ARM Group LLC
Engineers and Scientists

September 14, 2020

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

Re: Slag Characterization Completion Report
Revision 1
Area B: Parcel B13
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown,

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic (TPA), has prepared this Completion Report for slag characterization activities in the planned reclamation area within Parcel B13 (the Site) on the TPA property located in Sparrows Point, Maryland. The slag characterization described herein was performed in accordance with the approved Work Plan for Additional Characterization of Slag Reclamation Area for Parcel B13 (dated January 22, 2020) and subsequently modified through an approved Comment Response Letter (dated April 16, 2020). Deviations from the characterization plan are described herein. This Completion Report documents the field investigation activities, summarizes analytical results, and provides an evaluation of the encountered slag materials.

Project Background

In 2019, MCM Management Corp. (MCM) under contract to DXI began site grading (slag reclamation) activities in the northeastern portion of Parcel B13, which then progressed toward the south. Slag reclamation activities included removing approximately 15 feet of slag from the ground surface to be processed and then repurposed in ongoing and future construction projects throughout the TPA property. In mid-May 2019, MCM operators uncovered a vein of slag within the face of a cut that exhibited strong olfactory indications of naphthalene contamination. This impacted slag area is shown on **Figure 1**.

As described in the Work Plan for Additional Characterization of Slag Reclamation Area for Parcel B13 (dated January 22, 2020), two analytical samples were collected from the exposed vein of slag, and five composite samples were collected from nearby slag stockpiles generated from the reclamation activities. The results of these analytical samples are included in the Work

Plan and confirmed that naphthalene is the main contaminant of concern in the impacted slag material. Once the samples were collected, the exposed vein of slag was covered by MCM using polyethylene plastic sheeting and imported clean soil. In order to ascertain the extent and severity of the contamination to the south of the capped slag material that was emanating odors, eight soil borings were proposed to the south of the slag cut face.

Soil Boring Characterization Activities

Pursuant to MDE direction, and in accordance with the Work Plan, additional characterization of the slag was completed via Geoprobe® borings at the eight locations shown on **Figure 2**. Field investigation activities were conducted in accordance with the property-wide Health and Safety Plan (HASP). Boring logs for each of the completed locations are included as **Attachment 1**. The soil cores recovered from each boring were screened in the field with a photoionization detector (PID) and examined for any visual or olfactory indications of significant contamination. No groundwater was encountered in any of the borings.

Characterization borings were proposed to be completed to a depth equal to the anticipated final elevation (following slag reclamation) of 14 feet above mean sea level (amsl). Three soil borings (B13-096-SB, B13-098-SB, and B13-099-SB) were successfully completed to 14 feet amsl, and two borings (B13-100-SB and B13-101-SB) were completed to 15 feet amsl. The remaining three borings (B13-095-SB, B13-097-SB, and B13-102-SB) did not achieve the target depth of 14 feet amsl due to equipment refusal. Note that topography slopes downward on the eastern part of the characterization area so that even though borings B13-098-SB and B13-099-SB only extended to 8 feet below ground surface (bgs) and 10 feet bgs respectively, these borings successfully characterized the full extent of proposed future slag reclamation to 14 ft amsl.

A soil sample was collected from each 5-foot soil core (or partial core) for laboratory analysis down to refusal or the target depth. Based on the field screening information, each soil sample was biased within the 5-foot interval to target any evidence of contamination (inclusive of NAPL) such as elevated PID readings (>10 ppm), odors, notable staining, or free product. If no evidence of contamination was observed, the soil sample was collected from the middle of the 5-foot core. Soil samples were submitted to Alpha Analytical to be analyzed for polynuclear aromatic hydrocarbons (PAHs) via United States Environmental Protection Agency (USEPA) Method 8270D SIM. The laboratory reports are included as electronic attachments.

Test Pit Characterization Activities

Three test pits, shown on **Figure 2**, were completed to a depth of 18 ft bgs to supplement the soil borings that did not achieve the target depth due to refusal. The test pits were completed as transects using an excavator. The materials retrieved from its bucket were screened in the field with a PID and examined for any visual or olfactory indications of significant contamination prior to sample collection. No groundwater was encountered during test pitting activities.

A test pit was extended from the location of soil boring B13-102-SB north towards soil boring B13-095-SB to characterize slag to the west of the suspected contaminated area. A shallow sample was previously collected from soil boring B13-102-SB, but deeper samples were collected at the same location during test pitting. Starting at soil boring B13-101-SB, a test pit was extended south to characterize the full reclamation depth at this location. The final test pit was extended south from soil boring B13-100-SB to define the southern extent of elevated naphthalene concentrations which had previously been identified in the soil boring. Soil samples were collected at the southern edge of this test pit after olfactory evidence of naphthalene contamination was no longer observed. Soil samples collected from the test pits were submitted to Alpha Analytical to be analyzed for PAHs via USEPA Method 8270D SIM. The laboratory reports are included as electronic attachments.

Characterization Results

Boring observation logs (**Attachment 1**) show that slag and non-native fill are the main site constituents. **Table 1** summarizes the PAHs detected in the collected soil boring and test pit samples. As shown on **Figure 3**, several PAL exceedances were identified among the completed boring samples. Naphthalene exceedances were identified at boring locations B13-096-SB and B13-100-SB. A very light amount of NAPL was also observed at B13-096-SB from 15.7 to 16 feet amsl, and naphthalene-like odors were observed in the same boring from 15 to 20 feet amsl. Additionally, benzo[a]pyrene slightly exceeded its PAL in sample B13-097-SB-2.

No evidence of contamination was observed during the excavation of the test pits associated with soil borings B13-101-SB or B13-102-SB. Additionally, no PAL exceedances were measured in the subsurface samples collected during test pitting at B13-102-SB. In contrast, notable odors were observed while constructing the test pit that extended south from boring location B13-100-SB. This test pit was extended to the south until odors dissipated. Samples were collected at the southern edge after olfactory evidence of naphthalene contamination was no longer observed. Analytical results from the test pit samples at B13-100T-SB indicated no PAL exceedances, suggesting that the limit of suspected contamination was reached.

Conclusion

Based on the extent of PAL exceedances and observation of odors and NAPL, an area of suspected contamination has been defined and is shown on **Figure 3**. This area shall be designated for special management, separate from the surrounding slag reclamation activities, to ensure potentially contaminated materials are screened and appropriately managed. Overall, these characterization activities have adequately defined the extent of naphthalene-impacted slag in this area intended for future processing by TPA. Note that this characterization does not address potential NAPL impacts below 14 feet amsl. MDE will be provided with any plans for further characterization activities following the completion of slag reclamation.

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

Respectfully Submitted,
ARM Group LLC

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

Eric S. Magdar, P.G.
Vice President

FIGURES

Site Boundary
Parcel Boundaries
Private Property

Parcel A9
Parcel A5
Parcel A13
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A2
Parcel A15
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A4
Parcel A10
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B22
Parcel B16
Parcel B21
Parcel B15
Parcel B24
Parcel B23
Parcel B25
Parcel B7
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
Parcel B9
Parcel B18
Impacted Slag Area
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12

Tradepoint Atlantic
Area A and Area B Parcels

September 8, 2020

Figure 1

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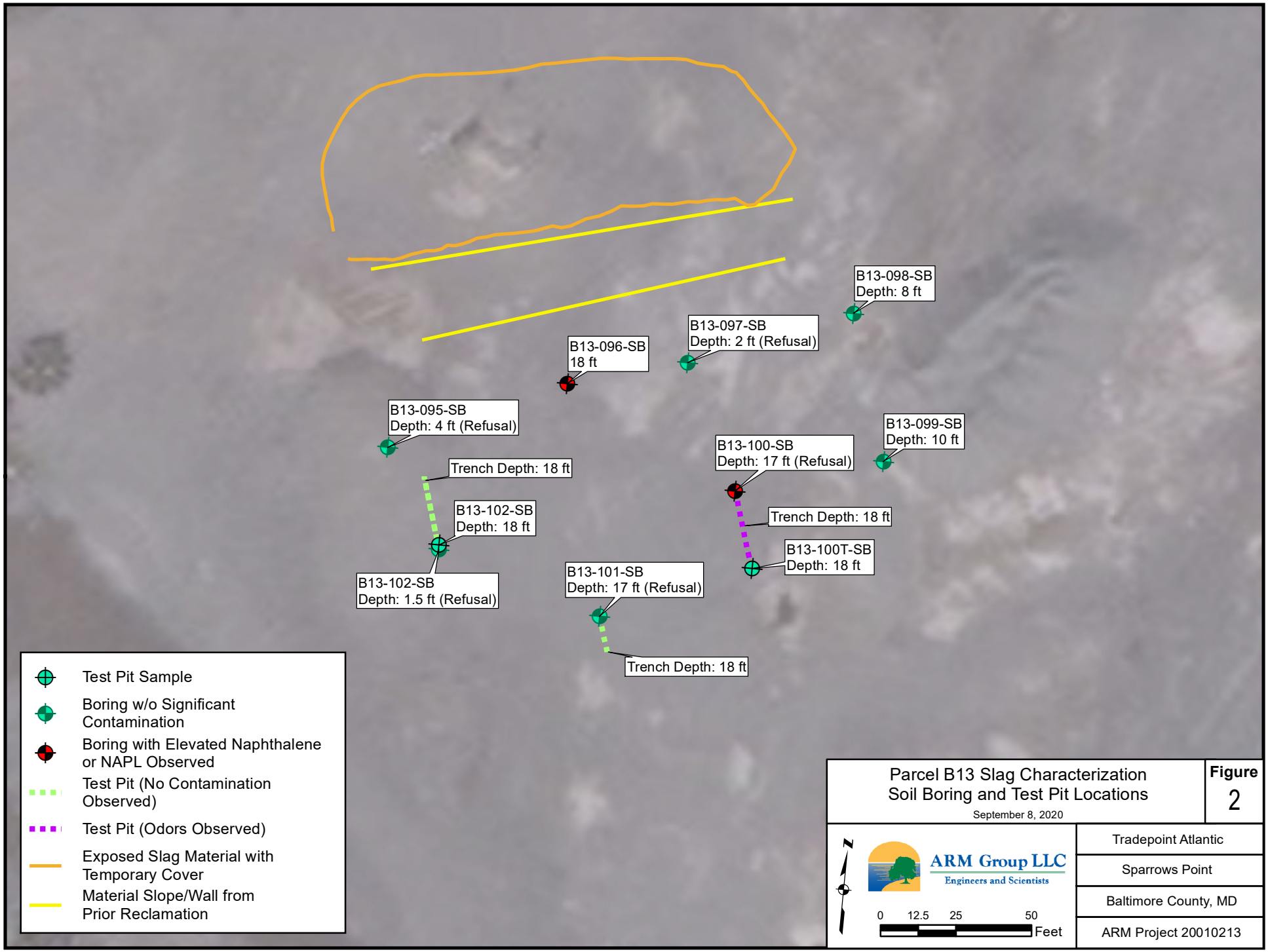
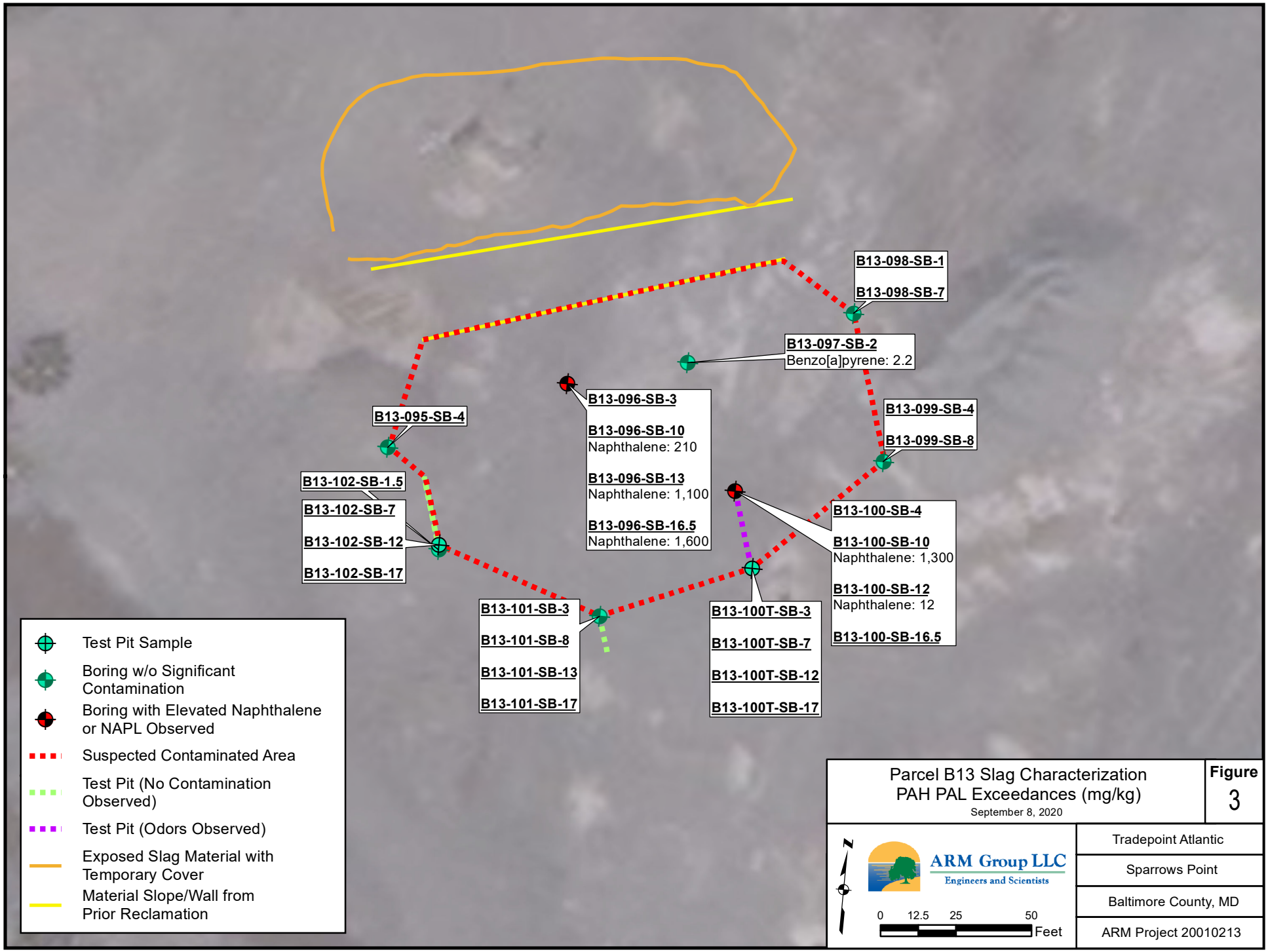
0 500 1,000 2,000 Feet

Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
Area A: Project 200101
Area B: Project 200102


B13-098-SB
Depth: 8 ft
B13-097-SB
Depth: 2 ft (Refusal)
B13-096-SB
18 ft
B13-095-SB
Depth: 4 ft (Refusal)
B13-099-SB
Depth: 10 ft
B13-100-SB
Depth: 17 ft (Refusal)
Trench Depth: 18 ft
B13-102-SB
Depth: 18 ft
Trench Depth: 18 ft
B13-100T-SB
Depth: 18 ft
B13-102-SB
Depth: 1.5 ft (Refusal)
B13-101-SB
Depth: 17 ft (Refusal)
Trench Depth: 18 ft
Test Pit Sample
Boring w/o Significant Contamination
Boring with Elevated Naphthalene or NAPL Observed
Test Pit (No Contamination Observed)
Test Pit (Odors Observed)
Exposed Slag Material with Temporary Cover
Material Slope/Wall from Prior Reclamation
Parcel B13 Slag Characterization
Soil Boring and Test Pit Locations
September 8, 2020
Figure
2
ARM Group LLC
Engineers and Scientists
0 12.5 25 50
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010213


B13-098-SB-1
B13-098-SB-7
B13-097-SB-2
Benzo[a]pyrene: 2.2
B13-096-SB-3
B13-096-SB-10
Naphthalene: 210
B13-096-SB-13
Naphthalene: 1,100
B13-096-SB-16.5
Naphthalene: 1,600
B13-095-SB-4
B13-099-SB-4
B13-099-SB-8
B13-102-SB-1.5
B13-102-SB-7
B13-102-SB-12
B13-102-SB-17
B13-100-SB-4
B13-100-SB-10
Naphthalene: 1,300
B13-100-SB-12
Naphthalene: 12
B13-100-SB-16.5
B13-101-SB-3
B13-101-SB-8
B13-101-SB-13
B13-101-SB-17
B13-100T-SB-3
B13-100T-SB-7
B13-100T-SB-12
B13-100T-SB-17
Test Pit Sample
Boring w/o Significant Contamination
Boring with Elevated Naphthalene or NAPL Observed
Suspected Contaminated Area
Test Pit (No Contamination Observed)
Test Pit (Odors Observed)
Exposed Slag Material with Temporary Cover
Material Slope/Wall from Prior Reclamation
Parcel B13 Slag Characterization
PAH PAL Exceedances (mg/kg)
September 8, 2020
Figure
3
ARM Group LLC
Engineers and Scientists
0 12.5 25 50
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
ARM Project 20010213

TABLES

Table 1 - Parcel B13 Slag Characterization
Summary of PAHs Detected in Slag

Parameter	Units	PAL	B13-095-SB-4*	B13-096-SB-3*	B13-096-SB-10*	B13-096-SB-13*	B13-096-SB-16.5*	B13-097-SB-2*	B13-098-SB-1*
			Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring
			6/3/2020	6/3/2020	6/3/2020	6/3/2020	6/3/2020	6/3/2020	6/4/2020
Polynuclear Aromatic Hydrocarbons^									
2-Methylnaphthalene	mg/kg	3,000	**0.07**	**0.012**	**140**	**220**	**470**	**0.22**	**0.01**
Acenaphthene	mg/kg	45,000	0.0085 U	**0.037**	**1.8**	**1.9**	**3.7**	**0.028**	0.0073 U
Acenaphthylene	mg/kg	45,000	0.0085 U	**0.013**	**4.2**	**4.8**	**6.5**	**0.32**	**0.0053 J**
Anthracene	mg/kg	230,000	**0.0016 J**	**0.083**	**0.28 J**	**0.3 J**	**0.7**	**0.45**	**0.0028 J**
Benz[a]anthracene	mg/kg	21	0.0085 U	**0.35**	**0.1 J**	**0.1 J**	**0.16 J**	**2.5**	**0.016**
Benzo[a]pyrene	mg/kg	2.1	0.0085 U	**0.32**	0.39 U	0.42 U	0.19 U	**2.2**	**0.014**
Benzo[b]fluoranthene	mg/kg	21	0.0085 U	**0.43**	**0.099 J**	**0.095 J**	**0.2**	**3.3**	**0.021**
Benzo[g,h,i]perylene	mg/kg		0.0085 U	**0.15**	**0.05 J**	**0.051 J**	**0.11 J**	**0.51**	**0.012**
Benzo[k]fluoranthene	mg/kg	210	0.0085 U	**0.15**	**0.068 J**	**0.072 J**	**0.14 J**	**0.59**	**0.0065 J**
Chrysene	mg/kg	2,100	0.0085 U	**0.29**	**0.084 J**	**0.08 J**	**0.17 J**	**2.4**	**0.011**
Dibenz[a,h]anthracene	mg/kg	2.1	0.0085 U	**0.046**	0.39 U	0.42 U	0.19 U	**0.19**	**0.0032 J**
Fluoranthene	mg/kg	30,000	0.0085 U	**0.48**	**0.37 J**	0.42 U	**0.64**	**1.8**	**0.015**
Fluorene	mg/kg	30,000	0.0085 U	**0.012**	**5.6**	**4.7**	**12**	**0.066**	**0.0012 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0085 U	**0.18**	0.39 U	**0.061 J**	**0.13 J**	**0.66**	**0.013**
Naphthalene	mg/kg	8.6	**0.28**	**0.066**	**210**	**1,100**	**1,600**	**1.1**	**0.023**
Phenanthrene	mg/kg		**0.0068 J**	**0.26**	**5.1**	**5**	**11**	**0.36**	**0.012**
Pyrene	mg/kg	23,000	0.0085 U	**0.38**	**0.2 J**	0.42 U	**0.43**	**4.3**	**0.013**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
* indicates non-validated data results
^ PAH compounds were analyzed via SIM
J: The positive result reported for this analyte is a quantitative estimate.
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

Table 1 - Parcel B13 Slag Characterization
Summary of PAHs Detected in Slag

Parameter	Units	PAL	B13-098-SB-7*	B13-099-SB-4*	B13-099-SB-8*	B13-100-SB-4*	B13-100-SB-10*	B13-100-SB-12*	B13-100-SB-16.5*
			Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring
			6/4/2020	6/4/2020	6/4/2020	6/3/2020	6/3/2020	6/3/2020	6/3/2020
Polynuclear Aromatic Hydrocarbons^									
2-Methylnaphthalene	mg/kg	3,000	0.0077 U	0.0069 U	**0.0065 J**	**0.0077 J**	**52**	**1.2**	**0.13**
Acenaphthene	mg/kg	45,000	0.0077 U	0.0069 U	0.0084 U	**0.002 J**	**0.9**	**0.042**	0.0078 U
Acenaphthylene	mg/kg	45,000	0.0077 U	0.0069 U	0.0084 U	**0.013**	**1.5**	**0.24**	**0.034**
Anthracene	mg/kg	230,000	0.0077 U	0.0069 U	**0.00076 J**	**0.016**	**0.33 J**	**0.077**	**0.0091**
Benz[a]anthracene	mg/kg	21	0.0077 U	0.0069 U	**0.0034 J**	**0.03**	**0.12 J**	**0.12**	**0.011**
Benzo[a]pyrene	mg/kg	2.1	0.0077 U	0.0069 U	**0.003 J**	**0.037**	0.4 U	**0.1**	**0.0068 J**
Benzo[b]fluoranthene	mg/kg	21	0.0077 U	0.0069 U	**0.0045 J**	**0.054**	**0.091 J**	**0.18**	**0.015**
Benzo[g,h,i]perylene	mg/kg		0.0077 U	0.0069 U	**0.0029 J**	**0.027**	0.4 U	**0.058**	**0.0059 J**
Benzo[k]fluoranthene	mg/kg	210	0.0077 U	0.0069 U	**0.0013 J**	**0.025**	0.4 U	**0.067**	**0.008**
Chrysene	mg/kg	2,100	0.0077 U	0.0069 U	**0.0024 J**	**0.045**	**0.087 J**	**0.12**	**0.014**
Dibenz[a,h]anthracene	mg/kg	2.1	0.0077 U	0.0069 U	0.0084 U	**0.0068 J**	0.4 U	**0.014**	0.0078 U
Fluoranthene	mg/kg	30,000	**0.00058 J**	0.0069 U	**0.0043 J**	**0.03**	**0.51**	**0.15**	**0.022**
Fluorene	mg/kg	30,000	0.0077 U	0.0069 U	0.0084 U	0.0083 U	**4.8**	**0.19**	0.0078 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0077 U	0.0069 U	**0.0029 J**	**0.031**	0.4 U	**0.069**	**0.0064 J**
Naphthalene	mg/kg	8.6	0.0077 U	**0.0045 J**	**0.015**	**0.04**	**1,300**	**12**	**1.9**
Phenanthrene	mg/kg		0.0077 U	0.0069 U	**0.004 J**	**0.016**	**5.9**	**0.24**	**0.044**
Pyrene	mg/kg	23,000	0.0077 U	0.0069 U	**0.0041 J**	**0.031**	**0.33 J**	**0.17**	**0.021**

Detections in bold

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* indicates non-validated data results

^ PAH compounds were analyzed via SIM

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

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

Table 1 - Parcel B13 Slag Characterization
Summary of PAHs Detected in Slag

Parameter	Units	PAL	B13-100T-SB-3* Test Pit 6/29/2020	B13-100T-SB-7* Test Pit 6/29/2020	B13-100T-SB-12* Test Pit 6/29/2020	B13-100T-SB-17* Test Pit 6/29/2020	B13-101-SB-3* Soil Boring 6/3/2020	B13-101-SB-8* Soil Boring 6/3/2020
Polynuclear Aromatic Hydrocarbons^								
2-Methylnaphthalene	mg/kg	3,000	0.0089 U	0.0078 U	0.0077 U	**0.035**	**0.038**	**0.036**
Acenaphthene	mg/kg	45,000	**0.0031 J**	0.0078 U	0.0077 U	0.0084 U	**0.011**	**0.0022 J**
Acenaphthylene	mg/kg	45,000	0.0089 U	0.0078 U	**0.0016 J**	**0.0043 J**	**0.054**	**0.022**
Anthracene	mg/kg	230,000	**0.0035 J**	**0.001 J**	0.0077 U	0.0084 U	**0.16**	**0.036**
Benz[a]anthracene	mg/kg	21	**0.0031 J**	**0.0021 J**	**0.00088 J**	**0.0021 J**	**0.12**	**0.1**
Benzo[a]pyrene	mg/kg	2.1	**0.0016 J**	**0.0013 J**	0.0077 U	**0.0012 J**	**0.23**	**0.093**
Benzo[b]fluoranthene	mg/kg	21	**0.0028 J**	**0.0027 J**	**0.00084 J**	**0.0025 J**	**0.35**	**0.15**
Benzo[g,h,i]perylene	mg/kg		**0.0008 J**	**0.00074 J**	0.0077 U	**0.0012 J**	**0.27**	**0.057**
Benzo[k]fluoranthene	mg/kg	210	**0.00094 J**	**0.00078 J**	0.0077 U	**0.00092 J**	**0.13**	**0.061**
Chrysene	mg/kg	2,100	**0.0036 J**	**0.0028 J**	**0.00069 J**	**0.002 J**	**0.078**	**0.1**
Dibenz[a,h]anthracene	mg/kg	2.1	0.0089 U	0.0078 U	0.0077 U	0.0084 U	**0.064**	**0.016**
Fluoranthene	mg/kg	30,000	**0.012**	**0.0066 J**	**0.0014 J**	**0.0042 J**	**0.11**	**0.12**
Fluorene	mg/kg	30,000	0.0089 U	0.0078 U	0.0077 U	**0.011**	**0.0067 J**	**0.007 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0089 U	**0.00093 J**	0.0077 U	**0.0013 J**	**0.31**	**0.069**
Naphthalene	mg/kg	8.6	0.0089 U	**0.002 J**	**0.0031 J**	**0.066**	**0.1**	**0.19**
Phenanthrene	mg/kg		**0.0071 J**	**0.0023 J**	**0.0032 J**	**0.019**	**0.048**	**0.062**
Pyrene	mg/kg	23,000	**0.011**	**0.0094**	**0.0018 J**	**0.0047 J**	**0.12**	**0.11**

Detections in bold

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

* indicates non-validated data results

^ PAH compounds were analyzed via SIM

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

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

Table 1 - Parcel B13 Slag Characterization
Summary of PAHs Detected in Slag

Parameter	Units	PAL	B13-101-SB-13*	B13-101-SB-17*	B13-102-SB-1.5*	B13-102-SB-7*	B13-102-SB-12*	B13-102-SB-17*
			Soil Boring	Soil Boring	Soil Boring	Test Pit	Test Pit	Test Pit
			6/3/2020	6/3/2020	6/3/2020	6/29/2020	6/29/2020	6/29/2020
Polynuclear Aromatic Hydrocarbons^								
2-Methylnaphthalene	mg/kg	3,000	**0.2**	**0.11**	**0.026**	**0.008**	**0.0047 J**	0.0084 U
Acenaphthene	mg/kg	45,000	0.0094 U	0.036 U	0.0074 U	0.0079 U	0.0078 U	0.0084 U
Acenaphthylene	mg/kg	45,000	**0.0015 J**	**0.31**	**0.0024 J**	**0.034**	**0.0014 J**	**0.0024 J**
Anthracene	mg/kg	230,000	**0.002 J**	**0.063**	**0.0033 J**	**0.034**	**0.0015 J**	**0.0022 J**
Benz[a]anthracene	mg/kg	21	**0.004 J**	**0.28**	**0.0056 J**	**0.11**	**0.0059 J**	**0.0089**
Benzo[a]pyrene	mg/kg	2.1	**0.0033 J**	**0.22**	**0.0062 J**	**0.15**	**0.0065 J**	**0.013**
Benzo[b]fluoranthene	mg/kg	21	**0.0052 J**	**0.19**	**0.0076**	**0.25**	**0.0098**	**0.02**
Benzo[g,h,i]perylene	mg/kg		**0.0034 J**	**0.54**	**0.0043 J**	**0.096**	**0.0042 J**	**0.0086**
Benzo[k]fluoranthene	mg/kg	210	**0.0022 J**	**0.024 J**	**0.0026 J**	**0.071**	**0.0029 J**	**0.0058 J**
Chrysene	mg/kg	2,100	**0.0054 J**	**0.41**	**0.0054 J**	**0.17**	**0.0066 J**	**0.01**
Dibenz[a,h]anthracene	mg/kg	2.1	**0.001 J**	**0.056**	**0.00089 J**	**0.034**	**0.0014 J**	**0.0025 J**
Fluoranthene	mg/kg	30,000	**0.0028 J**	**0.089**	**0.018**	**0.086**	**0.0066 J**	**0.0087**
Fluorene	mg/kg	30,000	0.0094 U	0.036 U	**0.0018 J**	**0.0042 J**	0.0078 U	0.0084 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.0035 J**	**0.18**	**0.004 J**	**0.12**	**0.005 J**	**0.011**
Naphthalene	mg/kg	8.6	**0.24**	**0.52**	**0.088**	**0.022**	**0.024**	**0.0047 J**
Phenanthrene	mg/kg		**0.011**	**0.19**	**0.018**	**0.028**	**0.0074 J**	**0.0052 J**
Pyrene	mg/kg	23,000	**0.0031 J**	**0.54**	**0.014**	**0.096**	**0.0066 J**	**0.0091**

Detections in bold

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

* indicates non-validated data results

^ PAH compounds were analyzed via SIM

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

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

ATTACHMENT 1

ARM Group LLC
Engineers and Scientists

Boring ID: B13-095-SB

(page 1 of 1)

Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/03/2020
Weather	: Sunny, 80's
Northing (US ft)	: 563091.53
Easting (US ft)	: 1463727.54

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	32						
		66	0.4		(0-4') SLAG, SAND and GRAVEL-sized with some SILT-sized SLAG, dark grayish brown and light gray, dry then moist 3.5-4' bgs, non-plastic, non-cohesive	SW/GW	No water encountered
1	31						
			1.2				
2	30						
			0.8				
3	29						
			33.8	B13-095-SB-4			
4	28				End of Boring		
5							

Total Borehole Depth: 4' bgs due to refusals.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-096-SB

(page 1 of 1)

Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/03/2020
Weather	: Cloudy, 80's
Northing (US ft)	: 563118.26
Easting (US ft)	: 1463784.71

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	32						
1	31		-		(0-9.3') SLAG, SAND and GRAVEL-sized with some SILT, dense, dark brown, dark grayish brown, and light gray, trace reddish brown 7.5-9' bgs, dry, non-plastic, non-cohesive		
2	30	80	0.3				
3	29		0.7	B13-096-SB-3			
4	28		0.4				
5	27		1.5			SW/GW	
6	26		-				
7	25	82	2.1				
8	24		1.5				
9	23		2.1				No water encountered
10	22		3.2	B13-096-SB-10	(9.3-17') SLAG GRAVEL, fine to coarse, with some SAND-sized SLAG and SILT, dense, light gray, pale brown, and gray, wet, non-plastic, non-cohesive		
11	21		-				
12	20		14.6				Light amount Napthalene-like odor 12-17' bgs
13	19	70	36.3	B13-096-SB-13		GW/SW	
14	18		22.1				
15	17		7.5				
16	16		19.8	B13-096-SB-16.5			Very light amount NAPL 16-16.3' bgs
17	15	100	3.2				
18	14		4.4		(17-18') BRICK, SAND and fine GRAVEL, fine to coarse, dense, yellow, moist, non-plastic, non-cohesive	SW/GP	
19	13				End of Boring		
20							

Total Borehole Depth: 18' bgs due to Work Plan.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-097-SB

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Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/03/2020
Weather	: Sunny, 80's
Northing (US ft)	: 563128.95
Easting (US ft)	: 1463823.71

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	32						
		50	-		(0-2') SLAG, SAND and GRAVEL-sized and non-native SAND and SILT, medium dense to dense, dark brown with gray and white, dry, non-plastic, non-cohesive	SW/GW	No water encountered
1	31						
			1.3	B13-097-SB-2			
2	30				End of Boring		
3	29						
4	28						
5							

Total Borehole Depth: 2' bgs due to refusals.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-098-SB

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Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/04/2020
Weather	: Sunny, 80's
Northing (US ft)	: 563150.52
Easting (US ft)	: 1463876.93

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	22						
			-	B13-098-SB-1	(0-8') SLAG, SAND and GRAVEL-sized with some SILT-sized SLAG, dense, pale brown, light gray, and grayish brown with very dark brown at 6' and 7' bgs, dry then very moist at 7' bgs, non-plastic, non-cohesive		
1	21						Surface sample appears at 2' bgs in core due to recovery
			195.0				
2	20						
		78	9.9				
3	19						
			3.2				
4	18					SW/GW	No water encountered
			0.2				
5	17						
			0.2				
6	16						
		100	0.7	B13-098-SB-7			
7	15						
			0.5				
8	14				End of Boring		
9	13						
10							

Total Borehole Depth: 8' bgs due to work plan.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-099-SB

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Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/04/2020
Weather	: Sunny, 80's
Northing (US ft)	: 563102.64
Easting (US ft)	: 1463891.32

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	24						
			-		(0-10') SLAG GRAVEL with SAND-sized SLAG, dense, light gray, light grayish brown, and pale brown with very dark gray from 2.7-2.9' bgs, dry then wet at 6.5' bgs with areas of dry slag, non-plastic, non-cohesive		
1	23		-				
2	22						
		54	3.4				
3	21						
			39.9	B13-099-SB-4			
4	20						
			10.0				
5	19					GW/SW	No water encountered
			0.1				
6	18						
			2.4				
7	17						
		100	0.0	B13-099-SB-8			
8	16						
			0.0				
9	15						
			0.0				
10	14				End of Boring		
11							

Total Borehole Depth: 10' bgs due to work plan.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-100-SB

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Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/03/2020
Weather	: Sunny, 80's
Northing (US ft)	: 563088.25
Easting (US ft)	: 1463843.44

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	32						
			-		(0-5.5') SLAG, SAND and GRAVEL-sized, dense, light gray and grayish brown, dry then wet at 4.7'-5' bgs, non-plastic, non-cohesive, trace CLAY and BRICK at 4.7'-5' bgs		
1	31		-				
2	30	52	0.2			SW/GW	
3	29		1.9	B13-100-SB-4			
4	28		0.7				
5	27		-				
6	26		16.4		(5.5-15') SLAG, SAND and GRAVEL-sized SLAG, with some SILT at 9' bgs and trace SILT from 10-15' bgs, dense, dense, light gray and light grayish brown, then dark gray, light gray, and light grayish brown from 10'-15' bgs, dry then wet at 8.8' -8.9' bgs, 9.6'-10' bgs, and 12'-12.2' bgs, non-plastic, non-cohesive		
7	25	80	19.8				
8	24		18.4				
9	23		142.5	B13-100-SB-10			No water encountered
10	22		-			SW/GW	
11	21		71.5	B13-100-SB-12			
12	20	80	21.8				
13	19		6.2				
14	18		5.3				
15	17		2.5				
16	16	100	1.8	B13-100-SB-16.5	(15'-17') SLAG, SAND and GRAVEL-sized with SILT, dense, grayish brown and dark brown, dry, non-plastic, non-cohesive	SW/ GW-GM	
17	15				End of Boring		
18	14						
19	13						
20							

Total Borehole Depth: 17' bgs due to refusals.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-101-SB

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Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/03/2020
Weather	: Cloudy, 70's
Northing (US ft)	: 563042.59
Easting (US ft)	: 1463802.74

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	32						
1	31	100	0.6		(0-8.5') SLAG, SAND and GRAVEL-sized, medium dense to dense, gray, light gray, dark brown and light grayish brown, dry, non-plastic, non-cohesive	SW/GW	No water encountered
2	30		0.0				
3	29		0.0	B13-101-SB-3			
4	28	0	0.0				
5	27		-				
6	26	100	0.1				
7	25		0.7				
8	24		2.2	B13-101-SB-8			
9	23		0.3		(8.5-10') SILTY SAND with fine GRAVEL and BRICK, SAND and GRAVEL-SIZED, dense, dusky red, dry, non-plastic, non-cohesive	SM/GP	
10	22		0.0				
11	21	100	0.8		(10'-11.3') SLAG, SAND and GRAVEL-sized, dense, light gray and light grayish brown, dry, non-plastic, non-cohesive	SW/GW	
12	20		0.0		(11.3'-13.5') SILTY SAND, very fine to fine, medium dense, dusky red, dry, non-plastic, non-cohesive, trace fine metallic grains	SM	
13	19		0.1	B13-101-SB-13			
14	18		0.1		(13.5-17') SLAG, SAND and GRAVEL-sized, dense, light gray and light grayish brown, dry to moist, non-plastic, non-cohesive	SW/GW	
15	17	0	0.2				
16	16	100	0.2				
17	15		0.1	B13-101-SB-17	End of Boring		
18	14						
19	13						
20							

Total Borehole Depth: 17' bgs due to refusals.
bgs: below ground surface
amsl: above mean sea level

ARM Group LLC
Engineers and Scientists

Boring ID: B13-102-SB

(page 1 of 1)

Client	: Tradepoint Atlantic
ARM Project No.	: 20010213
Project Description	: Sparrows Point - Parcel B13
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 06/03/2020
Weather	: Sunny, 80's
Northing (US ft)	: 563059.47
Easting (US ft)	: 1463747.67

Depth (ft.)	Surf. Elev. (ft amsl)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	32						
		47	-		(0-1.5') Non-native SAND and SILT with fine SLAG GRAVEL, loose to medium dense, very light gray then dark brown at 0.9' bgs, dry, non-plastic, non-cohesive	SM/GP	
1	31		0.2	B13-102-SB-1.5			No water encountered
					End of Boring		
2	30						
3	29						
4	28						
5							

Total Borehole Depth: 1.5' bgs due to refusals.
bgs: below ground surface
amsl: above mean sea level