



DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

01 October 2019

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Northern Bureau of Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, NJ 07927-1112

**SUBJECT: Supplemental Site Investigation Report for Service Bay Trenches and Anomaly P51_15 at the Parcel 51 Building 750 Motor Pool Area, Fort Monmouth, Monmouth County, New Jersey
PI G000000032**

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this supplement to the *Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks (Reference 1)* to summarize investigations conducted at the following two locations in the Building 750 (former Motor Pool) area within Parcel 51 (**Figures 1 and 2**):

- Service bay trenches at Building 750, and
- Geophysical Anomaly P51_15.

1.0 SITE DESCRIPTION

The subject sites are described as follows:

- Two concrete-lined service bay trenches were located under the canopy just east of Building 750 and were historically used for draining vehicle oil. Underground piping from the service trenches led to the former UST 750C waste oil tank, which was removed in 1998 (an NFA determination was issued for UST 750C in 2017; **Reference 2**). The service bay trenches are now backfilled, and the bay area is now used for covered parking by Monmouth County.
- In 2009 geophysical surveys and test trenching was performed to find historical fuel oil USTs associated with previous barracks located within the footprint of the Building 750 Motor Pool Area. One geophysical anomaly designated as P51_15 was assessed by test trenching, but no UST was found, and no soil samples were collected for analysis.

2.0 FIELD INVESTIGATIONS

The field investigations described below were performed to address the NJDEP comments in **Reference 2** (provided in **Attachment A**) that Anomaly P51_15 and the service trenches associated with former UST 750C had not been characterized.

2.1 Service Trenches Associated with Former UST 750C

On 9 July 2019 six soil borings (PAR-51-SB-01 through PAR-51-SB-06) were initially advanced within the backfilled service trenches (three borings within each of the two trenches) using a Geoprobe direct-push sampling rig. Granular fill comprised of recycled asphalt was encountered within the trenches, but the sampling rig was unable to penetrate beyond the concrete bottom of the service trenches encountered at 5 feet below ground surface (ft bgs) at each location. Therefore these six borings were re-located immediately outside of the service trenches (**Figure 2**) and sampled on 11 July 2019. The borings were advanced to a depth of 10 ft bgs. Soil was screened using visual observations and a photoionization detector (PID) to provide field indications of petroleum contamination. One soil sample was collected from each boring at 5.5 to 6.0 ft bgs to characterize the soil below the bottom of the trench, and analyzed for fractionated extractable petroleum hydrocarbons (EPH) in accordance with the analytical requirements for waste oil in Table 2-1 of the New Jersey Administrative Code (NJAC) 7:26E *Technical Requirements for Site Remediation* (TRSR).

On 9 and 11 July 2019 six additional soil borings (PAR-51-SB-07 through PAR-51-SB-12) were advanced at approximately 20 ft spacing along the waste oil piping between the former service trenches and the former location of UST 750C (**Figure 2**). One soil sample was collected from each boring at 6.0 to 6.5 ft bgs to characterize the soil below the piping, and analyzed for fractionated EPH in accordance with the NJDEP analytical requirements for waste oil. Additional analyses for volatile organic compounds (VOCs) plus tentatively-identified compounds (TICs), semivolatile organic compounds (SVOCs) plus TICs, polychlorinated biphenyls (PCBs), and Target Analyte List (TAL) metals were also performed on three of these samples (PAR-51-SB-07, -08 and 09) to satisfy the NJDEP analytical requirements for sites associated with waste oil. These borings were selected for the additional analyses because the highest EPH results were encountered at boring PAR-51-SB-08, and (in the absence of any other elevated EPH results) because there were field indications of potential petroleum contamination in the two adjacent borings PAR-51-SB-07 and PAR-51-SB-09.

2.2 Anomaly P51 15

On 11 July 2019 one boring (PAR-51-SB-P51_15) was advanced at the Anomaly P51_15 location. The boring was advanced to a depth of 10 ft bgs, and soil was screened using visual observations and a PID to provide field indications of petroleum contamination. One soil sample was collected from the boring at 6.0 to 6.5 ft bgs to characterize the soil beneath a potential UST (although no UST was encountered at this location). The sample was analyzed for fractionated EPH, VOCs plus TICs, SVOCs plus TICs, PCBs, and TAL metals in accordance with the NJDEP analytical requirements for unknown petroleum hydrocarbons.

3.0 SITE INVESTIGATION RESULTS

The soil analytical results are presented in **Table 1** with comparison to NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) criteria. Boring logs and field notes are provided in **Attachments B and C**.

3.1 Service Bay Trenches

Field PID readings were above ambient conditions in borings PAR-51-SB-07 (from 1 to 7 ft bgs), PAR-51-SB-08 (1 to 8.5 ft bgs), and PAR-51-SB-09 (0.5 to 7.5 ft bgs); soil samples for analyses were

collected from within each of these intervals for further assessment. There were no VOC, SVOC, PCBs, or metal exceedances of the NJDEP RDCSRS in any of the soil samples from the 12 borings. Soil EPH results were compared to NJDEP's sample-specific health-based soil remediation criterion (SRC) using the NJDEP's EPH calculator (**Reference 3**). As shown on **Table 1**, only one sample (PAR-51-SB-08 [6.0 to 6.5 ft bgs]) had Total EPH concentrations greater than or equal to 1,700 mg/kg, which is the minimum concentration determined by NJDEP to require a sample-specific health based SRC. As shown on **Table 2**, the EPH results at PAR-51-SB-08 did not exceed the allowable EPH SRC. Therefore, in accordance with **Reference 3**, there is no need for additional action at the service bay trenches and associated waste oil piping.

3.2 Anomaly P51_15

There were no field indications of petroleum contamination at boring PAR-51-SB-P51_15. There were no VOC, SVOC, or PCBs exceedances of the NJDEP RDCSRS in the soil boring. Soil EPH results were less than 1,700 mg/kg, which is the minimum concentration determined by NJDEP to require a sample-specific health based SRC.

Two metals exceeded the respective NJDEP RDCSRS in the field duplicate sample, but not in the parent sample: antimony was detected at 159 J mg/kg (where "J" indicates an estimated value due to the lack of precision indicated by the field duplicate result) which exceeded the RDCSRS of 31 mg/kg. Vanadium was detected at 101 mg/kg which exceeded the RDCSRS of 78 mg/kg. Antimony and vanadium are not known constituents of a petroleum release, and the exceedances were only noted in the field duplicate and not the parent sample. Glauconitic soils were present at boring PAR-51-SB-P51_15 as indicated in the boring log (**Attachment B**), and elevated metals (including vanadium) are commonly found in glauconitic soils (**References 4 and 5**). The source of the elevated antimony is not known, but there are no known sources of antimony in the area, and antimony is not attributable to a petroleum release. Therefore, the antimony and vanadium results at Anomaly P51_15 are attributed to naturally occurring elevated background concentrations in soils. In accordance with **Reference 3**, there is no need for additional action at Anomaly P51_15.

4.0 RECOMMENDATIONS

Based on the results of this investigation, the Army requests NJDEP's concurrence that no further action is needed and that an Unrestricted Use, NFA determination be issued for the former service trenches associated with former UST 750C and for Anomaly P51_15, located in the Building 750 former Motor Pool Area.

Thank you for reviewing this request; we look forward to your approval and/or comments. Our technical Point of Contact is Kent Friesen; kent.friesen@parsons.com. I can be reached at (732) 383-5104; william.r.colvin18.civ@mail.mil.

Sincerely,



William R. Colvin
Fort Monmouth BRAC Environmental Coordinator

cc: Ashish Joshi (e-mail and 2 hard copies)
William Colvin, BEC (e-mail and 1 hard copy)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Joseph Fallon, FMERA (e-mail)
Cris Grill, Parsons (e-mail)

References:

- 1 U.S. Army. 2016. *No Further Action Request, Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks, Fort Monmouth, NJ*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. October 28.
- 2 NJDEP. 2017. Letter to U.S. Army, *Re: No Further Action Request Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks*. April 4.
- 3 NJDEP. 2010. Protocol for Addressing Extractable Petroleum Hydrocarbons. Prepared by the Site Remediation Program. Version 3. August 9.
- 4 Dooley, J.H. 1998. Comprehensive Chemistry of Select Greensand from the New Jersey Coastal Plan. N.J. Geological Survey Technical Memorandum 98-1. Trenton, NJ.
- 5 Dooley, J.H. 2001. Baseline concentrations of arsenic, beryllium and associated elements in glauconite and glauconitic soils in the New Jersey Coastal Plain: N.J. Geological Survey Investigation Report, Trenton, NJ.

Attachments:

Figure 1 – Building 750 Motor Pool Area Location

Figure 2 – Building 750 Motor Pool Area Sampling Locations

Table 1 – Soil Sampling Results and Comparison to NJDEP Soil Remediation Standards

Table 2 – EPH SRC Calculator

Attachment A - Regulatory Correspondence

Attachment B – Soil Boring Logs

Attachment C – Field Notes



New Jersey Department of Environmental Protection
Site Remediation Program

Report Certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites

These certifications are to be used for reports submitted for RCRA GPRA 2020, CERCLA, and Federal Facility Sites. The Department has developed guidance for report certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites under traditional oversight. The "Person Responsible for Conducting the Remediation Information and Certification" is required to be submitted with each report. For those sites that are required or opt to use a Licensed Site Remediation Professional (LSRP) the report must also be certified by the LSRP using the "Licensed Site Remediation Professional Information and Statement". For additional guidance regarding the requirement for LSRPs at RCRA GPRA 2020, CERCLA and Federal Facility Sites see http://www.nj.gov/dep/srp/srra/training/matrix/quick_ref/rcra_cercla_fed_facility_sites.pdf.

Document:

- "Supplemental SI Report for Service Bay Trenches and Anomaly P51_15 at the Parcel 51 Building 750 Motor Pool Area, Fort Monmouth, Monmouth County, New Jersey" (01 October 2019)

PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: William R. Colvin

Representative First Name: William Representative Last Name: Colvin

Title: Fort Monmouth BRAC Environmental Coordinator (BEC)

Phone Number: (732) 383-5104

Ext: _____ Fax: _____

Mailing Address: P.O. Box 148

City/Town: Oceanport

State: NJ

Zip Code: 07757

Email Address: william.r.colvin18.civ@mail.mil

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: *William R. Colvin*

Date: 01 October 2019

Name/Title: William R. Colvin
Fort Monmouth BRAC Environmental Coordinator

Completed form should be sent to:

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Bureau of Northern Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, New Jersey 07927-1112

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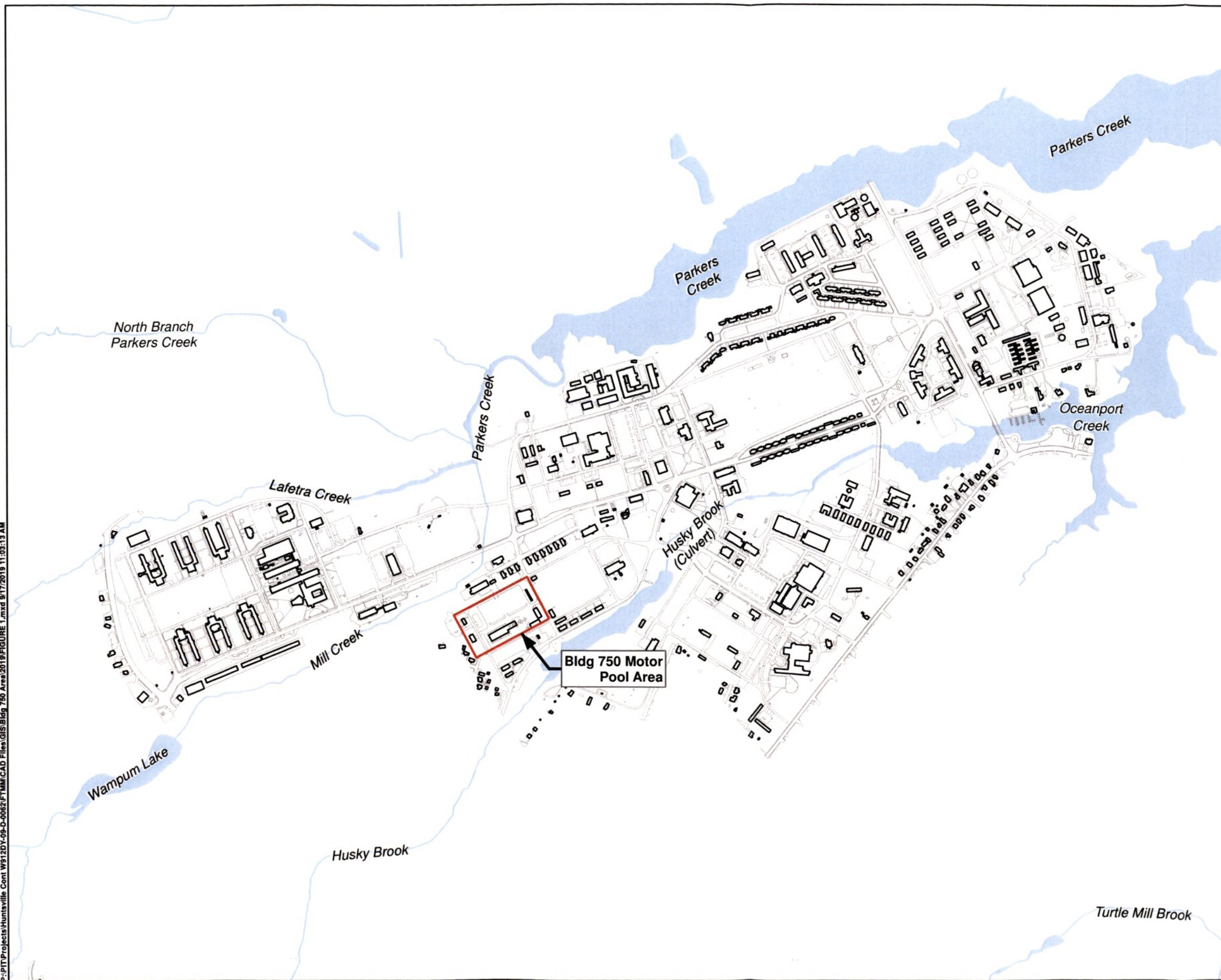
FIGURES

Figure 1 – Building 750 Motor Pool Area Location

Figure 2 – Building 750 Motor Pool Area Sampling Locations

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LEGEND:

- Parcel Boundary
- Surface Water Feature



1 inch = 1,000 feet

0 500 1,000 2,000 Feet

Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

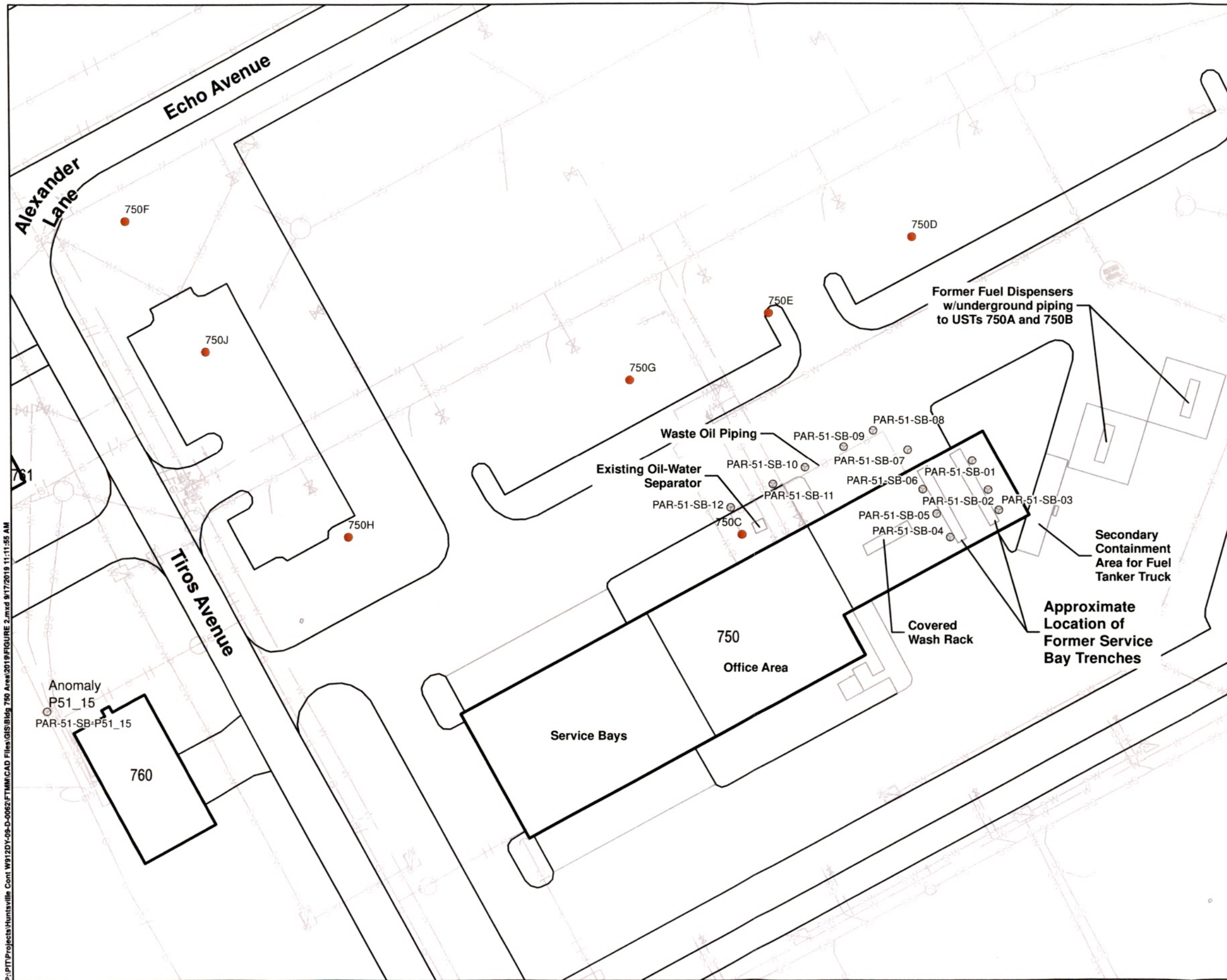
PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

BUILDING 750 MOTOR POOL AREA LOCATION

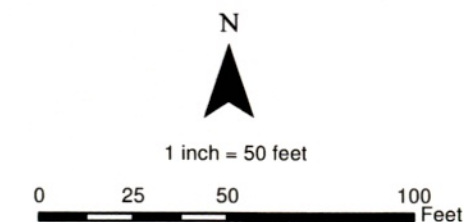
CREATED BY: RR	REVIEWED BY: JC
DATE: SEP. 2019	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-02130	FILE: FIGURE 1.mxd

P:\PIT\Projects\Huntsville Cont W\120Y-09-D-0062\FTMM\CAD Files\GIS\Bldg 750 Area\2019\FIGURE 2.mxd 9/17/2019 11:11:55 AM



LEGEND:

- Soil Boring Location (2019)
- Former UST Location



Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
BUILDING 750 MOTOR POOL AREA SAMPLING LOCATIONS	
CREATED BY: RR	REVIEWED BY: KF
DATE: SEP. 2019	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06031	FILE: FIGURE 2.mxd

TABLES

Table 1 – Soil Sampling Results and Comparison to NJDEP Soil Remediation Standards

Table 2 – EPH SRC Calculator

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TABLE 1
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION
STANDARDS
SITE PARCEL 51 - Building 750 Area
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non- Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Weston 1995 Background (Main Post)	PAR-51-SB-01	PAR-51-SB-02	PAR-51-SB-03	PAR-51-SB-04	PAR-51-SB-05	PAR-51-SB-06	PAR-51-SB-07	PAR-51-SB-08	PAR-51-SB-09
Sample ID					PAR-51-SB-01-5.5-6.0	PAR-51-SB-02-5.5-6.0	PAR-51-SB-03-5.5-6.0	PAR-51-SB-04-5.5-6.0	PAR-51-SB-05-5.5-6.0	PAR-51-SB-06-5.5-6.0	PAR-51-SB-07-6.0-6.5	PAR-51-SB-08-6.0-6.5	PAR-51-SB-09-6.0-6.5
Sample Date					7/11/2019	7/11/2019	7/11/2019	7/11/2019	7/11/2019	7/11/2019	7/9/2019	7/9/2019	7/11/2019
Volatile Organic Compounds (mg/kg)													
1,2,4-Trimethylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	46.5 J	< 0.0003 UJ
1,3,5-Trimethylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	13.4 J	< 0.0003 UJ
Acetone	70,000	NLE	19	-	NA	NA	NA	NA	NA	NA	0.0046	0.034 J	0.016 J
Benzene	2	5	0.005	-	NA	NA	NA	NA	NA	NA	< 0.0002	0.0011 J	< 0.0003 UJ
Cymene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	1.1 J	< 0.0003 UJ
Ethyl benzene	7,800	110,000	13	-	NA	NA	NA	NA	NA	NA	< 0.0002	4.1 J	< 0.0003 UJ
Isopropylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	0.86 J	< 0.0003 UJ
Meta/Para Xylene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	12.6 J	< 0.0003 UJ
Methyl bromide	25	59	0.04	-	NA	NA	NA	NA	NA	NA	< 0.0002	< 0.0002 UJ	< 0.0003 UJ
Methylene chloride	46	230	0.01	-	NA	NA	NA	NA	NA	NA	< 0.0002	< 0.0003 UJ	0.0012 JB
Naphthalene	6	17	25	-	NA	NA	NA	NA	NA	NA	< 0.0002	0.087 J	< 0.0003 UJ
n-Butylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	1.8 J	< 0.0003 UJ
Ortho Xylene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	9.3 J	< 0.0003 UJ
Propylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	3.5 J	< 0.0003 UJ
sec-Butylbenzene	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.0002	0.96 J	< 0.0003 UJ
Tert Butyl Alcohol	1,400	11,000	0.3	-	NA	NA	NA	NA	NA	NA	< 0.0009	0.0028 J	< 0.0013 UJ
Toluene	6,300	91,000	7	-	NA	NA	NA	NA	NA	NA	< 0.0002	0.025 J	< 0.0003 UJ
TIC VOCs (mg/kg)													
Total TIC VOCs	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	2.64177 JN	0.03 JN
Semivolatile Organic Compounds (mg/kg)													
2-Methylnaphthalene	230	2,400	8	-	NA	NA	NA	NA	NA	NA	< 0.018	7.1	< 0.02
Acenaphthene	3,400	37,000	110	-	NA	NA	NA	NA	NA	NA	< 0.018	0.53	< 0.02
Anthracene	17,000	30,000	2,400	-	NA	NA	NA	NA	NA	NA	< 0.018	0.15	< 0.02
Bis(2-Ethylhexyl)phthalate	35	140	1,200	-	NA	NA	NA	NA	NA	NA	< 0.018	0.71	< 0.02
Dibenzofuran	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	< 0.018	0.29 J	< 0.02
Fluorene	2,300	24,000	170	-	NA	NA	NA	NA	NA	NA	< 0.018	0.84	< 0.02
Naphthalene	6	17	25	-	NA	NA	NA	NA	NA	NA	< 0.018	2	< 0.02
Phenanthrene	NLE	300,000	NLE	-	NA	NA	NA	NA	NA	NA	< 0.018	1.6	< 0.02
Pyrene	1,700	18,000	840	-	NA	NA	NA	NA	NA	NA	< 0.018	0.24	< 0.02
TIC SVOCs (mg/kg)													
Total SVOC TICs	NLE	NLE	NLE	-	NA	NA	NA	NA	NA	NA	NA	482 JN	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)													
C10-C12 Aromatics	NLE	NLE	NLE	-	0.5 J	0.34 J	0.95 J	0.49 J	1.1 J	0.27 J	0.26 J	109	0.31 J
C12-C16 Aliphatics	NLE	NLE	NLE	-	< 0.71 UJ	< 0.76	< 0.7	< 0.75	< 0.69	< 0.68 UJ	< 0.7	464	< 0.72
C12-C16 Aromatics	NLE	NLE	NLE	-	0.69 J	0.21 J	1.5 J+	0.25 J	2.6	0.26 J	0.28 J	396	0.24 J
C16-C21 Aliphatics	NLE	NLE	NLE	-	< 0.41 UJ	< 0.43	< 0.4	< 0.43	< 0.4	< 0.39 UJ	< 0.4	485	< 0.41
C16-C21 Aromatics	NLE	NLE	NLE	-	0.65 J	0.33 J	1.1 J+	0.29 J	1.3	0.21 J	0.64 J	508	0.24 J
C21-C36 Aromatics	NLE	NLE	NLE	-	< 1.6	< 1.7	< 1.6	< 1.7	< 1.5	< 1.5	2.2 JB	216	< 1.6
C21-C40 Aliphatics	NLE	NLE	NLE	-	< 8.7 UJ	< 9.3	< 8.6	< 9.1	< 8.5	< 8.4 UJ	< 8.5	1,250	< 8.9
C9-C12 Aliphatics	NLE	NLE	NLE	-	< 0.59 UJ	< 0.63	0.83 J	< 0.62	< 0.57	< 0.57 UJ	< 0.58	105	< 0.6
Total Aliphatics	NLE	NLE	NLE	-	< 10.4 UJ	< 11.1	< 10.3	< 10.9	< 10.1	< 10 UJ	< 10.2	2,310	< 10.6
Total Aromatics	NLE	NLE	NLE	-	2.7 J	< 2.3	4.7 J	< 2.3	5.7	< 2.1	3.4 J	1,230	< 2.2
Total EPH	5,100	NLE	NLE	-	< 12.6	< 13.4	< 12.4	< 13.1	< 12.2	< 12.1	< 12.3	3,530	< 12.8
Pesticides & PCBs (mg/kg) (No Detects)													
PCBs (mg/kg) (No Detects)													
Inorganics (mg/kg)													
Aluminum	78,000	NLE	6,000	15,200	NA	NA	NA	NA	NA	NA	2,140	692	4,880
Antimony	31	450	6	ND	NA	NA	NA	NA	NA	NA	< 0.73	< 0.71	< 0.77
Arsenic	19	19	19	22.9	NA	NA	NA	NA	NA	NA	1.7 J	1.9 J	2.3
Barium	16,000	59,000	2,100	32.3	NA	NA	NA	NA	NA	NA	7.9	58	10.6
Beryllium	16	140	0.7	2	NA	NA	NA	NA	NA	NA	< 0.37	< 0.35	< 0.38
Calcium	NLE	NLE	NLE	921	NA	NA	NA	NA	NA	NA	115	1,390	453
Chromium	NLE	NLE	NLE	269	NA	NA	NA	NA	NA	NA	13.2	8.4	32.4
Chromium, Hexavalent	NLE	NLE	NLE	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	1,600	590	90	2.5	NA	NA	NA	NA	NA	NA	0.93 J	0.45 J	0.95 J
Copper	3,100	45,000	11,000	8	NA	NA	NA	NA	NA	NA	< 0.73	58.2	0.82 J
Iron	NLE	NLE	NLE	55,800	NA	NA	NA	NA	NA	NA	4,240	8,960	8,480
Lead	400	800	90	19.5	NA	NA	NA	NA	NA	NA	3.1	1.6 J	5.1
Magnesium	NLE	NLE	NLE	7,230	NA	NA	NA	NA	NA	NA	188	856	734
Manganese	11,000	5,900	65	90.7	NA	NA	NA	NA	NA	NA	13.9	120	15.6
Nickel	1,600	23,000	48	8.4	NA	NA	NA	NA	NA	NA	1.9 J	5.1	3.5
Potassium	NLE	NLE	NLE	15,400	NA	NA	NA	NA	NA	NA	380	877	1,600
Silver	390	5,700	1	1.1	NA	NA	NA	NA	NA	NA	< 0.18	0.26 J	< 0.19
Sodium	NLE	NLE	NLE	51.6	NA	NA	NA	NA	NA	NA	107	254	178
Vanadium	78	1,100	NLE	94.1	NA	NA	NA	NA	NA	NA	9.5	1.8	16.9
Zinc	23,000	110,000	930	81.4	NA	NA	NA	NA	NA	NA	4.6	120	11.9

TABLE 1
DETECTED SOIL SAMPLING RESULTS - COMPARISON TO NJDEP SOIL REMEDIATION
STANDARDS
SITE PARCEL 51 - Building 750 Area
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non- Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Weston 1995 Background (Main Post)	PAR-51-SB-10	PAR-51-SB-11	PAR-51-SB-12	PAR-51-SB-P51_15	
Sample ID					PAR-51-SB-10-6.0-6.5	PAR-51-SB-11-6.0-6.5	PAR-51-SB-12-6.0-6.5	PAR-51-SB-P51_15-6.0-6.5	PAR-51-SB-P151_15-6.0-6.5
Sample Date					7/11/2019	7/11/2019	7/11/2019	7/11/2019	7/11/2019
Volatile Organic Compounds (mg/kg)									
1,2,4-Trimethylbenzene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002 UJ	< 0.0002
1,3,5-Trimethylbenzene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002	< 0.0002
Acetone	70,000	NLE	19	-	NA	NA	NA	0.011	0.01
Benzene	2	5	0.005	-	NA	NA	NA	< 0.0002	< 0.0002
Cymene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002	< 0.0002
Ethyl benzene	7,800	110,000	13	-	NA	NA	NA	< 0.0002	< 0.0002
Isopropylbenzene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002	< 0.0002
Meta/Para Xylene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002 UJ	< 0.0002
Methyl bromide	25	59	0.04	-	NA	NA	NA	0.0005 J	0.0004 J
Methylene chloride	46	230	0.01	-	NA	NA	NA	0.0004 JB	< 0.0002
Naphthalene	6	17	25	-	NA	NA	NA	< 0.0002	< 0.0002
n-Butylbenzene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002	< 0.0002
Ortho Xylene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002 UJ	< 0.0002
Propylbenzene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002	< 0.0002
sec-Butylbenzene	NLE	NLE	NLE	-	NA	NA	NA	< 0.0002 UJ	< 0.0002
Tert Butyl Alcohol	1,400	11,000	0.3	-	NA	NA	NA	0.0015 J	0.0014 J
Toluene	6,300	91,000	7	-	NA	NA	NA	< 0.0002 UJ	< 0.0002
TIC VOCs (mg/kg)									
Total TIC VOCs	NLE	NLE	NLE	-	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	-	NA	NA	NA	< 0.02	< 0.02
Acenaphthene	3,400	37,000	110	-	NA	NA	NA	< 0.02	< 0.02
Anthracene	17,000	30,000	2,400	-	NA	NA	NA	< 0.02	< 0.02
Bis(2-Ethylhexyl)phthalate	35	140	1,200	-	NA	NA	NA	< 0.02	< 0.02
Dibenzofuran	NLE	NLE	NLE	-	NA	NA	NA	< 0.02	< 0.02
Fluorene	2,300	24,000	170	-	NA	NA	NA	< 0.02	< 0.02
Naphthalene	6	17	25	-	NA	NA	NA	< 0.02	< 0.02
Phenanthrene	NLE	300,000	NLE	-	NA	NA	NA	< 0.02	< 0.02
Pyrene	1,700	18,000	840	-	NA	NA	NA	< 0.02	< 0.02
TIC SVOCs (mg/kg)									
Total SVOC TICs	NLE	NLE	NLE	-	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
C10-C12 Aromatics	NLE	NLE	NLE	-	0.58 J	0.63 J	0.33 J	0.76 J	0.37 J
C12-C16 Aliphatics	NLE	NLE	NLE	-	< 0.79 UJ	< 0.7 UJ	< 0.72 UJ	< 0.75 UJ	< 0.75 UJ
C12-C16 Aromatics	NLE	NLE	NLE	-	0.77 J	0.91 J	0.38 J	1.5 J	0.26 JB
C16-C21 Aliphatics	NLE	NLE	NLE	-	< 0.45 UJ	< 0.4 UJ	< 0.41 UJ	< 0.43 UJ	< 0.43 UJ
C16-C21 Aromatics	NLE	NLE	NLE	-	0.78 J	0.69 J	0.41 J	1.3 J	0.36 JB
C21-C36 Aromatics	NLE	NLE	NLE	-	< 1.8	< 1.5	< 1.6	< 1.7	< 1.7
C21-C40 Aliphatics	NLE	NLE	NLE	-	< 9.7 UJ	< 8.5 UJ	< 8.8 UJ	< 9.2 UJ	< 9.2 UJ
C9-C12 Aliphatics	NLE	NLE	NLE	-	0.68 J	< 0.58 UJ	< 0.59 UJ	< 0.62 UJ	< 0.62 UJ
Total Aliphatics	NLE	NLE	NLE	-	< 11.6 UJ	< 10.2 UJ	< 10.5 UJ	< 11 UJ	< 11 UJ
Total Aromatics	NLE	NLE	NLE	-	2.8 J	2.9 J	< 2.2	4.8 J	< 2.3
Total EPH	5,100	NLE	NLE	-	< 14	< 12.3	< 12.7	< 13.2	< 13.2
Pesticides & PCBs (mg/kg) (No Detects)									
PCBs (mg/kg) (No Detects)									
Inorganics (mg/kg)									
Aluminum	78,000	NLE	6,000	15,200	NA	NA	NA	8,710	10,900
Antimony	31	450	6	ND	NA	NA	NA	< 0.76 UJ	159 J
Arsenic	19	19	19	22.9	NA	NA	NA	5.4 J	11 J
Barium	16,000	59,000	2,100	32.3	NA	NA	NA	11.3 J	29.3 J
Beryllium	16	140	0.7	2	NA	NA	NA	0.39 J	0.46 J
Calcium	NLE	NLE	NLE	921	NA	NA	NA	581	548
Chromium	NLE	NLE	NLE	269	NA	NA	NA	80 J	136
Chromium, Hexavalent	NLE	NLE	NLE	ND	NA	NA	NA	< 0.71	2.1 J
Cobalt	1,600	590	90	2.5	NA	NA	NA	0.92 J	0.71 J
Copper	3,100	45,000	11,000	8	NA	NA	NA	< 0.76	< 0.76
Iron	NLE	NLE	NLE	55,800	NA	NA	NA	8,180 J	18,100 J
Lead	400	800	90	19.5	NA	NA	NA	16.8	14
Magnesium	NLE	NLE	NLE	7,230	NA	NA	NA	1,020 J	1,450
Manganese	11,000	5,900	65	90.7	NA	NA	NA	16.5 J	12.2
Nickel	1,600	23,000	48	8.4	NA	NA	NA	3.5	4
Potassium	NLE	NLE	NLE	15,400	NA	NA	NA	2,140	3,570
Silver	390	5,700	1	1.1	NA	NA	NA	< 0.19	< 0.19
Sodium	NLE	NLE	NLE	51.6	NA	NA	NA	< 18.8	< 18.8
Vanadium	78	1,100	NLE	94.1	NA	NA	NA	64.2 J	101
Zinc	23,000	110,000	930	81.4	NA	NA	NA	14.4	25.9

Footnote:

- 1) All historical data collected prior to 2013 are reported as provided by others.
- 2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.
- 3) NLE = no limit established.
- 4) ND = not detected in any background sample, no background concentration available.
- 5) Bold chemical detection
- 6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.	E (or ER) = Estimated result.
B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.	D = Results from dilution of sample.
R = Rejected, data validation rejected the results.	J-DL = Elevated sample detection limit due to difficult sample matrix.
U = non-detect, i.e. not detected at or above this value.	JN = Tentatively identified compound, estimated concentration.
U-DL = Elevated sample detection limit due to difficult sample matrix.	UJ=The compound was not detected; however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.
U-ND = Analyte not detected in sample, but no detection or reporting limit provided.	J+ = The result is an estimated quantity, but the result may be biased high.
J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.	J- = The result is an estimated quantity, but the result may be biased low.

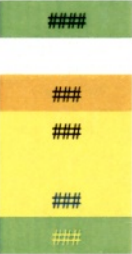
8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

a) DELETE THIS NOTE BEFORE GOING FINAL: Refer to the NJDEP Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010) and the NJDEP Health Based end Ecological Screening Criteria for Petroleum Hydrocarbons (Version 4.0, August 9, 2010) to determine the category of tank being investigated and the appropriate cleanup standards or screening levels for that category of tank.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Residential Direct Contact Soil Remediation Standard.

There are no NJDEP soil standards for individual PCB Aroclors, therefore the total PCB NJDEP standards were used for individual Aroclors.
- Cell Shade values represent a result that is above the NJ Non-Residential Direct Contact Soil Remediation Standard.
- Cell Shade values represent a result that is above the NJ Impact to GW Soil Screening Level
- Cell Shade values represent a result that is above both the NJ Residential, Non-Residential, AND NJ Impact to GW Soil Screening Level Direct Contact Soil Remediation Standard.
- Cell Shade values represent a result that is above both the NJ Residential and Non-Residential Direct Contact Soil Remediation Standard.



10) Criteria action level source document and web address.

- The NJ Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards
http://www.nj.gov/dep/rules/rules/njac7_26d.pdf
- The NJ Non-Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards
http://www.nj.gov/dep/rules/rules/njac7_26d.pdf
- The NJ Impact to GW Soil Screening Level criteria refers to the Development of Site Specific Impact to Ground Water Soil Remediation Standards - Nov 2013 revised
http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf

TABLE 2
EPH SRC CALCULATOR

COMPOSITION-SPECIFIC EXTRACTABLE PETROLEUM HYDROCARBON (EPH) SOIL REMEDIATION CRITERION (SRC) CALCULATOR FOR NON-#2 FUEL OIL/DIESEL OIL PETROLEUM HYDROCARBON MIXTURES (Version 3.0, October 18, 2017)					
DATA ENTRY CELLS ENTER ALL CONCENTRATIONS AS MILLIGRAMS/KILOGRAM (mg/kg) FOR NON DETECT VALUES, ENTER "0" or "ND" (without the quotation marks) REMEMBER TO ENTER ACTUAL SAMPLE IDENTIFICATION IN PLACE OF "SAMPLE 1", ETC. REMEMBER TO INDICATE WHETHER THE SAMPLE IS "RESIDENTIAL" (R) OR "NON-RESIDENTIAL" (N) [OR USE DROP-DOWN LIST] ALL DATA MUST BE ENTERED FOR EACH SAMPLE FOR THE EPH CRITERION TO BE CALCULATED CLICK ON THE "CALCULATE EPH SRC" BUTTON TO CALCULATE THE SAMPLE-SPECIFIC EPH SOIL REMEDIATION CRITERION IF YOU CHANGE ANY INPUT DATA, YOU MUST CLICK ON "CALCULATE EPH SRC" AGAIN TO RECALCULATE THE SOIL REMEDIATION CRITERION IF THE RESULTS FROM THE GC ANALYSIS INDICATE AN EPH CONCENTRATION LESS THAN 1,700 mg/kg, IT IS NOT NECESSARY TO USE THIS CALCULATOR					
EC* RANGE / SAMPLE ID	PAR-51-SB-08 6.0-6.5	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5
Enter Residential or Non-Residential	Residential				
ALIPHATICS	EC9-EC12	105.0			
	EC12-EC16	464.0			
	EC16-EC21	485.0			
	EC21-EC40	1,250.0			
AROMATICS	EC10-EC12	109.0			
	EC12-EC16	396.0			
	EC16-EC21	508.0			
	EC21-EC36	216.0			
Total Concentration (mg/kg)	3,533.0				
Calculated EPH SRC# (mg/kg)	4,900				
Allowable% EPH SRC (mg/kg)	4,900				
ABOVE/BELOW ALLOWABLE EPH SRC (i.e., PASS or FAIL)	BELOW (PASS)				

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: #ffffcc;"> <td>* = Equivalent Carbon</td> </tr> <tr style="background-color: #ffffcc;"> <td># = Soil Remediation Criterion</td> </tr> <tr style="background-color: #ffffcc;"> <td>% = Accounts for residual product</td> </tr> <tr style="background-color: #d9d9d9;"> <td>17,000^ = Default maximum value for all non-#2 fuel oil/diesel oil petroleum hydrocarbon mixtures</td> </tr> </table>	* = Equivalent Carbon	# = Soil Remediation Criterion	% = Accounts for residual product	17,000^ = Default maximum value for all non-#2 fuel oil/diesel oil petroleum hydrocarbon mixtures	Calculate EPH SRC Reset Data	Print Results Instructions	Intro Message Run Date = 09/16/2019
* = Equivalent Carbon							
# = Soil Remediation Criterion							
% = Accounts for residual product							
17,000^ = Default maximum value for all non-#2 fuel oil/diesel oil petroleum hydrocarbon mixtures							

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Attachment A
Regulatory Correspondence

1. NJDEP. 2017. Letter to U.S. Army, *Re: No Further Action Request Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks*. April 4.

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State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-292-2117

BOB MARTIN
Commissioner

April 4, 2017

William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *No Further Action Request Site Investigation Report Addendum for the Building 750
Motor Pool Area Including Underground Storage Tanks*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, received November 1, 2016 (with Errata Sheet for Attachment D received January 6, 2017), prepared by the Department of the Army's Office of Assistant Chief of Staff for Installation Management relative to the Building 750 Motor Pool Area and associated underground storage tank (UST) sites within Parcel 51 and in response to the NJDEP letter correspondence of July 10, 2012 and June 16, 2015 regarding same. Comments are as follows:

Three Hydraulic Lifts – The three hydraulic lifts located within Building 753 are electrically operated floor jacks with hydraulic oil reservoirs located above grade. No staining is noted. It is agreed no action is necessary.

Floor Drains – The floor drains located with Buildings 753 and 754 are associated only with the rest room and safety shower, and discharge to the sanitary sewer. It is agreed no investigation is necessary.

Wash Rack System/Area – Based upon information contained in the referenced submittal, it is agreed no investigation is necessary.

Service Pits/Trenches in Service Bay Area – The trenches were previously utilized for collected of draining vehicle waste oil, which was transferred via waste oil lines from the service bay trenches to the waste oil UST 750C (see comments below specific to the waste oil UST). The trenches were backfilled to grade and the area currently utilized for parking. There is no evidence sampling of either the trench area or the piping runs between the trenches to within

approximately 20' of the waste oil UST was performed. Therefore, this area remains uncharacterized, and cannot receive a designation of no further action required.

P51_15 - Nine potential USTs/anomalies were identified during performance of the Site Investigation several years ago. Each was subsequently investigated (see below), with all USTs encountered undergoing removal. One anomaly, however, at which no UST was noted, was not characterized via sampling. This anomaly, P51_15, can therefore not be granted a designation of no further action.

USTs and GPR Anomalies Requiring No Additional Action

Following review of the information provided in the referenced submittal, it is agreed no further action is necessary for the following USTs:

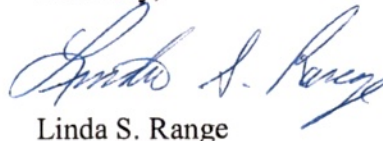
UST 750A – 81533-191 – Incident #92-05-07-1600-23 – 15,000 gallon diesel
UST 750B – 81533-192 – 8,000 gallon gasoline
UST 750C – 81533-198 – 1000 gallon waste oil UST (UST and approximately 20' of piping)
UST 750D – Anomaly P51_47 - #09-06-11-1309-09
UST 750E – Anomaly P51_42 - #09-06-22-1402-58
UST 750F – Anomaly P51_20
UST 750G – Anomaly P51_38 - #09-07-16-1341-23
UST 750H – Anomaly P51_31 - #09-07-28-1554-16
UST 750I – Anomaly P51_5
Anomaly P51_1

USTs Requiring Additional Remedial Efforts

UST 750J – Anomaly P51_27 - #09-08-20-0915-22 – Soil was removed to within 2' of the ground water table, and a sheen was noted. As indicated in the original Army notes, a ground water investigation is warranted. Please submit a workplan for performance of same.

Please contact this office if you have any questions.

Sincerely,



Linda S. Range

C: James Moore, USACE
Joseph Pearson, Calibre
Joseph Fallon, FMERA
Rick Harrison, FMERA

Attachment B
Boring Logs

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Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kevin McMillan</u>		BORING/WELL ID: <u>PAR-51-SB-01</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>Andrey</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>51</u>					WEATHER: <u>Low 80°</u>		<u>Concrete</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)		LOCATION PLAN	
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		Oceanport, New Jersey	
WATER LEVEL:					DATE/TIME START: <u>7-11-19 / 1413</u>		DATE/TIME FINISH: <u>7-11-19 / 1424</u>	
DATE:					WEIGHT OF HAMMER: <u>N/A</u>		DROP OF HAMMER: <u>N/A</u>	
TIME:					TYPE OF HAMMER: <u>N/A</u>			
MEAS. FROM:								
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-6" - Concrete		Screen used to break thru concrete	
1				0	6-24" - Dry, Medium dense, Brn, F-M Sand			
2				0	24"-30" - NR			
3				-				
4				-				
5				0	0-24" - Wet, Medium dense, Brn, F-M, Sand		45.51	
	PAR-51-SB-01 SB-5			0	little Silt, little Fine Subround grain			
6	51C-60			0	24"-36" - Wet, Medium, High Brn, F-M Sand			
7				0	little Silt, little F-M Subround grain			
8				0	36"-60" NR			
9				-	EOB @ 10' bgs			
10				-				
Remarks: All Soil Screened with PID. Cuttings Used to back fill boring								
Sample Types				Consistency vs. Blowcount / Foot				
S - Split Spoon				Granular (Sand & Gravel)				
U - Undisturbed Tube				Fine Grained (Silt & Clay)				
C - Rock Core				V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15				
A - Auger Cuttings				Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30				
				M. Dense: 10-30 M. Stiff: 4-8 Hard: >30				
				and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation				

Soil Boring Log

CLIENT: <u>USACE</u>					INSPECTOR: <u>Kevin McMill</u>		BORING/WELL ID: <u>PAR-C1-SB-02</u>	
PROJECT NAME: <u>FTMM - ECP</u>					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM Parcel 51</u>					WEATHER: <u>Low 80°</u>		<u>Concrete</u>	
PROJECT NUMBER: <u>748810-</u>					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL: _____					DATE/TIME START: <u>7-11-19 / 14102</u>		Oceanport, New Jersey	
DATE: _____					DATE/TIME FINISH: <u>7-11-19 / 14110</u>			
TIME: _____					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM: _____					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-6" - Concrete		Screw bit Used to break thru concrete	
				0	6"-12" - Dry, M. dense, Bm, F-M			
1				0	Sand, little silt			
				0	12"-18" - Concrete			
2				0	18"-30" - Dry, M. dense, Bm, F-M, Sand			
				0	little silt + Fine Subs. sand gravel			
3				-	30"-60" - NR			
		30/60		-				
5				0	0-12" - Wet, M. dense, Bm, F-M, Sand		US 5.5	
				0	little silt + Fine Subs. sand gravel			
6	<u>PAR-C1-SB-02</u> <u>5.5-6.0</u>			0	12"-36" - Wet, M. dense, light Bm, F-M			
				0	Sand, little silt + Fine Subs. sand			
7				0	gravel			
				0	36"-60" - NR			
8				-	FORCED 10 bags			
				-				
9				-				
				-				
10			34/6	-				
Remarks: <u>All soil screened with PID. Cuttings used to backfill boring</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation
U - Undisturbed Tube					Fine Grained (Silt & Clay)			
C - Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30			
					M. Dense: 10-30 M. Stiff: 4-8 Hard: >30			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kathy McNeill</u>		BORING/WELL ID: <u>PAR-CI-SB-03</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>51</u>					WEATHER: <u>Low 80s</u>		<u>Concrete</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL:					DATE/TIME START: <u>7-11-16 / 1341</u>		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: <u>7-11-16 / 1345</u>			
TIME:					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADVI REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0'-6" - Concrete		D Sample Used to test thru concrete	
				0				
1				0	6'-24" - Dry, Medium, Bn, Fine			
				0	Sand, little silt			
2				0				
				0	24'-60" - NR			
3				1				
				1				
4				1				
			24/60	1				
5				0	0'-15" - Wet, Medium, Bn, F-M		D S.S	
				0	Sand, some F-M Sub round gravel			
6				0				
				0	15'-36" - Wet, Medium, light Bn, F-M			
7				0	Sand, little clay, trace silt			
				0				
8				0	36'-60" - NR			
				1				
9				1				
				1				
10			24/60	1				
Remarks: <u>All soil screened with PID. Cuttings used to backfill boring</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S -- Split Spoon					Granular (Sand & Gravel)			and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation
U -- Undisturbed Tube					Fine Grained (Silt & Clay)			
C -- Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15			
A -- Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 16-30			
					M. Dense: 10-30 M. Stiff: 4-8 Hard: >30			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kevin M. Mulla</u>		BORING/WELL ID: <u>PAR-51-SB-04</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>51</u>					WEATHER: <u>Low SDI</u>		<u>Concrete</u>	
PROJECT NUMBER: 746810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL:					DATE/TIME START: <u>7-11-19 / 1325</u>		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: <u>7-11-19 / 1337</u>			
TIME:					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-6" - Concrete		Screw bit used to break thru concrete	
				0				
1				0	6"-24" - Dry, M. dense, Brn, Sand			
				0	Sand, little silt			
2				0				
				0	24"-60" - NR			
3				1				
				1				
4				1				
				1				
5				0	0-14" - Wet, M. dense, Brn, F-M		S.S.	
	PAR-51-SB-04			0				
	55-60			0	Sand, Trace Silt			
6				6	14"-42" - Wet, M. dense, light Brn			
				0	F-M Sand, Trace Silt			
7				0				
				0	42"-60" - NR			
8				0				
				1				
9				1				
				1				
10				1				
Remarks: All Soil Screened with Prod. Cuttings used to backfill boring								
Sample Types				Consistency vs. Blowcount / Foot				
S - Split Spoon				Granular (Sand & Gravel)				
U - Undisturbed Tube				Fine Grained (Silt & Clay)				
C - Rock Core				V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15				
A - Auger Cuttings				Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30				
				M. Dense: 10-30 M. Stiff: 4-8 Hard: >30				
				and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation				

Soil Boring Log

CLIENT: USACE					INSPECTOR: Kevin McMillan		BORING/WELL ID: PAR-51-SB-05	
PROJECT NAME: FTMM - ECP					DRILLER: Andrew		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel 51					WEATHER: Low 80's		Concrete	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL:					DATE/TIME START: 7-11-14 / 1314		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: 7 / 1323			
TIME:					WEIGHT OF HAMMER: N/A			
MEAS. FROM:					DROP OF HAMMER: N/A			
					TYPE OF HAMMER: N/A			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-6" - Concrete		Assemble Used to break thru concrete	
1				0	6-30" - Moist, M. dense, Brn F-M, Sand, some silt			
2				0	30"-60" - NR			
3				-				
4				-				
5				0	0-12" - SAA, Wet		17.5.5'	
6	PAR-51-SB-05 5.5-60			0	12-36" - Wet, M. dense, Brn, F-C Sand, trace silt			
7				0	36"-60" - NR			
8				0	EDB @ 10' bgs			
9				-				
10				-				
Remarks: All soil Screened with PID, Cuttings used to backfill boring								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			
U - Undisturbed Tube					Fine Grained (Silt & Clay)			
C - Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-16			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 16-30			
					M. Dense: 10-30 M. Stiff: 4-8 Hard: >30			
					end - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kevin McMillan</u>		BORING/WELL ID: <u>PAR-51-SB-06</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>51</u>					WEATHER: <u>Low 80s</u>		<u>Concrete</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>		LOCATION PLAN	
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		DATE/TIME START: <u>7-1-19 / 1304</u>	
WATER LEVEL:					DATE/TIME FINISH: <u>↓ / 1312</u>		Oceanport, New Jersey	
DATE:					WEIGHT OF HAMMER: <u>N/A</u>			
TIME:					DROP OF HAMMER: <u>N/A</u>			
MEAS. FROM:					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-6" - Concrete		Sensitivity used to break thru concrete	
				0	6-24" - Dry, medium dense, Brn, Fine, Sand			
1				0	Trace Silt			
				0	24-60" - NR			
2				0				
3				-				
4				-				
			24/60	-				
5				0	0-12" - Wet, medium dense, Brn, F-M Sand		▽ S.F.	
	PAR-51-SB-06			0	little Silt, Trace Subrounded gravel			
6	51-2.0			0	12"-30" - Wet, medium dense, light Brn, F-M			
				0	Sand, Trace Silt, little F subrounded gravel			
7				0				
				0	30-60" - NR			
8				-				
				-				
9				-				
				-				
10				-				

Remarks: All soil screened with PID. Cuttings used to backfill boring

Sample Types	Consistency vs. Blowcount / Foot			
S - Split Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
U - Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
C - Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
A - Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kevin M. Mall</u>		BORING/WELL ID: <u>PAR-S1-SB-07</u>	
PROJECT NAME: <u>FTMM - 509</u>					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM Parcel 51</u>					WEATHER: <u>Low 70's</u>		<u>Trench Asphalt</u>	
PROJECT NUMBER: <u>748810-</u>					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL: <u>6.0</u>					DATE/TIME START: <u>7-9-14 / 1048</u>		Oceanport, New Jersey	
DATE: <u>7-9-14</u>					DATE/TIME FINISH: <u>7-9-14 / 1055</u>			
TIME: <u>—</u>					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM: <u>Top of boring</u>					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-18" - Asphalt			
				1.9				
1				6.1	18"-42" - Dry, M. Dense, Brn to			
				4.2	light Brn, F-M Sand, trace medum			
2				7.4	subround gravel			
				2.7				
3				14.2	43"-60" - NR			
				4.4				
4				—				
				—				
5			12/60	—	0-24" - Wet, M. Dense, Brn, F-M		VI 6' logs	
				3.0	Sand, Some F-M Subround Gravel,			
6				10.6				
	PAR-S1-SB-07-60825			1.1	24"-60" - NR			
7				0.6				
				0				
8				0	FOR @ 10'			
				0	Boring Backfilled with cuttings			
9				—	and bentonite			
				—				
10			24/60	—				
Remarks: All soil cuttings screened with PID. Soil cuttings backfilled in boring								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split Spoon					Granular (Sand & Gravel)			
U - Undisturbed Tube					Fine Grained (Silt & Clay)			
C - Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30			
					M. Dense: 10-30 M. Stiff: 4-8 Hard: >30			
					sand - 35-50% silt - 20-35% clay - 10-20% trace - <10% moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE				INSPECTOR: <u>Kevin McMillan</u>		BORING/WELL ID: <u>PAR-S1-08</u>	
PROJECT NAME: <u>FTMM - EOP</u>				DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM Parcel 51</u>				WEATHER: <u>Low 70's</u>		<u>Trans Asphalt</u>	
PROJECT NUMBER: <u>748810</u>				CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>		LOCATION PLAN	
GROUNDWATER OBSERVATIONS				RIG TYPE: <u>Geoprobe(R) 7822DT</u>		Oceanport, New Jersey	
WATER LEVEL: <u>~6.0'</u>				DATE/TIME START: <u>7-9-19 / 1122</u>			
DATE: <u>7-9-19</u>				DATE/TIME FINISH: <u>7-9-19 / 1129</u>			
TIME: <u>-</u>				WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM: <u>Top of Boring</u>				DROP OF HAMMER: <u>N/A</u>			
				TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADVI REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0.5	0-18" - Asphalt		
				1.0			
1				142	18'-30" - Dry, med. dens, Ben, F-M, Sand, Trace F-M Sub round gravel		
				14.8			
2				2-2			
				1.9	30'-60" - NR		
3				-			
				-			
4				-			
				-			
5			30/60	-	0-15" - Moist, med. dens, Ben, F-M Sand, Trace F-M Sub round gravel		▽ @ 6 bgs
				40			
6				6.0			
	PAR-S1-SB-05-606.5			244	15'-30" - Wet, med. dens, Gray, F-M Sand, Trace F gravel. Strong Petro like odor		
7				188			
				12	30'-36" - Wet, med. dens, Ben, F-M, Sand, Trace F. Gravel		
8			30	11			
				-			
9				-			
				-			
10			36/60	-			
Remarks: <u>All soil cuttings backfilled in boring. All soil Screened PID</u>							
Sample Types				Consistency vs. Blowcount / Foot			
S - Split-Spoon				Gravel (Sand & Gravel)			
U - Undisturbed Tube				Fine Grained (Silt & Clay)			
C - Rock Core				V. Loose: 0-4 Dense: 30-50			
A - Auger Cuttings				V. Soft: <2 Stiff: 8-15			
				Loose: 4-10 V. Dense: >50			
				Soft: 2-4 V. Stiff: 16-30			
				M. Stiff: 4-8 Hard: >30			
				and - 35-50%			
				some - 20-35%			
				fine - 10-20%			
				trace - <10%			
				moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kyrin M. My 16</u>		BORING/WELL ID: <u>PAR-51-SB-09</u>	
PROJECT NAME: <u>FTMM - 60</u>					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM Parcel 51</u>					WEATHER: <u>Low 70's</u>		<u>Asphalt</u>	
PROJECT NUMBER: <u>748810-</u>					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>		LOCATION PLAN	
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		Oceanport, New Jersey	
WATER LEVEL: <u>~6.0</u>					DATE/TIME START: <u>7-9-19 / 10:58</u>			
DATE: <u>7-9-19</u>					DATE/TIME FINISH: <u>7-9-19 / 11:58</u>			
TIME: <u>-</u>					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM: <u>Top of Boring</u>					DROP OF HAMMER: <u>N/A</u>			
TYPE OF HAMMER: <u>N/A</u>								
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				2.4	0-18" Asphalt, Rubble			
				3.3	18-42" Dry, M. Dense, Brn-light Brn			
1				9.8	F-M Sand, Trace F-A Sub Rem			
				2.6	Graul.			
2				5.4				
				11.9				
3				20.2				
				16.7				
4				-				
				-				
5			42/60	-	0-36" Wet, M. Dense, Brn-Red Brn, F-M, Sand		7 @ 6.0'	
				0.2				
6				0.6	36"-42" Wet, M. Dense, light Brn/Grey			
	PAR-51-SB-09-60-6.5			0.3	F-M, Sand			
7				0.7				
				0.1	42"-60" NR			
8				0.3				
				0.4				
9				-				
				-				
10			42/60	-				
Remarks: <u>All soil Screened with PID. Soil cuttings backfilled in boring</u>								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			
U - Undisturbed Tube					Fine Grained (Silt & Clay)			
C - Rock Core					V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-15			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30			
					M. Dense: 10-30 M. Stiff: 4-8 Hard: >30			
					end - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation			

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Karin M. Mullin</u>		BORING/WELL ID: <u>PAR-SB-SB-10</u>	
PROJECT NAME: <u>FTMM - EOP</u>					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: <u>FTMM Parcel 51</u>					WEATHER: <u>Low 70's</u>		<u>Asphalt</u>	
PROJECT NUMBER: <u>748810-</u>					CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL:					DATE/TIME START: <u>7-19-19 / 1006</u>		Oceanport, New Jersey	
DATE:					DATE/TIME FINISH: <u>7-19-19 / 1019</u>			
TIME:					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM:					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0.8	0-18" Asphalt + Millings			
				0.7				
1				1.1	18-36" - Dry, Med. dense, Brn - Red Brn,			
				0	F-M, Sand, little silt, Trace Am			
2				1.2	Sub round gravel			
				1.0				
3				0.9	36"-60" NR			
				-				
4				-				
			36/60	-				
5				0	0-42" Wet, Med. dense, light Brn, F-A		Z=6'	
				0				
6				0	Sand, some little silt & fine			
	PAR-SB-SB-10 6.0 to 6.5			0	subangular gravel			
7				0				
				0	42"-60" NR			
8				0				
				0				
9				-				
				-				
10			40/60	-				
Remarks: <u>All soil cuttings screened with PID. All soil backfilled in boring</u>								
Sample Types				Consistency vs. Blowcount / Foot				
S - Split Spoon				Granular (Sand & Gravel)				
U - Undisturbed Tube				Fine Grained (Silt & Clay)				
C - Rock Core				V. Loose: 0-4 Dense: 30-50 V. Soft: <2 Stiff: 8-16				
A - Auger Cuttings				Loose: 4-10 V. Dense: >50 Soft: 2-4 V. Stiff: 15-30				
				M. Dense: 10-30 M. Stiff: 4-8 Hard: >30				
				end - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation				

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kevin McMillan</u>		BORINGWELL ID: <u>PAR-51-SB-11</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>51</u>					WEATHER: <u>Low 70's</u>		<u>Asphalt</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: Geoprobe(R) 7822DT		LOCATION PLAN	
WATER LEVEL: _____					DATE/TIME START: <u>7-11-19 / 1016</u>		Oceanport, New Jersey	
DATE: _____					DATE/TIME FINISH: <u>7-11-19 / 1029</u>			
TIME: _____					WEIGHT OF HAMMER: N/A			
MEAS. FROM: _____					DROP OF HAMMER: N/A			
					TYPE OF HAMMER: N/A			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-18" Asphalt + millings			
1				0	18"-30" Moist, m-dense, Brn-Red Brn F-A Sand, Trace Silt			
2				0	30"-60" NR			
3				0				
4				0				
5				0	0-36" SAA		706	
6				0	36"-42" Wet, m-dense, Gray, F-A Sand			
7	PAR-51-SB- 11-6.0' 6.5'			0	42"-60" NR			
8				0	E0B @ 10' bgs			
9				0				
10				0				

Remarks: All soil cuttings screened with PID. Soil cuttings backfilled in boring

Sample Types	Consistency vs. Blowcount / Foot			
S - Split Spoon	Granular (Sand & Gravel)		Fine Grained (SR & Clay)	
U - Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
C - Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
A - Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

Soil Boring Log

CLIENT: USACE PROJECT NAME: FTMM - ECP PROJECT LOCATION: FTMM Parcel <u>53</u> PROJECT NUMBER: 748810-					INSPECTOR: <u>Kevin McMurtry</u> DRILLER: <u>Andrew</u> WEATHER: <u>Low 70's</u> CONTRACTOR: <u>East Coast Drilling, Inc. (ECDI)</u>		BORING/WELL ID: <u>PAR-51-SB-12</u> LOCATION DESCRIPTION: <u>Asphalt</u> LOCATION PLAN: <u>Oceanport, New Jersey</u>																		
GROUNDWATER OBSERVATIONS WATER LEVEL: _____ DATE: _____ TIME: _____ MEAS. FROM: _____					RIG TYPE: <u>Geoprobe(R) 7822DT</u> DATE/TIME START: <u>7-11-19 / 1048</u> DATE/TIME FINISH: <u>7-11-19 / 1052</u> WEIGHT OF HAMMER: <u>N/A</u> DROP OF HAMMER: <u>N/A</u> TYPE OF HAMMER: <u>N/A</u>																				
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS																		
0				0	0-18" - Asphalt millings																				
1				0	18"-36" - MORA, M. dense, Bm, F, Sand, some Silt.																				
2				0																					
3				0																					
4				-																					
5				0	0-12" - 12" - 18" SAA		▽ 6hr																		
6				0	12"-18" Gravel (Blue Stone)																				
7	PAR-51-SB- 12-60-65			0	18"-36" Wet, M. dense, Bm, F-M, Sand, trace Silt																				
8				0	36"-60" NR																				
9				-	EOB @ 10' bgs																				
10				-																					
Remarks: <u>All soil cuttings screened with PID. Soil cuttings backfilled in borings</u>																									
Sample Types S - Split-Spoon U - Undisturbed Tube C - Rock Core A - Auger Cuttings				Consistency vs. Blowcount / Foot <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">Granular (Sand & Gravel)</th> <th colspan="2">Fine Grained (Silt & Clay)</th> </tr> <tr> <td>V. Loose: 0-4</td> <td>Dense: 30-50</td> <td>V. Soft: <2</td> <td>Stiff: 8-16</td> </tr> <tr> <td>Loose: 4-10</td> <td>V. Dense: >50</td> <td>Soft: 2-4</td> <td>V. Stiff: 15-30</td> </tr> <tr> <td>M. Dense: 10-30</td> <td></td> <td>M. Stiff: 4-8</td> <td>Hard: >30</td> </tr> </table>				Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-16	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	M. Dense: 10-30		M. Stiff: 4-8	Hard: >30	and - 35-50% some - 20-35% little - 10-20% trace - <10% moisture, density, color, gradation	
Granular (Sand & Gravel)		Fine Grained (Silt & Clay)																							
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-16																						
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30																						
M. Dense: 10-30		M. Stiff: 4-8	Hard: >30																						

Soil Boring Log

CLIENT: USACE					INSPECTOR: <u>Kenn McMill</u>		BORING/WELL ID: <u>PAR-ST-SB-P51-15</u>	
PROJECT NAME: FTMM - ECP					DRILLER: <u>Andrew</u>		LOCATION DESCRIPTION	
PROJECT LOCATION: FTMM Parcel <u>51</u>					WEATHER: <u>Low 70's Sunny</u>		<u>Grass Surface</u>	
PROJECT NUMBER: 748810-					CONTRACTOR: East Coast Drilling, Inc. (ECDI)			
GROUNDWATER OBSERVATIONS					RIG TYPE: <u>Geoprobe(R) 7822DT</u>		LOCATION PLAN	
WATER LEVEL: _____					DATE/TIME START: <u>7-19 / 11:17</u>		Oceanport, New Jersey	
DATE: _____					DATE/TIME FINISH: <u>7-19 / 11:25</u>			
TIME: _____					WEIGHT OF HAMMER: <u>N/A</u>			
MEAS. FROM: _____					DROP OF HAMMER: <u>N/A</u>			
					TYPE OF HAMMER: <u>N/A</u>			
DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS	
0				0	0-12" - Dry, Moderate, Bm, Fine			
				0.1	Sand, little silt.			
1				0.2	12-24" - Dry, Moderate, Bm F-M			
				0.2	Sand, some silt			
2				0.2				
				-	24"-60" - NR			
3				-				
				-				
4				-				
				-				
				24/60				
5				0	0-8" SAA		D.C.	
				0				
6				0	8-24" - Moist, Moderate dense, Bm-green			
				0	Hues, F sand, some clay			
7				0	36"-38" - Moist, Stiff, Bm/Green			
				0	clay			
8				0	38-42" - Wet, Moderate dense, Bm, F-C			
				0				
9				-	36" Sand, some F-M sub sand gravel			
				-				
10				42/60	END @ 10' bgs			
Remarks: All soil screened with PID. All soil cuttings contained backfilled in boring								
Sample Types					Consistency vs. Blowcount / Foot			
S - Split-Spoon					Granular (Sand & Gravel)			
U - Undisturbed Tube					V. Loose: 0-4 Dense: 30-50			
C - Rock Core					V. Soft: <2 Stiff: 8-15			
A - Auger Cuttings					Loose: 4-10 V. Dense: >50			
					Soft: 2-4 V. Stiff: 15-30			
					M. Stiff: 4-8 Hard: >30			
					and - 35-50%			
					some - 20-35%			
					little - 10-20%			
					trace - <10%			
					moisture, density, color, gradation			

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Attachment C
Field Notes

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Oceanport, NJ

FTMM /USACE

7-9-19

Oceanport, NJ

FTMM /USACE

7-9-19

Weather - High 70's, Sunny
Activity - Drill, Soil Sample
Equipment - IEPID, PPE, Hand tools, & Geoprobe
Personnel - KM + FA - Parsons
Andrew + Roman - ECDI

Activity

0700 - KM + FA onsite, Prep Brittware, Calibrate

Equipment

0800 - ECDI onsite, HSE: Slip/trip/Fall, Driving
stick By, Ticks, Pinch Hammer

0823 - Start Tapping off Well Abandonment locations with
grout.

Please Note: All electrical wiring + conductors removed
from the 4 recovery wells (699RW03, 699RW04, 699RW05, 699RW11)
Grounding Pumps + Airless adapters were removed from all 4 recovery
wells. Equipment Staged at Building 699. Recovery well
699RW01 was abandoned as per SOW. Exposed wires +
conductors (cut 12" below grade) were backfilled with
soil.

0930 - Finish Well Abandonment Tap off at PAR-S3
Mob to PAR-S1. TAKES on Driving - Setup at PAR-S3
and discuss drilling/sampling Procedure (TAKES)

0948 - Start Drilling PAR-S1-SB-01. Refusal at 5' bgs.
Concrete observed in SHOE. Attempt Stepout i' SW. Refusal
at 5' bgs. Move to PAR-S1-SB-02.

1010 - ~~Attempt~~ Drill PAR-S1-SB-02

Refusal at 5' bgs. Concrete observed in SHOE. Attempt Stepout
i' SE. Refusal at 5' bgs. Move to other Trench

1020 - Drill PAR-S1-SB-04 Refusal at 5' bgs
attempt Stepout i' NE, Refusal at 5' bgs.

KM call Chris Brill + Julien Chamberlain and inform of
refusal. Decision made Attempt All locations in trench

If refusal encountered stepout to concrete pad. Refusal
in concrete encountered at all locations. Decision made
to stepout into concrete. ECDI does not have a star bit
on site. Called office and getting one delivered to
site. Parsons decision to start drilling SB-07 then 09.

1058 - Drill PAR-S1-SB-07, ~~1053~~ - Finish

1055 - Collect Sample PAR-S1-SB-07-6.0-6.5

1122 - Drill PAR-S1-SB-08 1129 - Finish

1155 - Collect Sample PAR-S1-SB-08-6.0-6.5

1135 - Drill PAR-S1-SB-09. Drive Hammer shutting
off. Unable to Finish drilling. Tech coming onsite to
troubleshoot, ECDI lunch

Please Note: Not Enough Soil to Fill Sample Jar Set at
designated interval. Stepout i' N for each parent boring to get
adequate sample volume. Soil from both borings (Parent + Stepout)
homogenized in Clean Stainless Steel mixing bowl prior to filling
Jars. Vol samples taken on the spot, prior to mixing.

1255 - ECDI onsite, Plan to Change Hammer. Review AHA + TAKES
ECDI Change Hammer

Decomport, MS

ETMM/USACE

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1315 - Re Charging Rig Hammer did not work
ECDI call Tech Office, Trouble shoot, Unable to
fix onsite. ECDI order Thruster Plates from
Geoprobe to be overnighted to Home office. Tech
will Repair ASAP. KM call Julien + Chris Grill
Fill in on current operators.

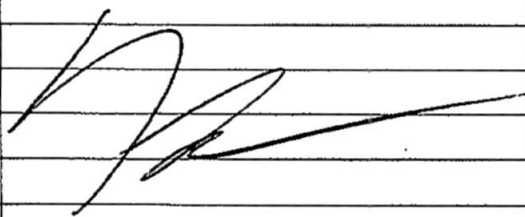
While Removing Macrocore from SB-09 (~6')
boring filled with H₂O to 1.5' below grade
No Plastic, Steel, Rubber, or PVC observed in sample

1430 - ECDI R/D and backfill borings

1500 - All off site

1500 - Collect EB-20190709

Please Note: Original SIX Trench borings (SA-01 thru
SD-06) to have -P added to end of boring ID
to note original Proposed location: PAR-51-SB-01-P
Stepout borings will not have the -P: PAR-51-SB-01
Confirmed Boring ID's with Julien Chambert



DL Oceanport, NJ

FTI FMM /USACE

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101 Weather - Low 80s, PM Rain
 102 Activity - Drill, Temp Well install, Soil Sample
 09 Equipment - 1/2 Geoprobe, PPE, 1/2 PID, 1/2 IP, Hand tools
 10 Personnel - KM + FA - Parsons
 09
 09
 09 Activity
 08 0700 - KM + FA onsite. Calibrate equipment
 08 Discuss Game Plan for work
 08 0856 - ECDI onsite, 1 HSE; Note - Dust - Weather
 08 Traffic - NO RUSH. Discuss Anticipated Plan
 08 For Today, ECDI Setup in FMM-S3
 08 0908 - Drill FMM-S3-SB-HL01. 0823 - Finish
 08 0924 - Collect $\downarrow$ - 7.5-8.0
 10 0924 - Drill SB-HL02. 0854 - Finish
 10 0942 - Collect FMM-S3-SB-HL02
 10 0951 - Drill FMM-S3-SB-HL03. 0905 - Finish
 10 0905 - Collect $\downarrow$ - 7.5-8.0
 10 0909 - Drill FMM-S3-SB-HL04. 0921 - Finish
 10 0922 - Collect $\downarrow$ - 7.5-8.0
 10 0925 - Drill FMM-S3-SB-HL05. 0935 - Finish
 12 0936 - Collect $\downarrow$ - 7.5-8.0
 12 Please Note 1" Temp wells installed at each boring
 to 12 bgs (Scope indicates ~8 below H₂O table, Water ~ 4' bgs)
 1 FA Sampling Temp Wells
 11 0944 - ECDI Water Break, Mob to PAR-S1

Oceanport, NJ

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0956 - Drill PAR-S1-SB-09. 1022 - Finish
 1001 - Collect $\downarrow$ - 6.0-6.5
 1006 - Drill PAR-S1-SB-10. 1011 - Finish
 1012 - Collect $\downarrow$ - 6.0-6.5 ~~1012~~
 1016 - Drill PAR-S1-SB-11. 1024 - Finish
 1024 - Collect $\downarrow$ - 6.0-6.5
 1048 - Drill PAR-S1-SB-12. 1052 - Finish
 1053 - Collect $\downarrow$ - 6.0-6.5
 1117 - Drill PAR-S1-SB-A51-15. 1125 - Finish
 1128 - Collect $\downarrow$ - 6.0-6.5 (D/M/S/M/D)
 Mob to Trench bay, Attempt to Drill thru
 concrete in bay, Unable. Stopcut. 1' East SB-01, 02, 03
 SB-04, 05, 06 + 1' East SB-01, 02, 03
 1200 - Cascade lunch
 8 KM call Julien Chemist; Confirm Sampling Depth
 at PAR-S1-SB-01 thru 06 (S.S-6.0) Continued
 1304 - Drill PAR-S1-SB-06. 1312 - Finish
 1313 - Collect $\downarrow$ - S.S-6.0
 1314 - Drill PAR-S1-SB-05. 1323 - Finish
 1324 - Collect $\downarrow$ - S.S-6.0
 1325 - Drill PAR-S1-SB-04. S.S-6.0 1337 - Finish
 1338 - Collect $\downarrow$ - S.S-6.0
 1341 - Drill PAR-S1-SB-03. ~~1341~~ 1345 - Finish
 1346 - Collect $\downarrow$ - S.S-6.0
 1402 - Drill PAR-S1-SB-02. 1410 - Finish
 1411 - Collect PAR-S1-SB-02. S.S-6.0

Dt: Oleaupost, US

1P: FTM/USACE

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11 1413 - Drill PAR-51-SB-01-1424 - Final

10 1425 - Collect $\downarrow$ 5.5-6.0

0.8 RID area, Clean Site. Mob to 906A

10 KM contact Julien Chambers, Confirm Sampling

0.8 For 906A

0.8 1508 - Start Drilling PAR-68-906A-W3-1515 - Final

0.8 Hand Cleared to 5' by 5'

0.8 1528 - Collect PAR-68-906A-W3-6.5-7.0

0.8 1530 - $\downarrow$ $\downarrow$ - 9.5-10

0.8 1535 - Drill PAR-68-906A-W4-1545 - Final

0.8 Hand Cleared to 5' by 5'

0.8 1548 - Collect PAR-68-906A-W4-6.5-7.0

0.8 1554 - $\downarrow$ $\downarrow$ - 9.5-10.0

0.8 ECDI Clean Area. Offsite @ 1600

10 1600 - KM + FA inventory ECDI + Paperwork Samples

14 Finalize Paperwork, and get ice for sample

10 1830 - All offsite

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