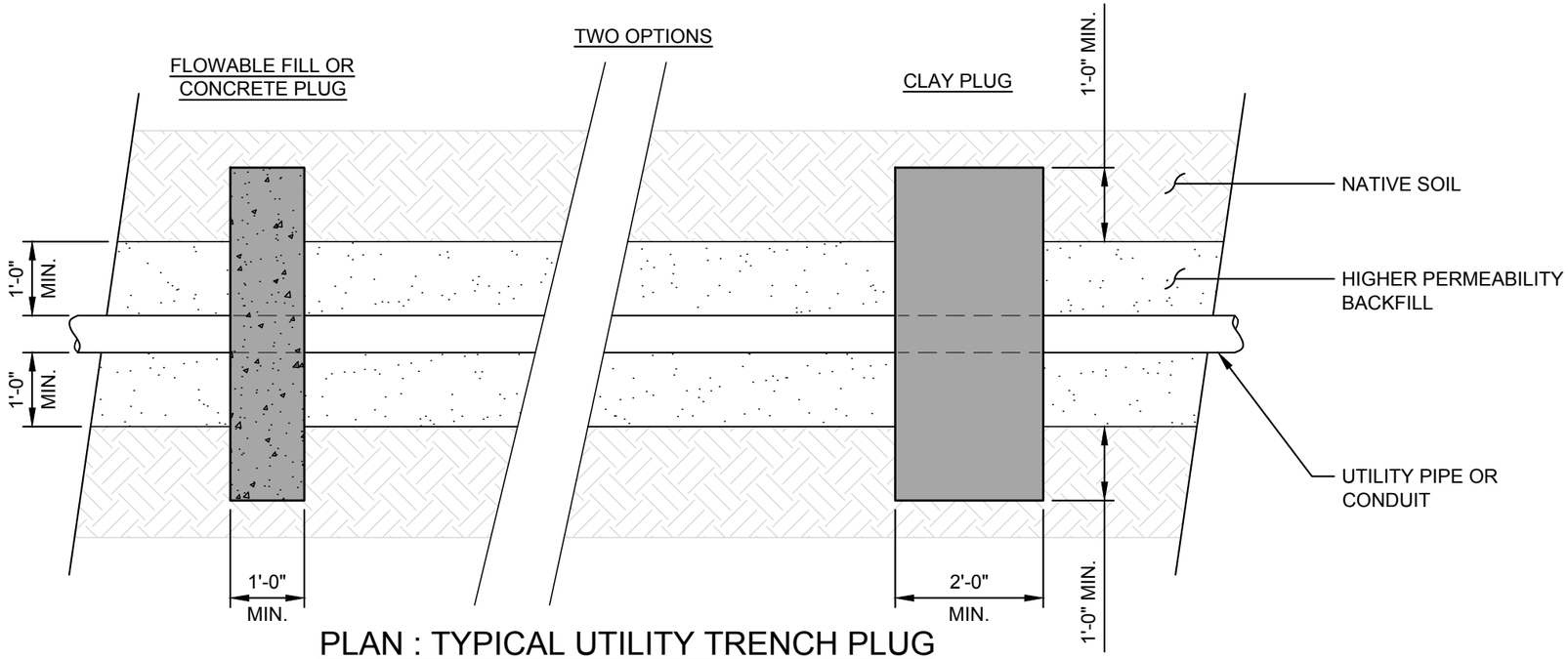
7. ALL UTILITIES INSTALLED THROUGH AREAS CONTAINING NAPL OR ELEVATED CHEMICAL IMPACTS WITH THE POTENTIAL TO TRANSMIT VAPORS ALONG PREFERENTIAL FLOW PATHWAYS SHALL BE EITHER 1) BACKFILLED WITH LOW PERMEABILITY BACKFILL MATERIAL (LESS THAN OR EQUAL TO THE PERMEABILITY OF THE EXISTING SUBGRADE), OR 2) INSTALLED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

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

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



SECTION : TYPICAL UTILITY TRENCH PLUG



PLAN : TYPICAL UTILITY TRENCH PLUG

ARM Group LLC
Engineers and Scientists

UTILITY TRENCH PLUG
Sparrows Point Site
Tradepoint Atlantic

September 2020	Figure
Not to Scale	1
160443M	