



DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF, G-9
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

11 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: Fort Monmouth, NJ
Commissary Building Footprint Category Determination
PI G000000032

Dear Mr. Joshi:

The Army is in the process of preparing the required documentation to support the transfer of a portion of Fort Monmouth Main Post (various Carve Outs known as Group 3 Carve Outs). The areas being readied for transfer are former “carve outs” from the Phase 2 transfer. As part of that process, the Army has determined, based on further investigations, and evaluation, that re-categorization of the Environmental Condition of Property (ECP) for a part of Parcel 57, more specifically a part of the footprint of Building 1007 (Commissary Building) and parts of Parcel 65 are necessary¹. Pursuant to 42 U.S.C. § 9620(h)(4)(B)², the Army has prepared this letter to provide the New Jersey Department of Environmental Protection (NJDEP) with a request for concurrence on the determination that the part of the footprint of Building 1007 and adjacent areas, previously categorized as Category 7 (Areas that are not evaluated or require additional evaluation) and Category 2 (Where only the release or disposal of petroleum products or their derivatives has occurred), should now be categorized as Category 1 (Areas in which no release or disposal of hazardous substances or petroleum products have occurred (including no migration of such substances from adjacent areas)). The Army also notes that a portion of the Building 1007 footprint previously categorized as a Category 7 is now considered a Category 2 (Where only the release or disposal of petroleum products or their derivatives has occurred) based on the petroleum release cleanup conducted in 1997.

¹ The Army has an obligation under 42 U.S.C. § 9620(h)(4)(A) to “identify real property on which no hazardous substances and no petroleum products or their derivatives were known to have been released or disposed of.” The Army’s determination is based on an investigation of the real property to determine or discover the obviousness of a release including, a review of federal government records, recorded chain of title documents and aerial photographs and reasonably obtainable federal, state and local government records of each adjacent facility where there has been a release; a visual inspection of the real property; a physical inspection of adjacent property; and interviews with current and former employees involved in operations on the real property. *See* 42 U.S.C. § 9620(h)(4)(A).

² 42 U.S.C. § 9620(h)(4)(B) states that the Army’s identification “is not complete until concurrence in the results of the identification is obtained . . . , in the case of real property that is not part of a facility on the National Priorities List, from the appropriate State official.”

Figures 1 and 2 show the area of the proposed change in categories in and around the Building 1007 footprint within portions of the Parcel 57 and Parcel 65 carve outs. Parcel 57 was created as part of the Environmental Condition of Property (ECP), Fort Monmouth, New Jersey, January 29, 2007 to address the Commissary Building and surrounding area including other buildings and parking lots and open space. Parcel 65 was created to address the Installation Restoration Program (IRP) site FTMM-66 (cleanup at Building 886 area). Figure 1 shows the area of the proposed change in categories in a portion of Parcel 57 (Commissary Building 1007 Footprint) and Parcel 65 overlain onto the most recent summary of soil analytical results from the investigation at Parcel 57. The information on Figure 1 is from the Soil Remedial Action Work Plan, Parcel 57 – Former Coal Storage and Railroad Unloading Area, July 2019 and addresses the soil cleanup of low level PAHs adjacent to the Commissary Building Footprint. All soils requiring action are outside the area at the Commissary Building footprint for which the Army is requesting re-categorization to Category 1.

A petroleum removal action was completed in 1997 within the building footprint and out to the boundary of Parcel 57 prior to construction of Building 1007 and that area is shown on Figures 1 and 2. This area is being categorized as a Category 2 area. Petroleum-contaminated soil was encountered during construction of the Commissary (Building 1007) in January 1997. The discharge was reported to NJDEP, and case number 97-1-11-0938-02 was assigned. Approximately 4,000 cubic yards of petroleum-contaminated soil were removed from Parcel 57 in 1997. A removal action report prepared by the FTMM Directorate of Public Works Environmental Office is presented in Attachment A.

Figure 2 shows the area of the proposed change in categories in a portion of Parcel 57 and Parcel 65 overlaid onto the most recent summary of groundwater results. Permanent monitoring wells PAR-57-MW01 and PAR-57-MW02 were installed in 2015 to a depth of 20 ft bgs at two former SI (U.S. Army BRAC, 2008) temporary well locations, and groundwater samples were collected from these new wells in 2015 and 2016. Groundwater sampling was also performed for existing wells 800MW01 (sampled in 2016 only) and 800MW02 (sampled in 2015 and 2016). Upgradient wells 886MW02 and 812MW14 were also sampled in 2016. All samples were collected using the low-flow, minimal disturbance method, and were analyzed for total (unfiltered) and dissolved (filtered) TAL metals, which included the specific analytes that exceeded Groundwater Quality Criteria (GWQC) in previous samples. Total and dissolved concentrations of select metals exceeded NJDEP GWQC and/or USEPA tap water RSLs in Parcel 57 groundwater (**Table 1**). Table 2 provides a summary of GWQC exceedences. Previous groundwater samples were non-detect or less than the GWQC for SVOCs (including PAHs) and VOCs. Aluminum, beryllium, cobalt, iron, manganese and nickel were found to be below background levels in all permanent wells, while sodium and calcium did exceed background concentrations in several wells. Sodium advisories have only been issued to address aesthetic effects. Secondary, non-enforceable standards for aluminum, manganese and iron have been issued to address aesthetic, non health-based effects. There are no criteria established for calcium.

The following is a summary of total (unfiltered) exceedences of the NJDEP GWQC for each monitoring well, which is also presented in Figure 2. Evaluation of metals exceedences in groundwater has included multiple rounds of sampling and analysis, collection of total

(unfiltered) samples, and evaluation of upgradient wells (Figure 2). The criteria referred to below refer to NJDEP GWQC and/or EPA Regional Screening Levels (RSLs) for tap water:

Total (Unfiltered) Results

- Well 800MW01, located cross-gradient of the coal storage area, exceeded the criteria for aluminum and iron in total (unfiltered) samples.
- Well 800MW02, which is generally downgradient of the coal storage area, exceeded the criteria for arsenic, aluminum, iron, and manganese in total (unfiltered) samples.
- Well PAR-57-GW-MW01, located within the historical coal storage area, exceeded the criteria for aluminum, arsenic, iron, and manganese in total (unfiltered) samples.
- Well PAR-57-GW-MW02, also located within the historical coal storage area, exceeded the criteria for multiple analytes in total (unfiltered) samples, including aluminum, arsenic, beryllium, cadmium, cobalt, iron, manganese, nickel, and sodium.
- Well 866MW02, which is upgradient of the coal storage area, exceeded the criteria for aluminum, cadmium, iron, lead, and manganese in total (unfiltered) samples.
- Well 812MW14, which is upgradient of the coal storage area, exceeded the criteria for aluminum, arsenic, beryllium, iron, lead, and manganese in the total (unfiltered) sample.

It should be noted that detections of aluminum, arsenic, and iron in groundwater do not exceed the background values determined by the 1995 background investigation (Weston, 1995).

A comparison of total (unfiltered) and dissolved (filtered) analyses suggests that groundwater sample turbidity has caused select metal exceedances at wells 800MW02 (aluminum and iron), PAR-57-GW-MW01 (aluminum), 866MW02 (aluminum, cadmium, and lead), and 812MW14 (aluminum, arsenic, beryllium, iron, lead and manganese). Therefore, GWQC exceedances can be attributed to groundwater sample turbidity, rather than a groundwater contamination source at Parcel 57. Dissolved iron and manganese were also detected at concentrations exceeding the GWQC in upgradient well 886MW02, and therefore iron and manganese are also not attributed to a Parcel 57 source.

Previous studies have documented the presence of elevated naturally-occurring metal concentrations (e.g., metals including arsenic and beryllium) in glauconitic soils such as those present within the New Jersey Coastal Plain physiographic province (Dooley, 2001; U.S. Geological Survey [USGS], 1984). Glauconitic soil was encountered during drilling of monitoring wells PAR-57-MW01 (3 to nearly 19 ft bgs) and PAR-57-MW02 (4 to 12 ft bgs). Therefore, arsenic and beryllium exceedances at these two wells are likely attributed to glauconite in soil.

The analytes with GWQC exceedances at well PAR-57-GW-MW-02 that cannot be attributed to sample turbidity, upgradient sources, or glauconitic soils include aluminum, cadmium, cobalt, nickel, and sodium. It should be noted that detections of aluminum in groundwater do not exceed the background values determined by the 1995 background investigation (Weston, 1995). While well PAR-57-GW-MW02 was installed in an area historically used for coal storage, and east of the former concrete coal storage pad, it is uncertain if these metals are attributable to former coal storage, since the predominance of the exceedances were in one sample from one well and may

represent an anomaly. Thus, the low level exceedances shown in well PAR-57-GW-MW02 are likely from natural conditions and do not necessarily represent a release, and it should be noted that no health-based standards exist for manganese and iron; there are only secondary, non-enforceable aesthetic standards. Sodium advisories have only been issued to address aesthetic effects (i.e., taste). Further, the well represents conditions adjacent to the area proposed for a Category 1 classification.

The portion of Parcel 65 proposed for re-categorization essentially covers a portion of the adjoining road to allow access to the rear of the Commissary Building. Data supporting the request to change this portion from a Category 2 to a Category 1 can be found in the letter to NJDEP dated 8 August 2019 covering a separate re-categorization request for an adjacent portion of Parcel 65 (see Attachment B).

Figure 3 shows the current Environmental Condition of Property (ECP) map with the proposed changes to this small piece of property proposed for re-categorization from Categories 2 and 7 to Categories 1 and 2. The new Category 2 portion covers the petroleum cleanup area from 1997 (during building construction). The figure also shows the adjustment of the size and location of Parcel 59 (a former UST) and the proposed Category 1 for the remainder of the area. It should be noted that the portion of Parcel 57, Commissary Building footprint is recommended to be changed to Category 1 as no release was associated with this area.

Based on the above referenced documentation, in order to support the property transfer the Army is proposing to change the property classification for a portion of Parcel 57 including the Commissary Building footprint and limited adjoining area from a Category 7, "Areas that are not evaluated or require additional evaluation." and from a Category 2 "Where only the release or disposal of petroleum products or their derivatives has occurred" to a Category 1, "Areas in which no release or disposal of hazardous substances or petroleum products have occurred (including no migration of such substances from adjacent areas) and a visual inspection indicates that both the land and the buildings are uncontaminated". It is also noted that a portion of the building footprint is being changed to a Category 2, "Where only the release or disposal of petroleum products or their derivatives has occurred" based on the 1997 petroleum cleanup in this area. The Army requests NJDEP's concurrence on the proposed change to Category 1 designation for the Commissary Building footprint at Parcel 57.

Should you require additional information or have any questions please contact me at 732-383-5104.

Sincerely,



William R. Colvin
BRAC Environmental Coordinator
Fort Monmouth

Cc: James Briggs, BRAC HQ



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: Fort Monmouth, NJ
Commissary Building Footprint Category Determination
PI G000000032

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.

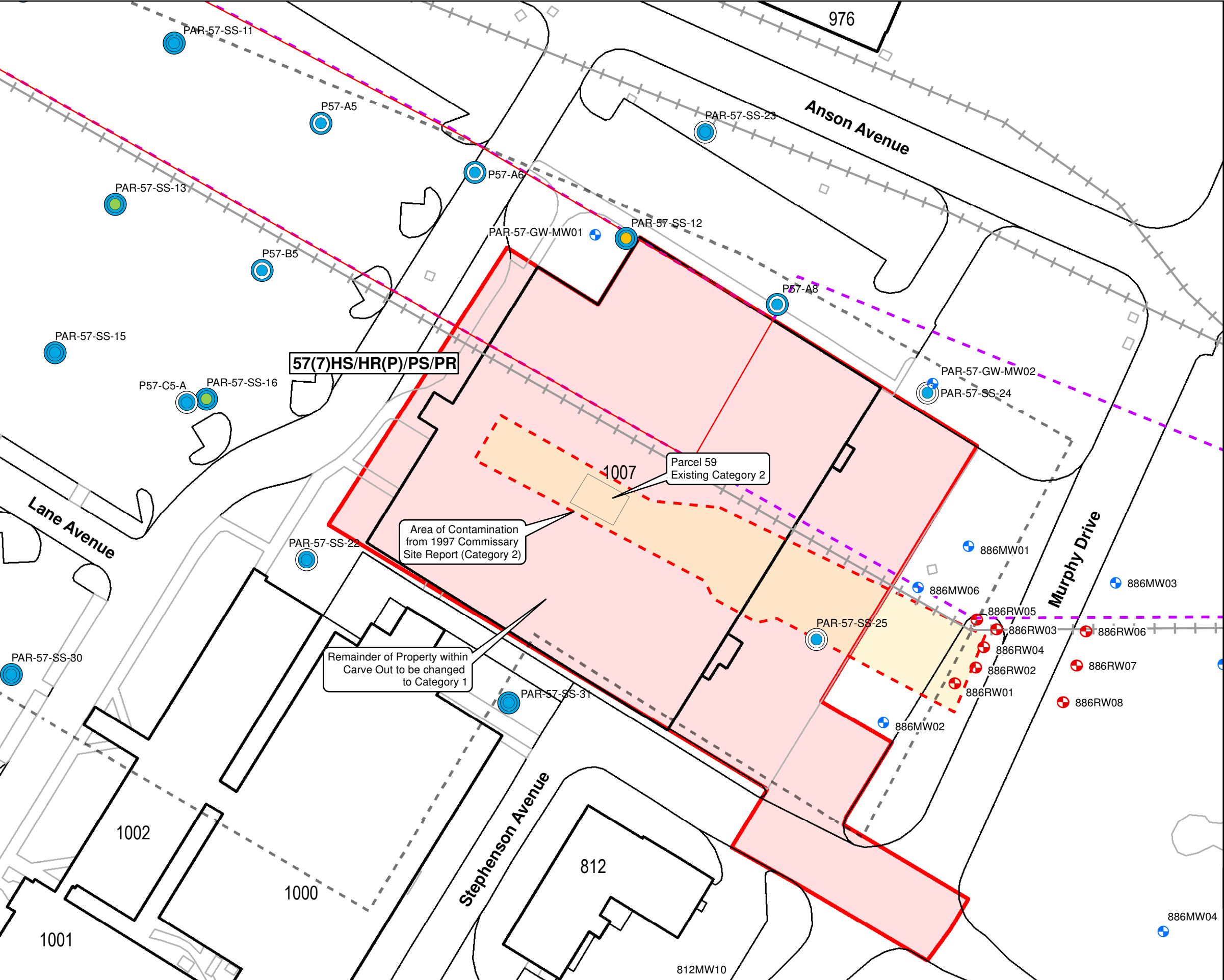
Name/Title: William R. Colvin
BRAC Environmental Coordinator

11 October 2019

Date

Completed form and document 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

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 57\2019\FIGURE 1.mxd



LEGEND:

- Shallow Monitoring Well
- Recovery Well
- Parcel 57 Boundary
- Approximate Location of Former Railroad Track (based on 1962 FTMM plan figure)
- Approximate Extent of Former Coal Storage
- Former Concrete Coal Storage Pad
- Recat Area
- Not analyzed for PAHs
- PAHs not detected or detected below RDCSRS
- PAHs exceeded RDCSRS
- PAHs exceeded both RDCSRS and NRDCSRS
- Water Table (approx. 5-7.5 ft. bgs)
- Intermediate (approx. 2-3.5 ft. bgs)
- Shallow (approx. 0-1 ft. bgs)

NOTES:

- RDCSRS = Residential Direct Contact Soil Remediation Standard
- NRDCSRS = Non-Residential Direct Contact Soil Remediation Standard
- 2007 Sample Results are not shown if a 2010, 2015, or 2016 sample was collected in the same location.

BRAC Parcel Label Definitions

8(2)PS	Contaminant Description	HS – Hazardous Substance Storage
		HR – Hazardous Substance Release
		PS – Petroleum Storage
		PR – Petroleum Release
		(P) – Possible Release or Disposal
	Category Number	
	Parcel Number	

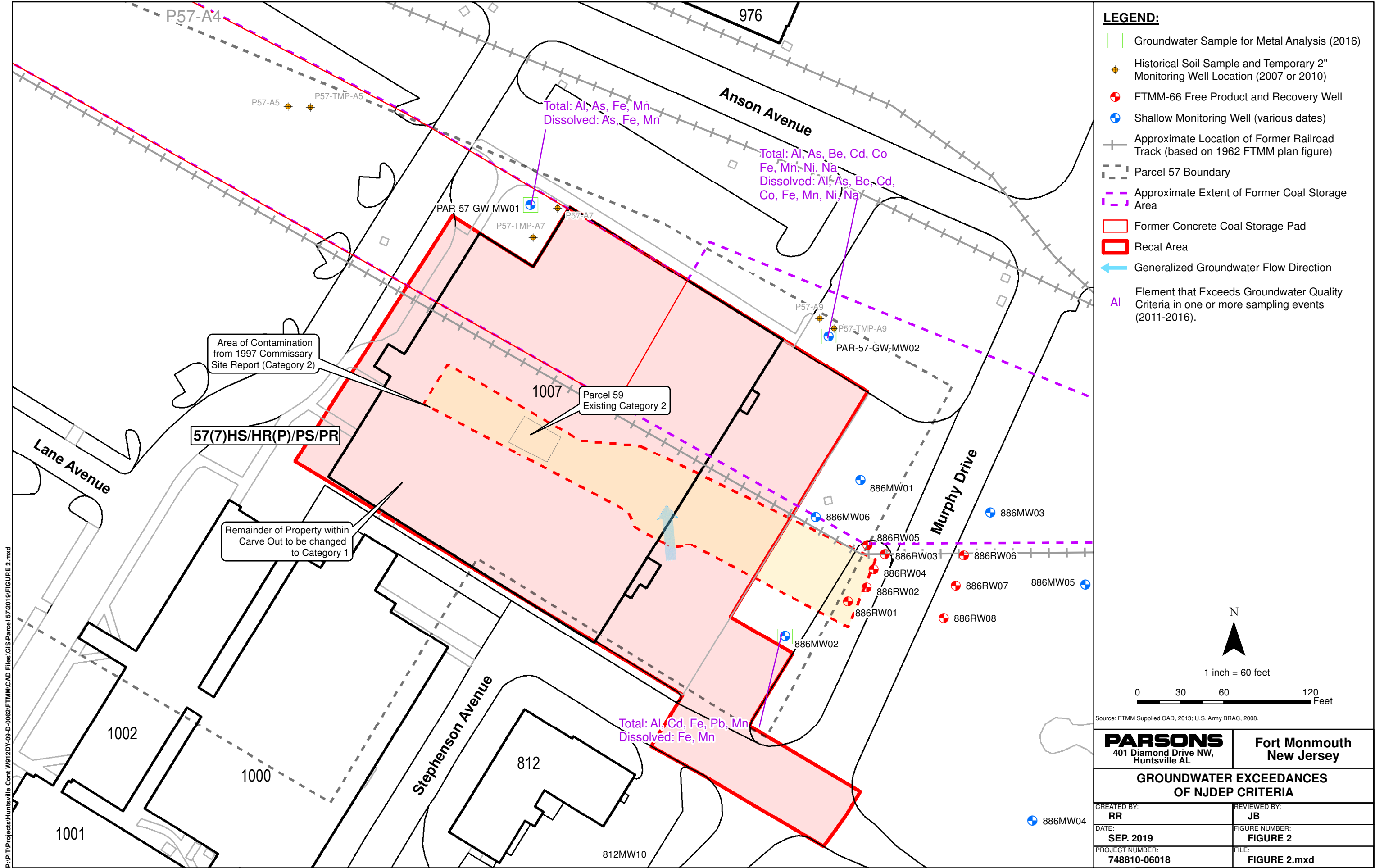
N

1 inch = 60 feet

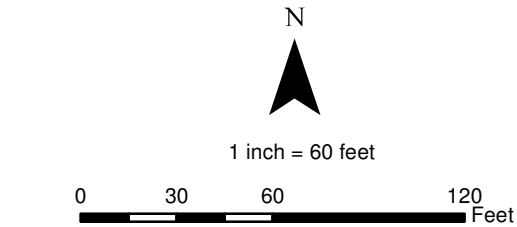
0 30 60 120 Feet

Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
COMPARISON OF SOIL RESULTS FOR PAHS TO NJDEP DIRECT CONTACT STANDARDS	
CREATED BY: RR	REVIEWED BY: JB
DATE: SEP. 2019	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-02110	FILE: FIGURE 1.mxd



- LEGEND:**
- Groundwater Sample for Metal Analysis (2016)
 - Historical Soil Sample and Temporary 2" Monitoring Well Location (2007 or 2010)
 - FTMM-66 Free Product and Recovery Well
 - Shallow Monitoring Well (various dates)
 - Approximate Location of Former Railroad Track (based on 1962 FTMM plan figure)
 - Parcel 57 Boundary
 - Approximate Extent of Former Coal Storage Area
 - Former Concrete Coal Storage Pad
 - Recat Area
 - Generalized Groundwater Flow Direction
 - Element that Exceeds Groundwater Quality Criteria in one or more sampling events (2011-2016).



Source: FTMM Supplied CAD, 2013; U.S. Army BRAC, 2008.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
GROUNDWATER EXCEEDANCES OF NJDEP CRITERIA	
CREATED BY: RR	REVIEWED BY: JB
DATE: SEP. 2019	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06018	FILE: FIGURE 2.mxd

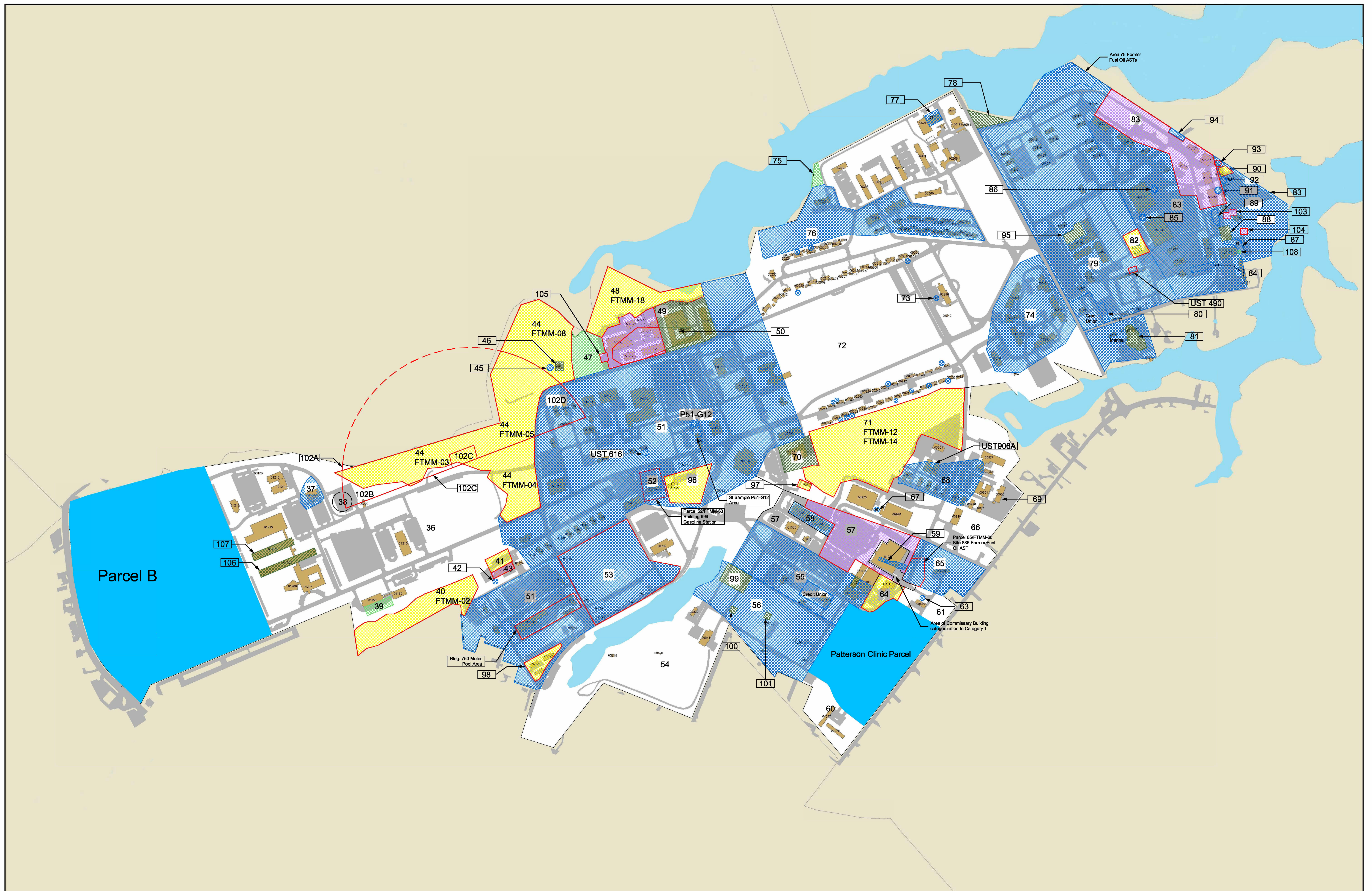


Figure 3
Fort Monmouth
ECP Property Category Map
Main Post

FILE: P:\V\PROJECTS\VAULTS\VAULTS\CONF\W1207-09-0-0062\FTMM\CAD FILES\GIS\FTMM MAP REQUEST\VARIOUS SOURCE FILES FROM FTMM GOVERNMENT SERVER\FIGURE 2 REV 21-WARN\DWG DATE: 10/06/2019 09:50:44M J0018387

Table 1

DETECTED GROUNDWATER SAMPLING RESULTS -
COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	P57-TMP-A5		P57-TMP-A7		P57-TMP-A9	
Sample ID				PAR57-GW-57-TMP-A-5	PAR57-GW-57-TMP-A-5	PAR57-GW-57-TMP-A-7	PAR57-GW-57-TMP-A-7	PAR57-GW-57-TMP-A-9	PAR57-GW-57-TMP-A-9
Sample Date				4/2/2010	4/2/2010	3/11/2010	3/11/2010	3/10/2010	3/10/2010
Sample Round									
Filtered				Dissolved	Total	Dissolved	Total	Dissolved	Total
Volatile Organic Compounds (µg/l)									
Carbon disulfide	700	81	-	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone	300	560	-	NA	NA	NA	NA	NA	NA
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA	NA	NA	NA
Toluene	600	110	-	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (µg/l)									
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA	NA	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA	NA	NA	NA
Inorganics (µg/l)									
Aluminum	200	2,000	121,000	NA	NA	NA	NA	NA	NA
Antimony	6	0.78	20.7	NA	NA	NA	NA	NA	NA
Arsenic	3	0.052	89.3	NA	NA	NA	NA	NA	NA
Barium	6,000	380	699	NA	NA	NA	NA	NA	NA
Beryllium	1	2.5	2.1	< 0.5	2.85	< 0.5	2.81	< 0.5	0.459
Cadmium	4	0.92	9.5	NA	NA	NA	NA	3.97	5.43
Calcium	NLE	NLE	45,400	NA	NA	NA	NA	NA	NA
Chromium	70	NLE	191	NA	NA	NA	NA	NA	54.7
Cobalt	100	0.6	18.3	NA	NA	NA	NA	51.2	53.8
Copper	1,300	80	65.6	NA	NA	NA	NA	NA	NA
Iron	300	1,400	431,000	NA	NA	NA	NA	NA	NA
Lead	5	15	22.7	< 5	138	< 5	43.2	2.81	6.74
Magnesium	NLE	NLE	62,700	NA	NA	NA	NA	NA	NA
Manganese	50	43	331	NA	NA	NA	NA	NA	NA
Mercury	2	0.063	0.26	NA	NA	NA	NA	NA	NA
Nickel	100	39	187	NA	NA	NA	NA	NA	NA
Potassium	NLE	NLE	137,000	NA	NA	NA	NA	NA	NA
Selenium	40	10	29.6	NA	NA	NA	NA	NA	NA
Silver	40	9.4	ND	NA	NA	NA	NA	NA	NA
Sodium	50,000	NLE	21,500	NA	NA	NA	NA	NA	NA
Vanadium	NLE	8.6	108	NA	NA	NA	NA	NA	NA
Zinc	2,000	600	233	NA	NA	NA	NA	NA	NA

Footnote:

All historical data collected prior to 2013 are reported as provided by others.

(1) The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010
<http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf>

(2) The 2017-06 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Regional Screening Levels (HQ=0.1) <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

Nickel, manganese, and mercury RSLs used are for nickel soluble salts, manganese (non-diet), and mercuric chloride (and other mercury salts)

Chromium RSL used is for Chromium (III) insoluble salts

NLE = no limit established.

ND = not detected in any background sample, no background concentration available.

NA = not analyzed.

DUP = field duplicate sample.

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.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

E (or ER) = Estimated result.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds the USEPA 2017-06 RSL Tap Water (HQ=0.1).

Shaded cells = concentration exceeds the NJ Ground Water Quality Criteria

Shaded cells = concentration exceeds both the NJ Ground Water Quality Criteria and USEPA 2017-06 RSL Tap Water (HQ=0.1).

Shaded cells = concentration exceeds Weston (1995) background concentration.

RSL values were current at the time that the screening was conducted.

Table 1
DETECTED GROUNDWATER SAMPLING RESULTS -
COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	800MW01				800MW02			
Sample ID				800MW01-10.06	800MW01-10.06 DISSOLVED	800MW101-10.06	800MW101-10.06 DISSOLVED	PAR57-GW-800MW02	PAR57-GW-800MW02-Dup	800MW02-11.9	800MW02-11.9 DISSOLVED
Sample Date				5/23/2016	5/23/2016	5/23/2016	5/23/2016	2/4/2011	2/4/2011	5/23/2016	5/23/2016
Sample Round											
Filtered				Total	Dissolved	Total	Dissolved	Total	Total	Total	Dissolved
Volatile Organic Compounds (µg/l)											
Carbon disulfide	700	81	-	NA	NA	NA	NA	< 0.5	< 0.5	NA	NA
Methyl ethyl ketone	300	560	-	NA	NA	NA	NA	< 0.5	< 0.5	NA	NA
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA	NA	< 5	< 5	NA	NA
Toluene	600	110	-	NA	NA	NA	NA	< 0.5	< 0.5	NA	NA
Semivolatile Organic Compounds (µg/l)											
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA	NA	< 2	< 2	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA	NA	0.15	0.151	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA	NA	0.136	0.14	NA	NA
Inorganics (µg/l)											
Aluminum	200	2,000	121,000	390	< 33	410	< 33	290	300	210	120
Antimony	6	0.78	20.7	< 10	< 6.6	< 10	< 6.6	< 6	< 6	< 10	< 6.6
Arsenic	3	0.052	89.3	< 1	2.9 J	< 1	3.6 J	4.1	4.1	1.2 J	< 2.6
Barium	6,000	380	699	5.2 J	3.4 J	5.6 J	6.8 J	< 200	< 200	33	34
Beryllium	1	2.5	2.1	< 0.3	< 1.3	< 0.3	< 1.3	< 1	< 1	< 0.3	< 1.3
Cadmium	4	0.92	9.5	< 0.7	< 0.7	< 0.7	< 0.7	< 3	< 3	< 0.7	< 0.7
Calcium	NLE	NLE	45,400	20,700	23,100	20,800	23,100	13,300	13,800	3,600	3,700
Chromium	70	NLE	191	< 2	< 1.6	< 2	< 1.6	< 10	< 10	< 2	< 1.6
Cobalt	100	0.6	18.3	< 2	< 1.6	< 2	< 1.6	< 50	< 50	2.7 J	2.4 J
Copper	1,300	80	65.6	8.3 J	5 J	8.8 J	5.7 J	< 10	< 10	< 3.6	< 3.3
Iron	300	1,400	431,000	860	22 J	880	25 J	8,220	8,710	1,900	40 J
Lead	5	15	22.7	< 2.2	< 2	< 2.2	< 2	3.5	3.7	2.6 J	< 2
Magnesium	NLE	NLE	62,700	4,400	4,900	4,400	4,900	5,190	5,570	2,500	2,700
Manganese	50	43	331	28	15	27	15	172	180	56	59
Mercury	2	0.063	0.26	< 0.2	< 0.1	< 0.2	< 0.1	< 0.2	< 0.2	< 0.2	< 0.1
Nickel	100	39	187	< 7.3	< 6.6	< 7.3	< 6.6	16	16.9	10 J	10 J
Potassium	NLE	NLE	137,000	1,700	2,000	1,700	2,000	< 10000	< 10000	2,500	2,900
Selenium	40	10	29.6	< 7.3	< 6.6	< 7.3	< 6.6	< 10	< 10	< 7.3	< 6.6
Silver	40	9.4	ND	< 1.4	< 1.3	< 1.4	< 1.3	< 10	< 10	< 1.4	< 1.3
Sodium	50,000	NLE	21,500	2,700	3,000	2,700	3,000	35,600	35,500	17,500	18,700
Vanadium	NLE	8.6	108	3.2 J	1.8 J	3.2 J	1.6 J	< 50	< 50	< 2	< 1.6
Zinc	2,000	600	233	10 J	< 6.6	11 J	6.7 J	125	130	21 J	26

Footnote:
All historical data collected prior to 2013 are reported as provided by others.
(1) The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010 <http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf>
(2) The 2017-06 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Regional Screening Levels (HQ=0.1) <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>
(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.
Nickel, manganese, and mercury RSLs used are for nickel soluble salts, manganese (non-diet), and mercuric chloride (and other mercury salts)
Chromium RSL used is for Chromium (III) insoluble salts
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RSL values were current at the time that the screening was conducted.

Table 1

DETECTED GROUNDWATER SAMPLING RESULTS -
COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	800MW02 (continued)				812MW14		
Sample ID				800MW02-16.9	800MW02-16.9 DISSOLVED	800MW02-6.9	800MW02-6.9 DISSOLVED	812-MW114-10.27	812MW14-10.27	812MW14-10.27 DISSOLVED
Sample Date				5/23/2016	5/23/2016	5/23/2016	5/23/2016	5/24/2016	5/24/2016	5/24/2016
Sample Round										
Filtered				Total	Dissolved	Total	Dissolved	Total	Total	Dissolved
Volatile Organic Compounds (µg/l)										
Carbon disulfide	700	81	-	NA	NA	NA	NA	NA	NA	NA
Methyl ethyl ketone	300	560	-	NA	NA	NA	NA	NA	NA	NA
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA	NA	NA	NA	NA
Toluene	600	110	-	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (µg/l)										
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA	NA	NA	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA	NA	NA	NA	NA
Inorganics (µg/l)										
Aluminum	200	2,000	121,000	230	110	200	120	9,500	9,600	< 33
Antimony	6	0.78	20.7	< 10	< 6.6	< 10	< 6.6	< 10	< 10	< 6.6
Arsenic	3	0.052	89.3	2.7 J	2.9 J	< 1	< 2.6	5.5	6.7	< 2.6
Barium	6,000	380	699	31	32	28	31	55	56	3.3 J
Beryllium	1	2.5	2.1	< 0.3	< 1.3	< 0.3	< 1.3	0.8 J	1.3	< 1.3
Cadmium	4	0.92	9.5	< 0.7	< 0.7	< 0.7	< 0.7	0.9 J	1 J	< 0.7
Calcium	NLE	NLE	45,400	3,500	3,600	3,300	3,400	13,000	12,400	11,700
Chromium	70	NLE	191	< 2	< 1.6	< 2	< 1.6	41	43	< 1.6
Cobalt	100	0.6	18.3	2.8 J	2.3 J	2.7 J	2.3 J	4.4 J	5.2 J	< 1.6
Copper	1,300	80	65.6	< 3.6	< 3.3	< 3.6	< 3.3	9.7 J	9.7 J	< 3.3
Iron	300	1,400	431,000	3,800	89	870	25 J	18,700	19,000	59 J
Lead	5	15	22.7	< 2.2	2.4 J	< 2.2	2.8 J	14	13	< 2
Magnesium	NLE	NLE	62,700	2,400	2,600	2,400	2,500	2,600	2,600	1,400
Manganese	50	43	331	54	58	53	56	400	420	< 1.6
Mercury	2	0.063	0.26	< 0.2	< 0.1	< 0.2	< 0.1	< 0.2	< 0.2	< 0.1
Nickel	100	39	187	9.9 J	9.6 J	9.3 J	9.4 J	< 7.3	< 7.3	< 6.6
Potassium	NLE	NLE	137,000	2,500	2,800	2,200	2,500	2,400	2,500	1,000
Selenium	40	10	29.6	< 7.3	< 6.6	< 7.3	< 6.6	< 7.3	< 7.3	< 6.6
Silver	40	9.4	ND	< 1.4	< 1.3	< 1.4	< 1.3	< 1.4	< 1.4	< 1.3
Sodium	50,000	NLE	21,500	17,300	18,400	17,200	18,100	26,800	25,600	28,200
Vanadium	NLE	8.6	108	< 2	< 1.6	< 2	< 1.6	42	44	< 1.6
Zinc	2,000	600	233	22	23	21 J	23	34	37	< 6.6

Footnote:

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RSL values were current at the time that the screening was conducted.

Table 1

DETECTED GROUNDWATER SAMPLING RESULTS -
COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	866MW02		86MW02		P57-A1	P57-A3		P57-A5	P57-A7
Sample ID				866MW02-14.35	866MW02-14.35 DISSOLVED	86MW02-9.35	86MW02-9.35 DISSOLVED	P57-A-1	P57-A-3	P57-A-3 DUP	P57-A-5	P57-A-7
Sample Date				5/24/2016	5/24/2016	5/24/2016	5/24/2016	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007
Sample Round												
Filtered				Total	Dissolved	Total	Dissolved	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)												
Carbon disulfide	700	81	-	NA	NA	NA	NA	< 0.44	< 0.44	< 0.44	< 0.44	0.28 J
Methyl ethyl ketone	300	560	-	NA	NA	NA	NA	< 0.14	< 0.14	< 0.14	< 0.14	4.14
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA	NA	< 1.82	10.49	< 1.82	< 1.82	< 1.82
Toluene	600	110	-	NA	NA	NA	NA	0.23 J	< 0.27	< 0.27	1.02	0.77
Semivolatile Organic Compounds (µg/l)												
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA	NA	< 1.28	1.94	< 1.28	< 1.28	< 1.28
Naphthalene	300	0.17	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (µg/l)												
Aluminum	200	2,000	121,000	480	< 33	360	< 33	< 592	< 16100	< 266	< 13400	< 11000
Antimony	6	0.78	20.7	< 10	< 6.6	< 10	< 6.6	< 0.7	< 0.7	< 0.7	< 0.7	1.13
Arsenic	3	0.052	89.3	1.8 J	< 2.6	1.3 J	2.6 J	< 2.7	5.24	< 2.7	3.94	4.01
Barium	6,000	380	699	62	62	60	67	66.2	189	165	225	224
Beryllium	1	2.5	2.1	< 0.3	< 1.3	< 0.3	< 1.3	0.454	0.249	< 0.1	2.12	1.98
Cadmium	4	0.92	9.5	7.8	< 0.7	3.9	< 0.7	0.274	1.46	1.15	0.284	0.917
Calcium	NLE	NLE	45,400	117,000	127,000	82,700	93,200	< 3300	< 290000	< 284000	< 33200	< 63400
Chromium	70	NLE	191	2.4 J	< 1.6	< 2	< 1.6	< 0.692	< 45.5	< 0.64	< 69.8	< 105
Cobalt	100	0.6	18.3	11	9.5	21	22	3.79	1.75	0.755	9.62	10.5
Copper	1,300	80	65.6	31	< 3.3	56	< 3.3	1.72	27.7	6.58	10.7	137
Iron	300	1,400	431,000	3,200	2,600	2,800	2,800	< 323	17,100	< 323	138,000	25,200
Lead	5	15	22.7	11	4.9 J	12	< 2	< 0.7	3.31	< 0.7	< 0.7	829
Magnesium	NLE	NLE	62,700	9,400	10,300	8,000	9,100	5,370	14,000	12,900	22,000	6,600
Manganese	50	43	331	520	580	820	940	< 46.4	< 62.7	< 43.5	< 502	< 765
Mercury	2	0.063	0.26	< 0.2	< 0.1	< 0.2	< 0.1	NA	NA	NA	NA	NA
Nickel	100	39	187	< 7.3	< 6.6	9.3 J	9 J	< 7.38	< 7.18	< 0.3	< 16.6	< 24
Potassium	NLE	NLE	137,000	11,800	12,800	10,100	11,200	< 2850	< 72600	< 68500	< 6720	< 2500
Selenium	40	10	29.6	< 7.3	< 6.6	< 7.3	< 6.6	< 4.89	< 2.7	< 2.7	< 2.7	< 2.7
Silver	40	9.4	ND	< 1.4	< 1.3	< 1.4	< 1.3	NA	NA	NA	NA	NA
Sodium	50,000	NLE	21,500	33,400	36,100	43,900	49,500	20,900	3,070,000 E	3,110,000 E	156,000	6,790
Vanadium	NLE	8.6	108	< 2	< 1.6	3.6 J	3.2 J	< 0.5	95.3	17.6	56.9	68.8
Zinc	2,000	600	233	200	< 6.6	190	7.5 J	23.6	62.7	20	171	145

Footnote:

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COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	P57-A9	PAR-57-MW01				
Sample ID				P57-A-9	PAR57-GW-MW01-15.1	PAR57-GW-MW01-15.1 DISSOLVED	PAR57-GW-MW101-15.1	PAR57-GW-MW101-15.1 DISSOLVED	PAR-57-GW-MW01-12.5
Sample Date				12/11/2007	11/23/2015	11/23/2015	11/23/2015	11/23/2015	5/23/2016
Sample Round									
Filtered				Total	Total	Dissolved	Total	Dissolved	Total
Volatile Organic Compounds (µg/l)									
Carbon disulfide	700	81	-	0.1 J	NA	NA	NA	NA	NA
Methyl ethyl ketone	300	560	-	< 0.14	NA	NA	NA	NA	NA
Tert Butyl Alcohol	100	NLE	-	< 1.82	NA	NA	NA	NA	NA
Toluene	600	110	-	0.21 J	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (µg/l)									
Bis(2-Ethylhexyl)phthalate	3	5.6	-	< 1.28	NA	NA	NA	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA	NA	NA	NA
Inorganics (µg/l)									
Aluminum	200	2,000	121,000	< 43400	989	< 50	1,010	< 50	260
Antimony	6	0.78	20.7	< 0.7	< 30	< 30	< 30	< 30	< 10
Arsenic	3	0.052	89.3	6.73	6.7 J	8.3 J	8.7 J	6.7 J	11
Barium	6,000	380	699	26.8	49.8	46.9	55.7	50.6	55
Beryllium	1	2.5	2.1	10.9	< 2.5	< 2.5	< 2.5	< 2.5	< 0.3
Cadmium	4	0.92	9.5	14.3	< 2.5	< 2.5	< 2.5	< 2.5	< 0.7
Calcium	NLE	NLE	45,400	< 73300	169,000	191,000	228,000	192,000	144,000
Chromium	70	NLE	191	< 3.57	8.8 J	0.316 J	9 J	0.445 J	< 2
Cobalt	100	0.6	18.3	147	< 25	< 25	< 25	< 25	< 2
Copper	1,300	80	65.6	43.4	< 10	< 10	< 10	< 10	< 3.6
Iron	300	1,400	431,000	17,700	31,300 J	35,200 J	35,800 J	32,900 J	74,000
Lead	5	15	22.7	3.07	< 2.5	< 2.5	2.6 J	< 2.5	< 2.2
Magnesium	NLE	NLE	62,700	37,500	12,200 J	14,200 J	14,300 J	13,800 J	27,400
Manganese	50	43	331	< 2710	644 J	746 J	771 J	740 J	630
Mercury	2	0.063	0.26	NA	0.057 J	0.049 J	< 0.1	< 0.1	< 0.2
Nickel	100	39	187	< 372	2.9 J	1.4 J	2.6 J	1.6 J	< 7.3
Potassium	NLE	NLE	137,000	< 5480	7,450	7,970	8,930	8,380	5,700
Selenium	40	10	29.6	< 2.7	< 5	< 5	< 5	< 5	< 7.3
Silver	40	9.4	ND	NA	2.8 J	3.1 J	2.5 J	2.6 J	< 1.4
Sodium	50,000	NLE	21,500	26,000	30,400	30,700	28,100	31,300	45,900
Vanadium	NLE	8.6	108	3.07	3.2 J	< 25	3 J	< 25	4.2 J
Zinc	2,000	600	233	1,580	10.2 J	< 10	9.6 J	7.2 J	< 7.3

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COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	PAR-57-MW01 (continued)		
Sample ID				PAR-57-GW-MW01-12.5 DISSOLVED	PAR-57-GW-MW01-17.5	PAR-57-GW-MW01-17.5 DISSOLVED
Sample Date				5/23/2016	5/24/2016	5/24/2016
Sample Round						
Filtered				Dissolved	Total	Dissolved
Volatile Organic Compounds (µg/l)						
Carbon disulfide	700	81	-	NA	NA	NA
Methyl ethyl ketone	300	560	-	NA	NA	NA
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA
Toluene	600	110	-	NA	NA	NA
Semivolatile Organic Compounds (µg/l)						
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA
Inorganics (µg/l)						
Aluminum	200	2,000	121,000	< 33	250	< 33
Antimony	6	0.78	20.7	< 6.6	< 10	< 6.6
Arsenic	3	0.052	89.3	23	9.6	17
Barium	6,000	380	699	57	49	52
Beryllium	1	2.5	2.1	< 1.3	< 0.3	< 1.3
Cadmium	4	0.92	9.5	< 0.7	< 0.7	< 0.7
Calcium	NLE	NLE	45,400	153,000	138,000	152,000
Chromium	70	NLE	191	< 1.6	< 2	< 1.6
Cobalt	100	0.6	18.3	< 1.6	< 2	< 1.6
Copper	1,300	80	65.6	< 3.3	< 3.6	< 3.3
Iron	300	1,400	431,000	75,300	55,200	60,200
Lead	5	15	22.7	< 2	< 2.2	< 2
Magnesium	NLE	NLE	62,700	28,800	24,700	26,500
Manganese	50	43	331	670	560	630
Mercury	2	0.063	0.26	< 0.1	< 0.2	< 0.1
Nickel	100	39	187	< 6.6	< 7.3	< 6.6
Potassium	NLE	NLE	137,000	6,400	6,400	7,100
Selenium	40	10	29.6	15 J	< 7.3	6.9 J
Silver	40	9.4	ND	< 1.3	< 1.4	< 1.3
Sodium	50,000	NLE	21,500	47,900	43,100	45,200
Vanadium	NLE	8.6	108	2.8 J	3.2 J	2.9 J
Zinc	2,000	600	233	< 6.6	< 7.3	< 6.6

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COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	PAR-57-MW02				
Sample ID				PAR57-GW-MW02-15.25	PAR57-GW-MW02-15.25 DISSOLVED	PAR57-GW-MW02-20.25	PAR57-GW-MW02-20.25 DISSOLVED	PAR-57-GW-MW02-15.8
Sample Date				11/24/2015	11/24/2015	11/24/2015	11/24/2015	5/24/2016
Sample Round								
Filtered				Total	Dissolved	Total	Dissolved	Total
Volatile Organic Compounds (µg/l)								
Carbon disulfide	700	81	-	NA	NA	NA	NA	NA
Methyl ethyl ketone	300	560	-	NA	NA	NA	NA	NA
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA	NA	NA
Toluene	600	110	-	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (µg/l)								
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA	NA	NA
Inorganics (µg/l)								
Aluminum	200	2,000	121,000	12,800	9,070	11,400	9,230	24,600
Antimony	6	0.78	20.7	< 30	< 30	< 30	< 30	< 50
Arsenic	3	0.052	89.3	10.3	8.5 J	8.9 J	7.8 J	5.7
Barium	6,000	380	699	31.6	27	27	25	120
Beryllium	1	2.5	2.1	7	6.2	6.8	6.4	3.6
Cadmium	4	0.92	9.5	5.8	5.3	5.2	5.1	15
Calcium	NLE	NLE	45,400	66,900	232,000	63,400	65,600	219,000
Chromium	70	NLE	191	8.2 J	1.9 J	5.3 J	1.9 J	< 10
Cobalt	100	0.6	18.3	113	111	103	104	280
Copper	1,300	80	65.6	17 J	5.6 J	13.5 J	5.4 J	31 J
Iron	300	1,400	431,000	36,600 J	30,900 J	34,000 J	31,200 J	141,000
Lead	5	15	22.7	< 2.5	< 2.5	< 2.5	< 2.5	< 11
Magnesium	NLE	NLE	62,700	25,600 J	25,000 J	24,500 J	23,700 J	77,700
Manganese	50	43	331	2,690 J	2,560 J	2,460 J	2,420 J	8,500
Mercury	2	0.063	0.26	< 0.1	0.048 J	< 0.1	< 0.1	< 0.2
Nickel	100	39	187	224	222	223	219	610
Potassium	NLE	NLE	137,000	6,580	6,080	6,070	5,760	19,500
Selenium	40	10	29.6	< 5	< 5	< 5	< 5	< 37
Silver	40	9.4	ND	3.1 J	2.8 J	2.5 J	2.6 J	< 7
Sodium	50,000	NLE	21,500	71,300	67,900	71,400	73,100	280,000
Vanadium	NLE	8.6	108	5.6 J	< 25	3 J	< 25	30
Zinc	2,000	600	233	851	858	788	792	1,900

Footnote:

All historical data collected prior to 2013 are reported as provided by others.

(1) The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010
<http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf>

(2) The 2017-06 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Regional Screening Levels (HQ=0.1) <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

Nickel, manganese, and mercury RSLs used are for nickel soluble salts, manganese (non-diet), and mercuric chloride (and other mercury salts)

Chromium RSL used is for Chromium (III) insoluble salts

NLE = no limit established.

ND = not detected in any background sample, no background concentration available.

NA = not analyzed.

DUP = field duplicate sample.

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.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

E (or ER) = Estimated result.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds the USEPA 2017-06 RSL Tap Water (HQ=0.1).

Shaded cells = concentration exceeds the NJ Ground Water Quality Criteria

Shaded cells = concentration exceeds both the NJ Ground Water Quality Criteria and USEPA 2017-06 RSL Tap Water (HQ=0.1).

Shaded cells = concentration exceeds Weston (1995) background concentration.

RSL values were current at the time that the screening was conducted.

Table 1

DETECTED GROUNDWATER SAMPLING RESULTS -
COMPARISON TO NJDEP GROUNDWATER QUALITY
CRITERIA AND USEPA TAPWATER RSLs
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	2017-06 RSL Tap Water (HQ=0.1)	Weston 1995 Background (Main Post)	PAR-57-MW02 (continued)		
Sample ID				PAR-57-GW-MW02-15.8 DISSOLVED	PAR-57-GW-MW02-20.8	PAR-57-GW-MW02-20.8 DISSSOLVED
Sample Date				5/24/2016	5/24/2016	5/24/2016
Sample Round						
Filtered				Dissolved	Total	Dissolved
Volatile Organic Compounds (µg/l)						
Carbon disulfide	700	81	-	NA	NA	NA
Methyl ethyl ketone	300	560	-	NA	NA	NA
Tert Butyl Alcohol	100	NLE	-	NA	NA	NA
Toluene	600	110	-	NA	NA	NA
Semivolatile Organic Compounds (µg/l)						
Bis(2-Ethylhexyl)phthalate	3	5.6	-	NA	NA	NA
Naphthalene	300	0.17	-	NA	NA	NA
Phenanthrene	100	NLE	-	NA	NA	NA
Inorganics (µg/l)						
Aluminum	200	2,000	121,000	3,100	3,800	4,600
Antimony	6	0.78	20.7	< 6.6	< 10	< 6.6
Arsenic	3	0.052	89.3	4.8 J	6.1	6.6 J
Barium	6,000	380	699	36	44	32
Beryllium	1	2.5	2.1	3.3 J	4.4	4.3
Cadmium	4	0.92	9.5	3.5 J	2.7	4.8 J
Calcium	NLE	NLE	45,400	66,100	109,000	65,100
Chromium	70	NLE	191	< 1.6	< 2	< 1.6
Cobalt	100	0.6	18.3	82	37	95
Copper	1,300	80	65.6	4.6 J	4.9 J	7.9 J
Iron	300	1,400	431,000	42,800	48,100	35,900
Lead	5	15	22.7	2.1 J	< 2.2	2 J
Magnesium	NLE	NLE	62,700	23,800	24,000	24,100
Manganese	50	43	331	2,600	1,300	2,500
Mercury	2	0.063	0.26	< 0.1	< 0.2	< 0.1
Nickel	100	39	187	180	79	200
Potassium	NLE	NLE	137,000	6,100	6,300	6,300
Selenium	40	10	29.6	< 6.6	< 7.3	< 6.6
Silver	40	9.4	ND	< 1.3	< 1.4	< 1.3
Sodium	50,000	NLE	21,500	86,000	57,300	79,400
Vanadium	NLE	8.6	108	7.4	6.2	6.8
Zinc	2,000	600	233	560	270	720

Footnote:

All historical data collected prior to 2013 are reported as provided by others.

(1) The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010
<http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf>

(2) The 2017-06 USEPA RSL Tap Water (HQ=0.1) refers to the USEPA's Regional Screening Levels (HQ=0.1) <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-june-2017>

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

Nickel, manganese, and mercury RSLs used are for nickel soluble salts, manganese (non-diet), and mercuric chloride (and other mercury salts)

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NLE = no limit established.

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U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

JN = Tentatively identified compound, estimated concentration.

Detections are bolded.

Shaded cells = concentration exceeds the USEPA 2017-06 RSL Tap Water (HQ=0.1).

Shaded cells = concentration exceeds the NJ Ground Water Quality Criteria

Shaded cells = concentration exceeds both the NJ Ground Water Quality Criteria and USEPA 2017-06 RSL Tap Water (HQ=0.1).

Shaded cells = concentration exceeds Weston (1995) background concentration.

RSL values were current at the time that the screening was conducted.

Table 2

GROUNDWATER SAMPLING SUMMARY OF EXCEEDANCES
PARCEL 57
FORT MONMOUTH, NEW JERSEY

Analyte	Maximum Detected Concentration	Location of Maximum Concentration	Sample Date	Number of Samples	Number of Detections	NJDEP GWQS ⁽¹⁾		2017-06 USEPA RSL Tap Water (HQ=0.1) ⁽²⁾		Weston 1995 Background (Main Post) ⁽³⁾		Identification of COPCs	
						Action Level	# of Exceedances	Action Level	# of Exceedances	Action Level	# of Exceedances	Evaluated as COPC in Risk Assessment?	Rationale
Volatile Organic Compounds (µg/l) (No Detects)													
Semivolatile Organic Compounds (µg/l)													
Naphthalene	0.151	800MW02	2/4/2011	2	2	300	0	0.17	0	-	n/a	No	Less than USEPA Tapwater RSL
Phenanthrene	0.14	800MW02	2/4/2011	2	2	100	0	NLE	NLE	-	n/a	No	No USEPA Tapwater RSL Established
Inorganics (µg/l)													
Aluminum	24,600	PAR-57MW02	5/24/2016	28	22	200	18	2,000	8	121,000	0	Yes	Exceeded USEPA Tapwater RSL
Arsenic	23	PAR-57MW01	5/23/2016	28	23	3	19	0.052	23	89.3	0	No	Attributable to glauconitic soils
Barium	120	PAR-57MW02	5/24/2016	28	26	6,000	0	380	0	699	0	No	Less than USEPA Tapwater RSL
Beryllium	7	PAR-57MW02	11/24/2015	28	8	1	8	2.5	8	2.1	8	No	Attributable to glauconitic soils
Cadmium	15	PAR-57MW02	5/24/2016	28	8	4	6	0.92	8	9.5	1	Yes	Exceeded USEPA Tapwater RSL
Calcium	232,000	PAR-57MW02	11/24/2015	28	28	NLE	NLE	NLE	NLE	45,400	16	No	Essential human nutrient
Chromium	9	J PAR-57MW01	11/23/2015	28	8	70	0	NLE	NLE	191	0	No	No USEPA Tapwater RSL Established
Cobalt	280	PAR-57MW02	5/24/2016	28	14	100	5	0.6	14	18.3	8	No	Detected in upgradient well 886MW02
Copper	31	J PAR-57MW02	5/24/2016	28	12	1,300	0	80	0	65.6	0	No	Less than USEPA Tapwater RSL
Iron	141,000	PAR-57MW02	5/24/2016	28	28	300	23	1,400	20	431,000	0	No	Essential human nutrient; detected in upgradient well 886MW02
Lead	3.7	800MW02	2/4/2011	28	8	5	0	15	0	22.7	0	No	Less than USEPA Tapwater RSL
Magnesium	77,700	PAR-57MW02	5/24/2016	28	28	NLE	NLE	NLE	NLE	62,700	1	No	Essential human nutrient
Manganese	8,500	PAR-57MW02	5/24/2016	28	28	50	24	43	24	331	16	No	Detected in upgradient well 886MW02
Mercury	0.057	J PAR-57MW01	11/23/2015	28	3	2	0	0.063	0	0.26	0	No	Less than USEPA Tapwater RSL
Nickel	610	PAR-57MW02	5/24/2016	28	20	100	7	39	8	187	6	Yes	Exceeded USEPA Tapwater RSL
Potassium	19,500	PAR-57MW02	5/24/2016	28	26	NLE	NLE	NLE	NLE	137,000	0	No	Essential human nutrient
Selenium	15	J PAR-57MW01	5/23/2016	28	2	40	0	10	1	29.6	0	No	Detected at low frequency
Silver	3.1	J PAR-57MW01 PAR-57MW02	11/23/2015 11/24/2015	28	8	40	0	9.4	0	ND	8	No	Less than USEPA Tapwater RSL
Sodium	280,000	PAR-57MW02	5/24/2016	28	28	50,000	8	NLE	NLE	21,500	18	No	Essential human nutrient
Vanadium	30	PAR-57MW02	5/24/2016	28	16	NLE	NLE	8.6	1	108	0	No	Attributable to turbidity
Zinc	1,900	PAR-57MW02	5/24/2016	28	22	2,000	0	600	6	233	8	Yes	Exceeded USEPA Tapwater RSL

Footnote:

Summary Statistics were obtained from a subset of the Result Sheet(s) and do not reflect values for the whole dataset. The data summarized here represents detected compounds from permanent wells between February 2011 and May 2016.

(1) New Jersey Department of Environmental Protection Ground Water Quality Standards (GWQS), Ground Water Quality Criteria as per N.J.A.C. 7:9-6. Specific Ground Water Quality Criteria - Class IIA and Practical Quantitation Levels.
(http://www.state.nj.us/dep/wms/bwqsa/Appendix_Table_1.htm)

(2) U.S. Environmental Protection Agency (USEPA), Regional Screening Levels (RSLs). Available at http://www.epa.gov/sites/production/files/2015-12/documents/master_sl_table_01run_nov2015.pdf

(3) Weston, 1995. Final Site Investigation - Main Post and Charles Wood Areas, Fort Monmouth, New Jersey, December.

µg/L = micrograms per liter

COPC = contaminant of potential concern

J = Estimated concentration exceeds the method detection limit (MDL) and is less than the reporting limit (RL)

n/a = not applicable

ND = not detected

NLE = No limit established

RSL values were current at the time that the screening was conducted.

ATTACHMENT A

**Spill and Site Remediation
Update Report
Gas / Fuel Oil Discharge
COMMISSARY CONSTRUCTION SITE
Main Post Area
NJDEP Case # 97-1-11-0938-02**

United States Army

Fort Monmouth, New Jersey

Spill and Site Remediation Update Report *Gas / Fuel Oil Discharge* **COMMISSARY CONSTRUCTION SITE**

Main Post Area ***NJDEP Case # 97-1-11-0938-02***

February 9, 1997

SITE UPDATE REPORT

GAS \ FUEL OIL DISCHARGE

**COMMISSARY CONSTRUCTION SITE
MAIN POST AREA
NJDEP CASE NO. 97-1-11-0938-02**

FEBRUARY 9, 1997

PREPARED BY:

**UNITED STATES ARMY, FORT MONMOUTH, NEW JERSEY
DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL OFFICE
BUILDING 173
FORT MONMOUTH, NJ 07703**

**CHARLES APPLEBY
ENVIRONMENTAL PROTECTION SPECIALIST
NJDEP SUBSURFACE CERT. # 009974**

COMMISSARY UPDATE

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1.3 Field Screening	
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2.0 CONCLUSIONS AND RECOMMENDATIONS	9

1.0 Discharge Response Actions

On January 3, 1997, an fuel odor was observed coming from excavated soils at the commissary construction site at U.S. Army Fort Monmouth, Fort Monmouth, New Jersey (Figure 1). The Commissary Construction Site includes the subsurface installation of electric, water, sewer, storm drains and communication services as well building and parking facilities. The Fort Monmouth Directorate of Public Works Environmental Office immediately responded to the report. The soil was observed to be contaminated with some type of petroleum product of unknown origin. An area approximately 80ft. by 80ft. was suspected to be contaminated to a depth of 7ft.. Samples from three areas (the highest observed contaminated areas) were taken and were analyzed for TPHC. The highest TPHC sample was 20,400 mg/kg and was from an area 7 ft. below ground surface at the new water main excavation. That sample was also analyzed for TCLP and Total metals and was found to be below NJDEP residential clean-up criteria for all metals except arsenic which was 3.7 mg/kg with an NJDEP standard of 2 mg/kg. The discharge was reported to The New Jersey Department of Environmental Protection (NJDEP), case number 97-1-11-0938-02 was assigned. Due to the contractual delay as well as the Army's commitment to a clean environment it was determined that further site investigation activities would commence and the site would be restored to the best extent possible.

1.1 Site Investigation

The site investigation was performed by licensed U.S. Army personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E). In an effort to determine

the cause of the discharge, soils within the area were screened visually for evidence of contamination as well as sampled and analyzed by the Fort Monmouth Environmental Testing Laboratory, an NJDEP Certified Laboratory. Due to the extreme cold no field instruments were operational therefore, when necessary, samples were taken to the laboratory for complete analysis.

Construction plans and other historical data were researched and pertinent information was found. The information includes: drawings of a UST system and piping, an aboveground fuel storage system, and a railroad yard which brought the fuels to a main fueling station area adjacent to the railroad. These drawings provided the locations of all the piping systems and directed us directly to the source of contamination.



1.2 Findings

During the review of historical data it was determined that in 1945 a railroad operated within the construction area. Drawings showed that an elaborate fuel distribution system operated on-site and it allowed for the off-loading of fuels from rail car. Heating oil was pumped to a 55 thousand gallon aboveground storage tank and gasoline was pumped to an underground storage tank system located over 420 feet from the railroad area and approx. 200 feet south of the Commissary construction site. Current employees remember the UST system and stated that it was removed in the late 1960's. Only a dirt berm remains from the AST.



Jan. 14, The piping from the UST system was uncovered and traced to the within 15 feet of the railroad track. Several valves were found and the area was found to be contaminated with petroleum in excess of 3,000 mg/kg TPH. It was observed that the fuel migrated from the piping area to the railroad bed (in some areas 4 feet in depth) which was a highly porous dirty stone material.



Jan 15, soil excavation from the fuel distribution/railroad track area. The contaminated material was excavated and transported to the ID-27 soil pile staging area.



Jan 14, gas pipe excavation from the fuel distribution/railroad track area facing north. This pipe led us to the most contaminated area (the rail-car off-loading area) which is believed to be the source area for the fuel contamination.

1.3 FIELD SCREENING/MONITORING

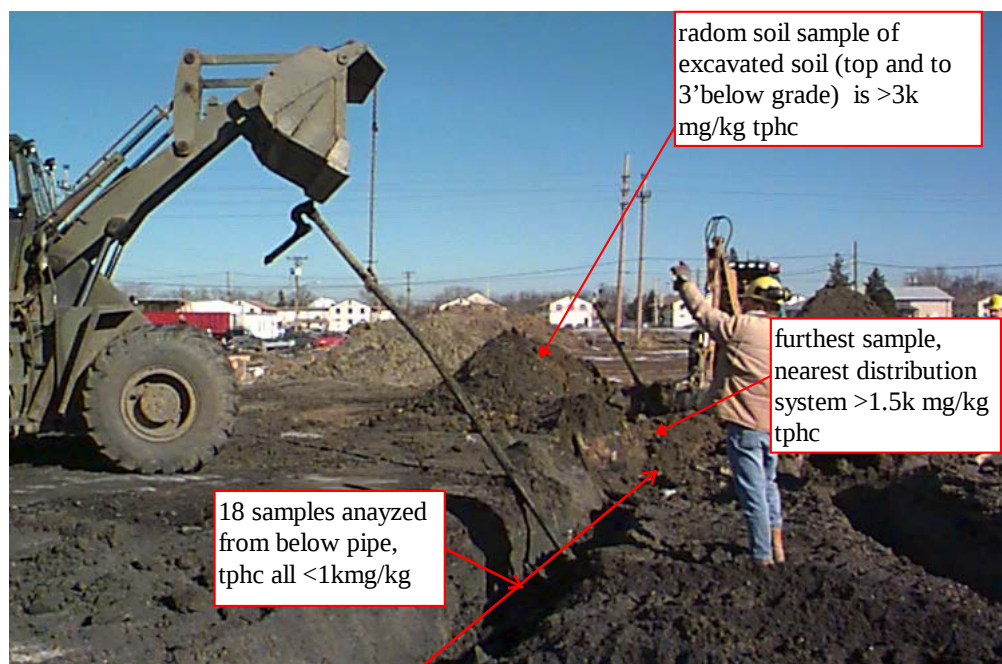
Field screening was performed by a NJDEP Certified Sub-Surface Evaluator using an OVA and visual observations to identify potentially contaminated material. Soil excavated from around the tank and appurtenant piping, as well as the UST excavation sidewalls and bottom, were found to be free of potential contamination.

1.4 SITE INVESTIGATION ACTIVITIES

SOIL SAMPLING

Soil sampling was performed to determine areas needing further excavation and areas needing no further excavation. No field screening was possible due to the cold weather. Samples were collected every five feet along the perimeter and a grid of ten feet by ten feet for the assessment of the bottom of the excavation. The increase above the allowable sampling frequency by the NJDEP for such a site was due to the inability to field screen the site with an OVA or FID.

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements* and the NJDEP *Field Sampling Procedures Manual*. The samples were collected using decontaminated stainless steel scoops or taken directly into the sample container. Following soil sampling activities, the samples were chilled and delivered to U.S. Fort Monmouth Environmental Laboratory located in Fort Monmouth, New Jersey for analysis.



**Jan. 15, gas pipe excavation / removal from the fuel distribution/railroad track area
sample results show a clean excavation and approx. 50 ft. of the pipe-run has been
backfilled._**



**Central excavation area (fuel distribution/railroad track area)
sample results show a clean excavation and the area is being backfilled._**



West excavation area (railroad track area)

sample results show a clean excavation and the area is being backfilled.

1.5 Hazard Abatement

From January 13th to present, the site has been under remedial excavation activities which have resulted in the removal of approx. 4,000 cubic yards of petroleum contaminated soils.



ID-27 soil pile storage area near the excavation site. The area is covered top and bottom by poly tarps and is bordered by hay-bails to control any soil run-off as a precaution. Approx. 4,000 cubic yards of soil were removed.

2.0 Conclusions and Recommendations

The Directorate of Public Works, Fort Monmouth recommends that a DER be applied for areas under utilities which were not remediated by excavation activities. Additional assessment and possible further activities will be required at the site of the old UST tank field as well as the AST area. The Site of the Commissary construction will be backfilled for completion of the construction project. The DPW Environmental Office will coordinate further activities with the NJDEP.

**Parcel 57 Excerpt
Final Site Investigation Report – July 2008**

3.14 Parcel 57 – Former Coal Storage and Railroad Unloading – 800 Area

3.14.1 Site Description

Parcel 57 is located in the south-central portion of the MP in the area of Bldgs 1007 and 801. Historic site plans, aerial photographs, and information obtained during personnel interviews indicate a coal storage area and fuel unloading area formerly existed in the south-central portion of the MP along the former RR in the vicinity of Bldgs 1007 and 801. The potential coal storage area was identified in photographs from 1947, 1957, and 1963 (18). A geothermal well field is present north of Bldg 800. Additional information pertaining to this parcel can be found in Section 3.3, Section 5.4, Section 5.13.1, and Appendix G of the Phase I ECP (1).

3.14.2 Previous Investigations

No previous investigations have been conducted in relation to the former coal storage area.

3.14.3 Site Investigation Sampling

In order to determine the impact of historic coal and fuel unloading and storage activities in the area of the former RR, the following soil and groundwater sampling was conducted.

Geoprobe® Investigation

Soil and groundwater samples were collected in December 2007 in Parcel 57 in order to determine if any contamination exists from previous activities associated with the former coal storage area. A total of 15 surface soil samples and 18 subsurface soil samples (including three duplicate samples) were collected from 15 distinct Geoprobe® borings (**Figure 3.14-1**) on 100-ft centers. Surface soil samples for non-VO analysis were collected from the 0- to 6-inch interval bgs. For borings located in paved areas, non-VO surface soil samples were collected from the 0- to 6-inch interval directly below the pavement sub-base. Surface soil samples collected for VO analysis were collected from the 18- to 24-inch interval bgs. Subsurface soil samples were collected from the 6-inch interval directly above the water table. Field screening of the soil boring core was conducted using a PID/FID meter. No visual or olfactory evidence of soil contamination was noted.

A total of six groundwater samples (including one duplicate sample) were collected from five distinct temporary wells (**Figure 3.14.1**). Temporary wells were installed along the northern boundary of the soil boring grid in a downgradient hydrogeologic direction and were constructed of PVC and 5 to 10 ft of factory-slotted screen.

Final Site Investigation Report – Fort Monmouth – July 2008

Table 3.14-1 presents a summary of all field activities, and all sample locations are provided on **Figure 3.14-1**. A summary of sampling activities, including sample IDs, collection dates, and analytical parameters, is provided in **Table 3.14-2**.

**Table 3.14-1
Parcel 57 Sampling Location, Rationale and Analytical**

Sample Location	Sample Media	Sample Location Rationale	Analytical Suite
57SS-A1 through 57SS-C9 (15 samples)	Surface soil	Soil samples were collected from the 0- to 6-inch bgs interval from the Geoprobe® soil boring grid (conducted on 100-ft centers) to investigate the former coal storage location. If the sample location was paved, the sample was collected from the 0- to 6-inch interval below the pavement sub-base.	TCL+30 (w/o pesticides), TAL Metals
57SB-A1 through 57SB-C9 (18 samples – includes 3 duplicate samples)	Subsurface soil	Soil samples were collected from the 6-inch interval directly above the water table (depths ranging from 3.5 to 8.0 ft bgs) from each Geoprobe® soil boring in the grid (conducted on 100-ft centers) to investigate the former coal storage location. Field screening of the entire Geoprobe® soil core was conducted using PID/FID meters.	TCL+30 (w/o pesticides), TAL Metals
57GW-A1, A3, A5, A7, A9 (6 samples – includes 1 duplicate sample)	Groundwater	Groundwater samples were collected from the specified Geoprobe® soil borings in the grid to investigate the former location of coal storage.	TCL+30 (w/o pesticides/PCBs), TAL Metals

3.14.4 Site Investigation Results

Geoprobe® Investigation Results

Surface and subsurface soil samples were analyzed for TCL+30 (without pesticides) and TAL metals. Groundwater samples were analyzed for TCL+30 (without pesticides/PCBs) and TAL metals.

Soil

As presented in **Table 3.14-3**, seven VO's, 22 B/N's, and 19 metals were detected in Parcel 57 soil samples. All seven VO's were detected at concentrations below NJDEP NRDCSCC. Of the 17 B/N's, four (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and benzo[k]fluoranthene) were detected in three surface soil samples, P57-A1-A, P57-C3-A, and P57-C5-A, at concentrations that exceeded NJDEP NRDCSCC and their respective MPBC. All 19 metals were detected at concentrations below NJDEP NRDCSCC. B/N's are considered COCs in soil at Parcel 57.

Final Site Investigation Report – Fort Monmouth – July 2008

Five soil samples contained TICs at elevated concentrations. 1,1-bis(1-methylethyl)-Hydrazine was detected at a concentration of 310 mg/kg in sample P57-A6-A and at a concentration of 330 mg/kg in the duplicate sample collected at P57-A9-C. It was not detected in sample P57-A9-C. 4-hydroxy-4-methyl 2-Pentanone was detected at concentrations of 220 mg/kg, 150 mg/kg, and 230 mg/kg in samples P57-A2-A, P57-A2-C, and P57-A4-C, respectively. Multiple semi-volatile constituents were identified in each of the five samples; however, no TCL organic constituents were identified at concentrations greater than the NRDCSCC in the five samples in which elevated TIC concentrations were identified.

Groundwater

As presented in **Table 3.14-4**, a total of five VOs (acetone, carbon disulfide, methyl ethyl ketone [2-butanone], TBA, and toluene) and one B/N (bis[2-ethylhexyl]phthalate) were detected at concentrations below the NJDEP GWQC in Parcel 57 groundwater samples.

A total of 20 metals were detected in Parcel 57 groundwater samples. Of the 20 metals detected, 11 (aluminum, arsenic, beryllium, cadmium, chromium, cobalt, iron, lead, manganese, nickel, and sodium) were detected above the respective GWQC.

Several natural and anthropogenic factors contribute to the wide range in concentrations of metals in soils, which further impact the concentration of metals in groundwater. Soils derived from glauconitic sands contain abundant aluminum, calcium, potassium, iron, magnesium, manganese, and sodium (among others), which are likely to be present at elevated concentrations in the groundwater, particularly when sediments are entrained in the collected groundwater samples. These native metals included aluminum, barium, calcium, iron, magnesium, manganese, potassium, sodium, and zinc (47). In addition, sodium concentrations can be influenced by saltwater intrusion. The non-native metals detected in groundwater samples collected from the temporary wells in Parcel 57 have been compared to the respective GWQC and MPBCs to determine COCs requiring further evaluation (**Figure 3.14-1**).

Four naturally occurring metal constituents commonly associated with the local soils/geology, aluminum, iron, manganese, and sodium were detected in Parcel 57 groundwater samples collected from temporary wells. As a result of these natural influences, aluminum, iron, manganese, and sodium are not considered COCs in groundwater.

Arsenic was detected at concentrations exceeding the NJDEP GWQC of 3 µg/L in four samples, P57-A3 (5.24 µg/L), P57-A5 (3.94 µg/L), P57-A7 (4.01 µg/L), and P57-A9 (6.73 µg/L). However, these concentrations did not exceed the MPBC of 89.3 µg/L. In addition, arsenic is associated with the native glauconitic sands (48). The elevated arsenic concentrations in the native soil in turn influence the arsenic levels in groundwater. Thus, arsenic is not considered a COC in groundwater. Beryllium was detected at concentrations exceeding the NJDEP GWQC of 1 µg/L in three samples, P57-A5 (2.12 µg/L), P57-A7 (1.98 µg/L), and P57-A9 (10.9 µg/L). Two of the three

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beryllium concentrations also exceeded the MPBC of 2.1 µg/L. Cadmium was detected at a concentration exceeding the NJDEP GWQC of 4 µg/L and the MPBC of 9.5 µg/L in one sample, P57-A9 (14.3 µg/L). Chromium was detected at a concentration exceeding the NJDEP GWQC of 70 µg/L in one sample, P57-A7 (105 µg/L). The chromium concentration was below the MPBC of 191 µg/L. Cobalt was detected at a concentration exceeding the NJDEP GWQC of 100 µg/L and the MPBC of 18.3 µg/L in one sample, P57-A9 (147 µg/L). Lead was detected at a concentration exceeding the NJDEP GWQC of 5 µg/L and the MPBC of 22.7 µg/L in one sample, P57-A7 (829 µg/L). Nickel was detected at a concentration exceeding the NJDEP GWQC of 100 µg/L and the MPBC of 187 µg/L in one sample P57-A-9 (372 µg/L).

3.14.5 Summary and Conclusions

Soil samples that exceeded NJDEP NRDCSCC for B/Ns were collected from the 0- to 6-inch interval below the pavement sub-base. The four B/Ns (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and benzo[k]fluoranthene) that were detected at concentrations above the NRDCSCC and the MPBC are considered COCs in soil.

Five common, naturally occurring metal constituents, aluminum, arsenic, iron, manganese, and sodium, were detected at concentrations greater than the NJDEP GWQC, but these native metals are attributed to the aquifer material and are not site-related. Therefore, these metals are not considered COCs. Five non-native metal constituents, beryllium, cadmium, cobalt, lead, and nickel, were detected at concentrations above the NJDEP GWQC and their respective MPBC. These five metals are considered COCs in Parcel 57 groundwater. Further evaluation of B/Ns identified in surface soil and metals in groundwater is recommended for Parcel 57. The B/N COCs identified in soil at Parcel 57 are PAHs. PAHs are contained in asphalt and are commonly detected in soil under asphalt pavement. Re-collection of samples at locations that are currently paved and/or were paved in the past will be conducted as part of the further evaluation to determine if the PAHs detected in soil are attributable to asphalt.

Table 3.14-2
Parcel 57 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BIN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
BLANK	TRIP	TRIP BLANK-SO	12/08/07	-	--	--		X							
SOIL	GEOPROBE	P57-B3-A	12/08/07	9:15	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B3-B	12/08/07	9:15	1.5	2.0		X							
SOIL	GEOPROBE	P57-B3-C	12/08/07	9:35	7.0	7.5		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B4-A	12/08/07	10:30	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B4-B	12/08/07	10:30	1.5	2.0		X							
SOIL	GEOPROBE	P57-B4-C	12/08/07	10:45	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C3-A	12/08/07	12:10	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C3-B	12/08/07	12:10	1.5	2.0		X							
SOIL	GEOPROBE	P57-C3-C	12/08/07	12:20	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C3-C DUPLICATE	12/08/07	12:20	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A2-A	12/08/07	12:55	0.0	0.5			X	X	X				
SOIL	GEOPROBE	P57-A2-B	12/08/07	12:55	1.5	2.0		X							
SOIL	GEOPROBE	P57-A2-C	12/08/07	13:05	5.5	6.0		X	X	X	X				
BLANK	FIELD	FIELD BLANK-SO	12/08/07	13:15	--	--		X	X	X	X				
BLANK	TRIP	TRIP BLANK	12/10/07	-	--	--		X							
SOIL	GEOPROBE	P57-C5-A	12/10/07	8:25	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.

Table 3.14-2
Parcel 57 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BIN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P57-C5-B	12/10/07	8:25	1.5	2.0		X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C5-C	12/10/07	8:35	7.0	7.5		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C4-A	12/10/07	9:20	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C4-B	12/10/07	9:20	1.5	2.0		X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-C4-C	12/10/07	9:30	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B5-A	12/10/07	13:35	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B5-B	12/10/07	13:35	1.5	2.0		X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B5-C	12/10/07	13:40	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-B5-C DUPLICATE	12/10/07	13:40	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A4-A	12/10/07	14:15	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A4-B	12/10/07	14:15	1.5	2.0		X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A4-C	12/10/07	14:25	6.5	7.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A6-A	12/10/07	14:50	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A6-B	12/10/07	14:50	1.5	2.0		X							Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A6-C	12/10/07	15:00	7.0	7.5		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.

**Table 3.14-2
Parcel 57 Sample and Analytical Summary**

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BIN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P57-A8-A	12/10/07	15:35	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A8-B	12/10/07	15:35	1.5	2.0		X							
SOIL	GEOPROBE	P57-A8-C	12/10/07	15:50	6.0	6.5		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
BLANK	FIELD	FIELD BLANK	12/10/07	15:15	--	--		X	X	X	X				
BLANK	TRIP	TRIP BLANK-SO	12/11/07	-	--	--		X							
SOIL	GEOPROBE	P57-A1-A	12/11/07	7:50	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A1-B	12/11/07	7:50	1.5	2.0		X							
SOIL	GEOPROBE	P57-A1-C	12/11/07	8:00	7.5	8.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A3-A	12/11/07	8:30	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A3-B	12/11/07	8:30	1.5	2.0		X							
SOIL	GEOPROBE	P57-A3-C	12/11/07	8:40	4.0	4.5		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A5-A	12/11/07	9:25	0.5	1.0			X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A5-B	12/11/07	9:25	1.5	2.0		X							
SOIL	GEOPROBE	P57-A5-C	12/11/07	14:05	7.5	8.0		X	X	X	X				Sample depth in field documentation was recorded from top of soil. Reported bgs depths adjusted to account for surface asphalt and sub-base.
SOIL	GEOPROBE	P57-A7-A	12/11/07	11:15	0.0	0.5			X	X	X				
SOIL	GEOPROBE	P57-A7-B	12/11/07	11:15	1.5	2.0		X							
SOIL	GEOPROBE	P57-A7-C	12/11/07	11:35	5.5	6.0		X	X	X	X				

Table 3.14-2
Parcel 57 Sample and Analytical Summary

Media	Type	Field Sample #	Sample Date	Sample Time	Begin Depth	End Depth	TPHC	VO+15	BN+15	PCBs	TAL Metals	Cyanide	Mercury	Ammonia/ Nitrate/ Nitrite	COMMENTS/VARIANCES
SOIL	GEOPROBE	P57-A9-A	12/11/07	13:10	0.0	0.5			X	X	X				
SOIL	GEOPROBE	P57-A9-B	12/11/07	13:10	1.5	2.0		X							
SOIL	GEOPROBE	P57-A9-C	12/11/07	13:20	7.5	8.0		X	X	X	X				
SOIL	GEOPROBE	P57-A9-C DUPLICATE	12/11/07	13:20	7.5	8.0		X	X	X	X				
BLANK	FIELD	FIELD BLANK-SO	12/11/07	13:35	--	--		X	X	X	X				
BLANK	TRIP	TRIP BLANK-AQ	12/11/07	13:30	--	--		X							
BLANK	FIELD	FIELD BLANK-AQ	12/11/07	14:00	--	--		X	X		X				
GW	GEOPROBE	P57-A1	12/11/07	14:30	7.0	12.0		X	X		X				
GW	GEOPROBE	P57-A3	12/11/07	15:00	4.0	9.0		X	X		X				
GW	GEOPROBE	P57-A3 DUPLICATE	12/11/07	15:00	4.0	9.0		X	X		X				
GW	GEOPROBE	P57-A5	12/11/07	15:30	4.0	14.0		X	X		X				
GW	GEOPROBE	P57-A7	12/11/07	16:00	4.0	14.0		X	X		X				
GW	GEOPROBE	P57-A9	12/11/07	16:30	8.0	18.0		X	X		X				

X = Sample analyzed for the indicated analytical parameter suite

Table 3.14-3
Fort Monmouth Phase II Site Investigation, Parcel 57
Summary of Analytical Parameters Detected in Soil (mg/kg)

Chemical	Sample ID:		Analytical Results											
	Lab ID:		P57-A1-A	P57-A1-B	P57-A1-C	P57-A2-A	P57-A2-B	P57-A2-C	P57-A3-A	P57-A3-B	P57-A3-C	P57-A4-A	P57-A4-B	P57-A4-C
	Date Sampled:		7052503	7052504	7052505	7051712	7051713	7051714	7052506	7052507	7052508	7052112	7052113	7052114
Depth (ft. bgs):			0.5-1.0	1.5-2.0	7.5-8.0	0.0-0.5	1.5-2.0	5.5-6.0	0.5-1.0	1.5-2.0	4.0-4.5	0.5-1.0	1.5-2.0	6.5-7.0
			NRDCSCC ²	IGWSCC ³	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles														
Acetone	1000	100	NT	0.260 U	0.400	NT	0.240 U	0.320 U	NT	0.420	0.300	NT	0.043 J	0.450
Benzene	13	1	NT	0.260 U	0.330 U	NT	0.017 J	0.320 U	NT	0.260 U	0.250 U	NT	0.330 U	0.290 U
Ethylbenzene	1000	100	NT	0.260 U	0.330 U	NT	0.023 J	0.320 U	NT	0.260 U	0.250 U	NT	0.330 U	0.290 U
Toluene	1000	500	NT	0.260 U	0.330 U	NT	0.077 J	0.320 U	NT	0.260 U	0.250 U	NT	0.069 J	0.290 U
Trichlorofluoromethane	NLE	NLE	NT	0.260 U	0.330 U	NT	0.240 U	0.320 U	NT	0.260 U	0.250 U	NT	0.330 U	0.290 U
Vinyl Acetate	NLE	NLE	NT	0.260 U	0.330 U	NT	0.240 U	0.320 U	NT	0.260 U	0.250 U	NT	0.330 U	0.290 U
Xylenes (Total)	1000	67	NT	0.780 U	0.990 U	NT	0.350 J	0.950 U	NT	0.780 U	0.750 U	NT	1.000 U	0.870 U
Semi-Volatiles														
Acenaphthene	10000	100	1.200	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Acenaphthylene	NLE	NLE	0.760 J	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	0.077 J	NT	1.100 U
Anthracene	10000	100	5.600	NT	1.300 U	0.055 J	NT	1.300 U	1.200 U	NT	1.100 U	0.160 J	NT	1.100 U
Benzo[a]anthracene	4	500	9.500 JD	NT	1.300 U	0.220 J	NT	1.300 U	0.100 J	NT	1.100 U	0.310 J	NT	1.100 U
Benzo[a]pyrene	0.66	100	9.900	NT	1.300 U	0.210 J	NT	1.300 U	1.200 U	NT	1.100 U	0.350 J	NT	1.100 U
Benzo[b]fluoranthene	4	50	9.900 JD	NT	1.300 U	0.330 J	NT	1.300 U	1.200 U	NT	1.100 U	0.470 J	NT	1.100 U
Benzo[g,h,i]perylene	NLE	NLE	3.400	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Benzo[k]fluoranthene	4	500	7.000	NT	1.300 U	0.110 J	NT	1.300 U	1.200 U	NT	1.100 U	0.160 J	NT	1.100 U
bis(2-Ethylhexyl)phthalate	210	100	1.100 U	NT	0.080 J	0.099 J	NT	0.052 J	1.200 U	NT	0.086 J	0.150 J	NT	1.100 U
Butyl benzyl phthalate	10000	100	1.100 U	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Chrysene	40	500	10.000 JD	NT	1.300 U	0.270 J	NT	1.300 U	0.130 J	NT	1.100 U	0.390 J	NT	1.100 U
Dibenzofuran	NLE	NLE	1.800	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	0.032 J	NT	1.100 U
Diethyl phthalate	10000	50	1.100 U	NT	0.059 JB	1.200 U	NT	1.300 U	1.200 U	NT	0.053 JB	0.160 JB	NT	1.100 U
Di-n-butylphthalate	10000	100	0.210 J	NT	0.990 J	2.700 B	NT	1.800 B	0.820 J	NT	1.500	0.490 JB	NT	1.400 B
Di-n-octyl phthalate	10000	100	1.100 U	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Fluoranthene	10000	100	25.000 D	NT	0.058 J	0.420 J	NT	1.300 U	0.280 J	NT	1.100 U	0.680 J	NT	1.100 U
Fluorene	10000	100	2.200	NT	1.300 U	1.200 U	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Indeno[1,2,3-cd]pyrene	4	500	3.200	NT	1.300 U	0.082 J	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
2-Methylnaphthalene	NLE	NLE	1.400	NT	1.300 U	0.075 J	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Naphthalene	4200	100	0.880 J	NT	1.300 U	0.051 J	NT	1.300 U	1.200 U	NT	1.100 U	1.100 U	NT	1.100 U
Phenanthrene	NLE	NLE	19.000 D	NT	1.300 U	0.200 J	NT	1.300 U	0.140 J	NT	1.100 U	0.510 J	NT	0.041 J
Pyrene	10000	100	22.000 D	NT	0.050 J	0.410 J	NT	1.300 U	0.300 J	NT	1.100 U	0.820 J	NT	0.034 J
Metals														
Aluminum	NLE	NLE	7800 B	NT	16500 B	14500 B	NT	35200 B	21700 B	NT	6490 B	14400 B	NT	11500 B
Arsenic	20	NLE	17.8	NT	9.11	7.39	NT	11.4	12.4	NT	2.73	6.16	NT	8.12
Barium	47000	NLE	35.3 B	NT	12.2 B	49.3 B	NT	148 B	50.1 B	NT	11.3 B	42.8 B	NT	17.2 B
Beryllium	140	NLE	0.769	NT	0.926	0.882	NT	1.54	1.35	NT	0.271	0.527	NT	1.61
Cadmium	100	NLE	0.325	NT	0.221	0.384	NT	0.311	0.426	NT	0.112	0.468	NT	0.497
Calcium	NLE	NLE	2180 B	NT	216 B	3190 B	NT	468 B	18800 B	NT	466 B	29000 B	NT	778 B
Chromium (Total)	NLE	NLE	58.8 B	NT	106 B	53.5 B	NT	217 B	110 B	NT	22.8 B	40.9 B	NT	122 B
Cobalt	NLE	NLE	1.98	NT	0.526	3.48	NT	0.832	1.79	NT	0.338 U	8.52	NT	1.30
Copper	45000	NLE	28.6 B	NT	9.40 B	17.6 B	NT	26.4 B	12.8 B	NT	3.57 B	33.1 B	NT	7.01 B
Iron	NLE	NLE	27900 B	NT	22800 B	24500 B	NT	35100 B	34600 B	NT	8110 B	21600 B	NT	44000 B
Lead	900	NLE	15.9	NT	0.525	22.8	NT	3.88	11.2	NT	3.01	21.0	NT	0.351 U
Magnesium	NLE	NLE	3240 B	NT	4000 B	3790 B	NT	5900 B	5000 B	NT	832 B	5240 B	NT	5250 B
Manganese	NLE	NLE	57.7 B	NT	42.2 B	303 B	NT	54.8 B	85.9 B	NT	19.7 B	174 B	NT	27.9 B
Mercury	270	NLE	0.100 U	NT	0.119 U	0.110 U	NT	0.122 U	0.116 U	NT	0.099 U	0.105 U	NT	0.109 U
Nickel (Soluble Salts)	2400	NLE	7.56	NT	4.39	10.4	NT	50.3	14.6	NT	2.76	17.6	NT	44.1
Potassium	NLE	NLE	5200 B	NT	5190 B	4290 B	NT	9540 B	7720 B	NT	1430 B	3420 B	NT	11800 B
Sodium	NLE	NLE	42.5	NT	41.667 U	38.480 U	NT	43.926 U	42.214 U	NT	38.483 U	904	NT	37.586 U
Vanadium	7100	NLE	45.7	NT	60.5	49.9	NT	86.1	77.6	NT	18.1	60.4	NT	70.2
Zinc	1500	NLE	39.1	NT	46.9	61.7	NT	72.6	70.2	NT	36.5	65.0	NT	165

¹ NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.² NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.³ NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.

(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

Table 3.14-3
Fort Monmouth Phase II Site Investigation, Parcel 57
Summary of Analytical Parameters Detected in Soil (mg/kg)

Chemical	Lab ID:	Sample ID: Date Sampled: Depth (ft. bgs):	Analytical Results												
			P57-A5-B 7052510 12/11/2007 1.5-2.0	P57-A5-C 7052511 12/11/2007 7.5-8.0	P57-A6-A 7052115 12/10/2007 0.5-1.0	P57-A6-B 7052116 12/10/2007 1.5-2.0	P57-A6-C 7052117 12/10/2007 7.0-7.5	P57-A7-A 7052512 12/11/2007 0.0-0.5	P57-A7-B 7052513 12/11/2007 1.5-2.0	P57-A7-C 7052514 12/11/2007 5.5-6.0	P57-A8-A 7052118 12/10/2007 0.5-1.0	P57-A8-B 7052119 12/10/2007 1.5-2.0	P57-A8-C 7052120 12/10/2007 6.0-6.5	P57-A9-A 7052515 12/11/2007 0.0-0.5	P57-A9-B 7052516 12/11/2007 1.5-2.0
			NRDCSCC ²	IGWSCC ³	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles															
Acetone	1000	100	0.340	0.420	NT	0.400	0.380	NT	0.610	0.340	NT	0.390	0.560	NT	0.510
Benzene	13	1	0.250 U	0.280 U	NT	0.270 U	0.260 U	NT	0.270 U	0.280 U	NT	0.260 U	0.270 U	NT	0.260 U
Ethylbenzene	1000	100	0.250 U	0.280 U	NT	0.270 U	0.260 U	NT	0.270 U	0.280 U	NT	0.260 U	0.270 U	NT	0.260 U
Toluene	1000	500	0.250 U	0.280 U	NT	0.270 U	0.260 U	NT	0.270 U	0.024 J	NT	0.260 U	0.270 U	NT	0.260 U
Trichlorofluoromethane	NLE	NLE	0.069 J	0.280 U	NT	0.270 U	0.260 U	NT	0.270 U	0.280 U	NT	0.260 U	0.270 U	NT	0.260 U
Vinyl Acetate	NLE	NLE	0.250 U	0.280 U	NT	0.270 U	0.260 U	NT	0.270 U	0.280 U	NT	0.210 J	0.270 U	NT	0.260 U
Xylenes (Total)	1000	67	0.760 U	0.840 U	NT	0.810 U	0.780 U	NT	0.820 U	0.021 J	NT	0.770 U	0.810 U	NT	0.790 U
Semi-Volatiles															
Acenaphthene	10000	100	NT	1.200 U	0.070 J	NT	1.100 U	1.100 U	NT	1.100 U	4.400 U	NT	1.100 U	1.200 U	NT
Acenaphthylene	NLE	NLE	NT	1.200 U	0.059 J	NT	1.100 U	1.100 U	NT	0.069 J	0.170 J	NT	1.100 U	1.200 U	NT
Anthracene	10000	100	NT	1.200 U	0.150 J	NT	0.030 J	0.058 J	NT	0.039 J	0.520 J	NT	1.100 U	1.200 U	NT
Benzo[a]anthracene	4	500	NT	1.200 U	0.350 J	NT	0.054 J	0.240 J	NT	0.100 J	1.100 J	NT	1.100 U	0.089 J	NT
Benzo[a]pyrene	0.66	100	NT	1.200 U	1.100 U	NT	1.100 U	0.240 J	NT	0.088 J	4.400 U	NT	1.100 U	0.080 J	NT
Benzo[b]fluoranthene	4	50	NT	1.200 U	1.100 U	NT	0.069 J	0.430 J	NT	0.072 J	4.400 U	NT	1.100 U	0.130 J	NT
Benzo[g,h,i]perylene	NLE	NLE	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.100 U	4.400 U	NT	1.100 U	1.200 U	NT
Benzo[k]fluoranthene	4	500	NT	1.200 U	1.100 U	NT	0.039 J	0.100 J	NT	0.077 J	4.400 U	NT	1.100 U	1.200 U	NT
bis(2-Ethylhexyl)phthalate	210	100	NT	0.067 J	1.100 U	NT	0.044 J	1.900	NT	0.730 J	1.200 J	NT	0.110 J	0.180 J	NT
Butyl benzyl phthalate	10000	100	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.100 U	4.400 U	NT	1.100 U	1.200 U	NT
Chrysene	40	500	NT	1.200 U	0.077 J	NT	0.077 J	0.320 J	NT	0.140 J	1.500 J	NT	1.100 U	0.120 J	NT
Dibenzofuran	NLE	NLE	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.100 U	0.170 J	NT	1.100 U	1.200 U	NT
Diethyl phthalate	10000	50	NT	1.200 U	0.080 JB	NT	1.100 U	0.065 JB	NT	0.054 JB	0.250 JB	NT	1.100 U	0.046 JB	NT
Di-n-butylphthalate	10000	100	NT	0.300 J	1.100 JB	NT	0.380 JB	1.500	NT	0.810 J	2.300 JB	NT	3.800 B	0.340 J	NT
Di-n-octyl phthalate	10000	100	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.100 U	4.400 U	NT	0.035 JB	1.200 U	NT
Fluoranthene	10000	100	NT	0.077 J	0.850 J	NT	0.130 J	0.580 J	NT	0.140 J	2.400 J	NT	0.055 J	0.170 J	NT
Fluorene	10000	100	NT	1.200 U	0.073 J	NT	1.100 U	1.100 U	NT	1.100 U	0.280 J	NT	1.100 U	1.200 U	NT
Indeno[1,2,3-cd]pyrene	4	500	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.100 U	4.400 U	NT	1.100 U	1.200 U	NT
2-Methylnaphthalene	NLE	NLE	NT	1.200 U	0.091 J	NT	1.100 U	1.100 U	NT	1.100 U	4.400 U	NT	1.100 U	1.200 U	NT
Naphthalene	4200	100	NT	1.200 U	0.043 J	NT	1.100 U	1.100 U	NT	1.100 U	0.160 J	NT	1.100 U	1.200 U	NT
Phenanthrene	NLE	NLE	NT	0.057 J	0.670 J	NT	0.100 J	0.270 J	NT	0.050 J	2.100 J	NT	0.031 J	0.100 J	NT
Pyrene	10000	100	NT	0.074 J	1.300	NT	0.150 J	0.550 J	NT	0.210 J	4.000 J	NT	0.051 J	0.200 J	NT
Metals															
Aluminum	NLE	NLE	NT	11000 B	10600 B	NT	14300 B	10300 B	NT	6810 B	7970 B	NT	6370 B	12500 B	NT
Arsenic	20	NLE	NT	6.04	4.68	NT	13.2	8.01	NT	4.68	2.84	NT	8.05	10.3	NT
Barium	47000	NLE	NT	45.9 B	35.5 B	NT	38.6 B	34.5 B	NT	14.6 B	19.0 B	NT	5.38 B	36.2 B	NT
Beryllium	140	NLE	NT	1.02	0.346	NT	1.23	0.529	NT	0.524	0.259	NT	0.556	0.933	NT
Cadmium	100	NLE	NT	0.203	0.435	NT	0.359	0.329	NT	0.185	0.247	NT	0.0843	0.306	NT
Calcium	NLE	NLE	NT	1140 B	25000 B	NT	2040 B	9430 B	NT	762 B	14300 B	NT	439 B	1720 B	NT
Chromium	NLE	NLE	NT	61.5 B	22.9 B	NT	108 B	33.3 B	NT	41.0 B	17.1 B	NT	72.2 B	58.9 B	NT
Cobalt	NLE	NLE	NT	0.347 U	5.53	NT	1.70	1.32	NT	0.876	6.60	NT	0.337 U	1.42	NT
Copper	45000	NLE	NT	3.02 B	26.8 B	NT	11.1 B	13.0 B	NT	7.19 B	33.3 B	NT	2.90 B	16.2 B	NT
Iron	NLE	NLE	NT	23100 B	16500 B	NT	33200 B	17800 B	NT	15600 B	14300 B	NT	14100 B	27200 B	NT
Lead	800	NLE	NT	3.05	15.7	NT	7.57	29.5	NT	7.00	9.78	NT	1.65	28.9	NT
Magnesium	NLE	NLE	NT	2670 B	3790 B	NT	4330 B	2280 B	NT	1780 B	3720 B	NT	1180 B	2850 B	NT
Manganese	NLE	NLE	NT	97.6 B	118 B	NT	73.1 B	95.7 B	NT	55.9 B	140 B	NT	9.25 B	110 B	NT
Mercury	270	NLE	NT	0.101 U	0.099 U	NT	0.108 U	0.106 U	NT	0.101 U	0.104 U	NT	0.109 U	0.109 U	NT
Nickel	2400	NLE	NT	5.57	20.0	NT	10.3	6.45	NT	4.43	14.5	NT	2.27	6.97	NT
Potassium	NLE	NLE	NT	4170 B	1920 B	NT	7580 B	1970 B	NT	3110 B	1010 B	NT	2750 B	5150 B	NT
Sodium	NLE	NLE	NT	39.424 U	539	NT	41.362 U	36.479 U	NT	38.989 U	429	NT	38.358 U	38.584 U	NT
Vanadium	7100	NLE	NT	40.9	46.8	NT	63.9	37.5	NT	29.7	70.6	NT	40.6	47.0	NT
Zinc	1500	NLE	NT	80.4	70.4	NT	58.2	76.4	NT	35.8	50.4	NT	14.4	57.8	NT

¹ NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.² NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.³ NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.

(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

Table 3.14-3
Fort Monmouth Phase II Site Investigation, Parcel 57
Summary of Analytical Parameters Detected in Soil (mg/kg)

Chemical	Sample ID: Lab ID: Date Sampled: Depth (ft. bgs):		Analytical Results												
	P57-A9-C 7052517 12/11/2007 7.5-8.0	P57-A9-C DUP 7052502 12/11/2007 7.5-8.0	P57-B3-A 7051703 12/08/2007 0.5-1.0	P57-B3-B 7051704 12/08/2007 1.5-2.0	P57-B3-C 7051705 12/08/2007 7.0-7.5	P57-B4-A 7051706 12/08/2007 0.5-1.0	P57-B4-B 7051707 12/08/2007 1.5-2.0	P57-B4-C 7051708 12/08/2007 6.5-7.0	P57-B5-A 7052109 12/10/2007 0.5-1.0	P57-B5-B 7052110 12/10/2007 1.5-2.0	P57-B5-C 7052111 12/10/2007 6.5-7.0	P57-B5-C DUP 7052102 12/10/2007 6.5-7.0	P57-C3-A 7051709 12/08/2007 0.5-1.0		
	NRDCSCC ²	IGWSCC ³	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
Volatiles															
Acetone	1000	100	0.490	0.730	NT	0.260 U	0.330 U	NT	0.260 U	0.280 U	NT	0.270 U	0.350 U	0.280 J	NT
Benzene	13	1	0.250 U	0.290 U	NT	0.260 U	0.330 U	NT	0.260 U	0.280 U	NT	0.270 U	0.350 U	0.300 U	NT
Ethylbenzene	1000	100	0.250 U	0.290 U	NT	0.260 U	0.330 U	NT	0.260 U	0.280 U	NT	0.270 U	0.350 U	0.300 U	NT
Toluene	1000	500	0.250 U	0.290 U	NT	0.260 U	0.330 U	NT	0.260 U	0.280 U	NT	0.270 U	0.350 U	0.300 U	NT
Trichlorofluoromethane	NLE	NLE	0.250 U	0.290 U	NT	0.260 U	0.330 U	NT	0.260 U	0.280 U	NT	0.270 U	0.350 U	0.300 U	NT
Vinyl Acetate	NLE	NLE	0.250 U	0.240 J	NT	0.260 U	0.330 U	NT	0.260 U	0.280 U	NT	0.270 U	0.350 U	0.300 U	NT
Xylenes (Total)	1000	67	0.750 U	0.870 U	NT	0.790 U	0.980 U	NT	0.790 U	0.840 U	NT	0.810 U	1.060 U	0.900 U	NT
Semi-Volatiles															
Acenaphthene	10000	100	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.041 J	NT	1.100 U	0.066 J	NT	1.200 U	1.200 U	0.540 J
Acenaphthylene	NLE	NLE	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.071 J	NT	1.100 U	0.039 J	NT	1.200 U	1.200 U	0.097 J
Anthracene	10000	100	1.100 U	0.110 J	0.049 J	NT	1.200 U	0.200 J	NT	1.100 U	0.200 J	NT	1.200 U	1.200 U	1.200
Benzo[a]anthracene	4	500	1.100 U	0.230 J	0.210 J	NT	1.200 U	0.600 J	NT	1.100 U	0.460 J	NT	1.200 U	1.200 U	2.900
Benzo[a]pyrene	0.66	100	1.100 U	0.150 J	1.100 U	NT	1.200 U	0.480 J	NT	1.100 U	1.100 U	NT	1.200 U	1.200 U	2.000
Benzo[b]fluoranthene	4	50	1.100 U	0.220 J	1.100 U	NT	1.200 U	0.790 J	NT	1.100 U	0.520 J	NT	1.200 U	1.200 U	3.100
Benzo[g,h,i]perylene	NLE	NLE	1.100 U	0.100 J	1.100 U	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.200 U	1.200 U	0.730 J
Benzo[k]fluoranthene	4	500	1.100 U	0.093 J	1.100 U	NT	1.200 U	0.360 J	NT	1.100 U	0.350 J	NT	1.200 U	1.200 U	1.900
bis(2-Ethylhexyl)phthalate	210	100	0.100 J	0.062 J	0.150 J	NT	1.200 U	0.130 J	NT	1.100 U	0.300 J	NT	1.200 U	0.087 J	0.220 J
Butyl benzyl phthalate	10000	100	1.100 U	1.200 U	1.100 U	NT	1.200 U	1.100 U	NT	1.100 U	0.130 J	NT	1.200 U	1.200 U	1.100 U
Chrysene	40	500	1.100 U	0.250 J	0.250 J	NT	1.200 U	0.690 J	NT	1.100 U	0.510 J	NT	1.200 U	1.200 U	3.000
Dibenzofuran	NLE	NLE	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.064 J	NT	1.100 U	0.057 J	NT	1.200 U	1.200 U	0.260 J
Diethyl phthalate	10000	50	1.100 U	0.048 JB	0.043 JB	NT	1.200 U	1.100 U	NT	1.100 U	1.100 U	NT	1.200 U	0.034 JB	1.100 U
Di-n-butylphthalate	10000	100	1.100 J	1.000 J	1.600 B	NT	0.630 JB	1.700 B	NT	0.610 JB	0.760 JB	NT	0.910 JB	2.700 B	2.000 B
Di-n-octyl phthalate	10000	100	1.100 U	1.200 U	1.100 U	NT	1.200 U	1.100 U	NT	1.100 U	0.380 JB	NT	1.200 U	0.060 JB	1.100 U
Fluoranthene	10000	100	1.100 U	0.680 J	0.320 J	NT	1.200 U	1.400	NT	1.100 U	0.990 J	NT	1.200 U	1.200 U	7.500
Fluorene	10000	100	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.038 J	NT	1.100 U	1.100 U	NT	1.200 U	1.200 U	0.380 J
Indeno[1,2,3-cd]pyrene	4	500	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.150 J	NT	1.100 U	1.100 U	NT	1.200 U	1.200 U	0.690 J
2-Methylnaphthalene	NLE	NLE	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.080 J	NT	1.100 U	1.100 U	NT	1.200 U	1.200 U	0.075 J
Naphthalene	4200	100	1.100 U	1.200 U	1.100 U	NT	1.200 U	0.065 J	NT	1.100 U	1.100 U	NT	1.200 U	1.200 U	0.120 J
Phenanthrene	NLE	NLE	1.100 U	0.510 J	0.180 J	NT	1.200 U	0.750 J	NT	1.100 U	1.000 J	NT	1.200 U	1.200 U	4.700
Pyrene	10000	100	1.100 U	0.580 J	0.500 J	NT	1.200 U	1.600	NT	1.100 U	1.600	NT	1.200 U	1.200 U	9.400
Metals															
Aluminum	NLE	NLE	5540 B	5180 B	8850 B	NT	18800 B	10600 B	NT	8020 B	9520 B	NT	19400 B	20300 B	10400 B
Arsenic	20	NLE	2.42	1.70	7.58	NT	11.0	5.89	NT	6.21	5.03	NT	7.71	9.35	2.36
Barium	47000	NLE	19.9 B	17.0 B	20.6 B	NT	33.8 B	43.6 B	NT	39.3 B	32.9 B	NT	30.5 B	32.0 B	20.9 B
Beryllium	140	NLE	0.462	0.475	1.25	NT	0.917	0.517	NT	0.516	0.540	NT	1.06	1.18	0.494
Cadmium	100	NLE	0.135	0.126	0.193	NT	0.261	0.318	NT	0.414	0.289	NT	0.317	0.534	0.163
Calcium	NLE	NLE	677 B	605 B	18300 B	NT	467 B	42600 B	NT	34300 B	34400 B	NT	607 B	598 B	292 B
Chromium	NLE	NLE	28.0 B	28.3 B	92.2 B	NT	63.6 B	39.9 B	NT	35.6 B	58.4 B	NT	127 B	135 B	46.4 B
Cobalt	NLE	NLE	0.332 U	0.333 U	1.94	NT	2.47	2.82	NT	2.93	5.07	NT	1.64	1.58	0.756
Copper	45000	NLE	2.91 B	4.17 B	8.00 B	NT	12.2 B	14.4 B	NT	29.9 B	21.0 B	NT	5.56 B	6.99 B	4.84 B
Iron	NLE	NLE	13300 B	13300 B	36000 B	NT	15300 B	15800 B	NT	17400 B	18500 B	NT	37400 B	47400 B	8230 B
Lead	800	NLE	40.7	38.0	7.69	NT	7.04	20.3	NT	51.4	15.0	NT	3.03	2.82	4.81
Magnesium	NLE	NLE	1380 B	1460 B	4560 B	NT	2600 B	3970 B	NT	4980 B	4530 B	NT	5090 B	5330 B	1500 B
Manganese	NLE	NLE	36.2 B	26.9 B	58.4 B	NT	67.6 B	120 B	NT	118 B	102 B	NT	55.2 B	54.6 B	34.8 B
Mercury	270	NLE	0.106 U	0.114 U	0.110 U	NT	0.116 U	0.102 U	NT	0.102 U	0.107 U	NT	0.114 U	0.110 U	0.160
Nickel	2400	NLE	2.35	2.49	6.29	NT	11.0	8.92	NT	8.99	9.44	NT	8.71	8.98	5.59
Potassium	NLE	NLE	2500 B	2640 B	8710 B	NT	2780 B	2710 B	NT	2560 B	3170 B	NT	8330 B	8900 B	1940 B
Sodium	NLE	NLE	37.822 U	37.867 U	37.752 U	NT	43.828 U	36.969 U	NT	39.984 U	48.6	NT	42.72 U	39.581 U	40.694 U
Vanadium	7100	NLE	19.4	18.2	51.2	NT	62.7	40.8	NT	40.0	59.1	NT	85.3	91.4	30.9
Zinc	1500	NLE	29.4	28.8	72.5	NT	57.9	50.5	NT	84.8	46.2	NT	62.6	67.0	25.2

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DUP = Duplicate Sample.

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(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

Table 3.14-3
Fort Monmouth Phase II Site Investigation, Parcel 57
Summary of Analytical Parameters Detected in Soil (mg/kg)

Chemical	Sample ID: Lab ID: Date Sampled: Depth (ft. bgs):		Analytical Results								
			P57-C3-B 7051710 12/08/2007 1.5-2.0	P57-C3-C 7051711 12/08/2007 6.5-7.0	P57-C3-C DUP 7051702 12/08/2007 6.5-7.0	P57-C4-A 7052106 12/10/2007 0.5-1.0	P57-C4-B 7052107 12/10/2007 1.5-2.0	P57-C4-C 7052108 12/10/2007 6.5-7.0	P57-C5-A 7052103 12/10/2007 0.5-1.0	P57-C5-B 7052104 12/10/2007 1.5-2.0	P57-C5-C 7052105 12/10/2007 7.0-7.5
	NRDCSCC ²	IGWSCC ³	Result	Result	Result	Result	Result	Result	Result	Result	Result
Volatiles											
Acetone	1000	100	0.270 U	0.260 U	0.260 U	NT	0.310 U	0.270 U	NT	0.280 J	0.320 U
Benzene	13	1	0.270 U	0.260 U	0.260 U	NT	0.310 U	0.270 U	NT	0.300 U	0.320 U
Ethylbenzene	1000	100	0.011 J	0.260 U	0.260 U	NT	0.310 U	0.270 U	NT	0.300 U	0.320 U
Toluene	1000	500	0.270 U	0.260 U	0.260 U	NT	0.310 U	0.270 U	NT	0.300 U	0.320 U
Trichlorofluoromethane	NLE	NLE	0.270 U	0.260 U	0.260 U	NT	0.310 U	0.270 U	NT	0.300 U	0.320 U
Vinyl Acetate	NLE	NLE	0.270 U	0.260 U	0.260 U	NT	0.310 U	0.270 U	NT	0.300 U	0.320 U
Xylenes (Total)	1000	67	0.810 U	0.780 U	0.780 U	NT	0.920 U	0.810 U	NT	0.990 U	0.960 U
Semi-Volatiles											
Acenaphthene	10000	100	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	0.078 J	NT	1.100 U
Acenaphthylene	NLE	NLE	NT	1.100 U	1.100 U	0.190 J	NT	1.100 U	0.100 J	NT	1.100 U
Anthracene	10000	100	NT	1.100 U	1.100 U	0.130 J	NT	1.100 U	0.430 J	NT	1.100 U
Benzo[a]anthracene	4	500	NT	0.100 J	1.100 U	0.420 J	NT	1.100 U	1.200 J	NT	1.100 U
Benzo[a]pyrene	0.66	100	NT	0.081 J	1.100 U	0.470 J	NT	1.100 U	0.950 J	NT	1.100 U
Benzo[b]fluoranthene	4	50	NT	0.110 J	1.100 U	0.650 J	NT	1.100 U	1.500 J	NT	1.100 U
Benzo[g,h,i]perylene	NLE	NLE	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	1.100 U	NT	1.100 U
Benzo[k]fluoranthene	4	500	NT	0.059 J	1.100 U	0.290 J	NT	1.100 U	0.480 J	NT	1.100 U
bis(2-Ethylhexyl)phthalate	210	100	NT	0.092 J	0.090 J	0.200 J	NT	1.100 U	1.100 J	NT	1.100 U
Butyl benzyl phthalate	10000	100	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	1.100 U	NT	1.100 U
Chrysene	40	500	NT	0.120 J	1.100 U	0.520 J	NT	1.100 U	1.300 J	NT	1.100 U
Dibenzofuran	NLE	NLE	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	0.058 J	NT	1.100 U
Diethyl phthalate	10000	50	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	1.100 U	NT	1.100 U
Di-n-butylphthalate	10000	100	NT	2.400 B	0.410 JB	0.770 JB	NT	0.570 JB	0.640 JB	NT	0.580 JB
Di-n-octyl phthalate	10000	100	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	1.100 U	NT	1.100 U
Fluoranthene	10000	100	NT	0.120 J	0.041 J	0.640 J	NT	1.100 U	2.600 J	NT	1.100 U
Fluorene	10000	100	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	0.110 J	NT	1.100 U
Indeno[1,2,3-cd]pyrene	4	500	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	0.330 J	NT	1.100 U
2-Methylnaphthalene	NLE	NLE	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	1.100 U	NT	1.100 U
Naphthalene	4200	100	NT	1.100 U	1.100 U	1.000 U	NT	1.100 U	1.100 U	NT	1.100 U
Phenanthrene	NLE	NLE	NT	0.033 J	1.100 U	0.260 J	NT	1.100 U	1.400 J	NT	1.100 U
Pyrene	10000	100	NT	0.160 J	0.041 J	1.200 J	NT	1.100 U	3.600 J	NT	1.100 U
Metals											
Aluminum	NLE	NLE	NT	11000 B	7000 B	13100 B	NT	11000 B	8990 B	NT	3580 B
Arsenic	20	NLE	NT	4.98 B	3.65 B	5.40 B	NT	11.4 B	4.64 B	NT	2.04 B
Barium	47000	NLE	NT	20.6 B	13.4 B	40.7 B	NT	15.9 B	32.7 B	NT	6.15 B
Beryllium	140	NLE	NT	0.637 B	0.508 B	0.590 B	NT	1.33 B	0.615 B	NT	0.326 B
Cadmium	100	NLE	NT	0.194 B	0.0962 B	0.362 B	NT	0.196 B	0.319 B	NT	0.0535 B
Calcium	NLE	NLE	NT	1660 B	1400 B	21100 B	NT	693 B	24100 B	NT	280 B
Chromium	NLE	NLE	NT	57.7 B	42.9 B	43.5 B	NT	96.4 B	54.5 B	NT	30.8 B
Cobalt	NLE	NLE	NT	1.11 B	1.43 B	8.68 B	NT	1.42 B	3.13 B	NT	0.326 U
Copper	45000	NLE	NT	8.57 B	7.79 B	29.3 B	NT	5.09 B	20.0 B	NT	3.28 B
Iron	NLE	NLE	NT	18400 B	16200 B	20100 B	NT	39500 B	19800 B	NT	8350 B
Lead	800	NLE	NT	5.10 B	4.66 B	30.1 B	NT	1.20 B	51.6 B	NT	1.40 B
Magnesium	NLE	NLE	NT	1940 B	1330 B	4740 B	NT	4300 B	3400 B	NT	871 B
Manganese	NLE	NLE	NT	52.7 B	96.2 B	127 B	NT	39.4 B	93.3 B	NT	15.3 B
Mercury	270	NLE	NT	0.100 U	0.101 U	0.098 U	NT	0.096 U	0.099 U	NT	0.099 U
Nickel	2400	NLE	NT	5.79 B	7.16 B	14.1 B	NT	5.97 B	9.05 B	NT	3.63 B
Potassium	NLE	NLE	NT	3070 B	1860 B	2760 B	NT	9520 B	2540 B	NT	1960 B
Sodium	NLE	NLE	NT	35,244 U	37,691 U	688 U	NT	36,431 U	40,061 U	NT	37,124 U
Vanadium	7100	NLE	NT	46.7 B	36.6 B	65.3 B	NT	60.0 B	65.3 B	NT	24.5 B
Zinc	1500	NLE	NT	39.8 B	43.6 B	53.6 B	NT	61.5 B	58.2 B	NT	28.0 B

¹ NJDEP Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

² NJDEP Non-Residential Direct Contact Soil Cleanup Criteria per NJAC 7:26D, 1999. Beryllium, Copper and Lead criteria per NJAC 7:26D, 2008.

³ NJDEP Impact to Groundwater Soil Cleanup Criteria per NJAC 7:26D, 1999.

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.

NT = Not tested.

NLE = No limit established.

mg/kg = milligram per kilogram.

Bold = Analyte was detected.

Shaded = Concentration exceeds level of concern.

(Surface soil compared to NRDCSCC. Subsurface soil compared to IGWSCC when available, otherwise compared to NRDCSCC).

Table 3.14-4
Fort Monmouth Phase II Site Investigation, Parcel 57
Summary of Analytical Parameters Detected in Groundwater (µg/L)

Chemical	Sample ID: Lab ID: Date Sampled: Screened Interval (ft. bgs): Quality Criteria ¹	Analytical Results					
		P57-A-1	P57-A-3	P57-A-3 DUP	P57-A-5	P57-A-7	P57-A-9
		7053104	7053105	7053103	7053106	7053107	7053108
		12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007	12/11/2007
		7-12	4-9	4-9	4-14	4-14	8-18
Volatiles							
Acetone	6000	0.85 U	0.85 U	0.85 U	0.85 U	31.13 B	0.85 U
Carbon disulfide	700	0.44 U	0.44 U	0.44 U	0.44 U	0.28 J	0.10 J
Methyl ethyl ketone (2-Butanone)	300	0.14 U	0.14 U	0.14 U	0.14 U	4.14	0.14 U
Tertiary butyl alcohol	100	1.82 U	10.49	1.82 U	1.82 U	1.82 U	1.82 U
Toluene	600	0.23 J	0.27 U	0.27 U	1.02	0.77	0.21 J
Semi-Volatiles							
bis(2-Ethylhexyl)phthalate	3	1.28 U	1.94	1.28 U	1.28 U	1.28 U	1.28 U
Metals							
Aluminum	200	592 B	16100 B	266 B	13400 B	11000 B	43400 B
Antimony	6	0.70 U	0.70 U	0.70 U	0.70 U	1.13	0.70 U
Arsenic	3	2.70 U	5.24	2.70 U	3.94	4.01	6.73
Barium	6000	66.2	189	165	225	224	26.8
Beryllium	1	0.454	0.249	0.100 U	2.12	1.98	10.9
Cadmium	4	0.274	1.46	1.15	0.284	0.917	14.3
Calcium	NLE	3300 B	290000 B	284000 B	33200 B	63400 B	73300 B
Chromium (Total)	70	0.692 B	45.5 B	0.640 B	69.8 B	105 B	3.57 B
Cobalt	100*	3.79	1.75	0.755	9.62	10.5	147
Copper	1300	1.72	27.7	6.58	10.7	137	43.4
Iron	300	323 U	17100	323 U	138000	25200	17700
Lead	5	0.700 U	3.31	0.700 U	0.700 U	829	3.07
Magnesium	NLE	5370	14000	12900	22000	6600	37500
Manganese	50	46.4 B	62.7 B	43.5 B	502 B	765 B	2710 B
Nickel (Soluble Salts)	100	7.38 B	7.18 B	0.300 U	16.6 B	24.0 B	372 B
Potassium	NLE	2850 B	72600 B	68500 B	6720 B	2500 B	5480 B
Selenium	40	4.89 B	2.70 U	2.70 U	2.70 U	2.70 U	2.70 U
Sodium	50000	20900	3070000 E	3110000 E	156000	6790	26000
Vanadium	NLE	0.500 U	95.3	17.6	56.9	68.8	3.07
Zinc	2000	23.6	62.7	20.0	171	145	1580

¹ Higher of Practical Quantitation Limits (PQLs) & Groundwater Quality Criterion (GWQC) per NJAC 7:9-6, 2005 (* Interim GWQC).

DUP = Duplicate Sample.

ft. bgs = Feet below ground surface.

Bold = Analyte was detected.

Shaded = Concentration exceeds Quality Criteria.

µg/L = micrograms per liter.

NLE = No limit established.

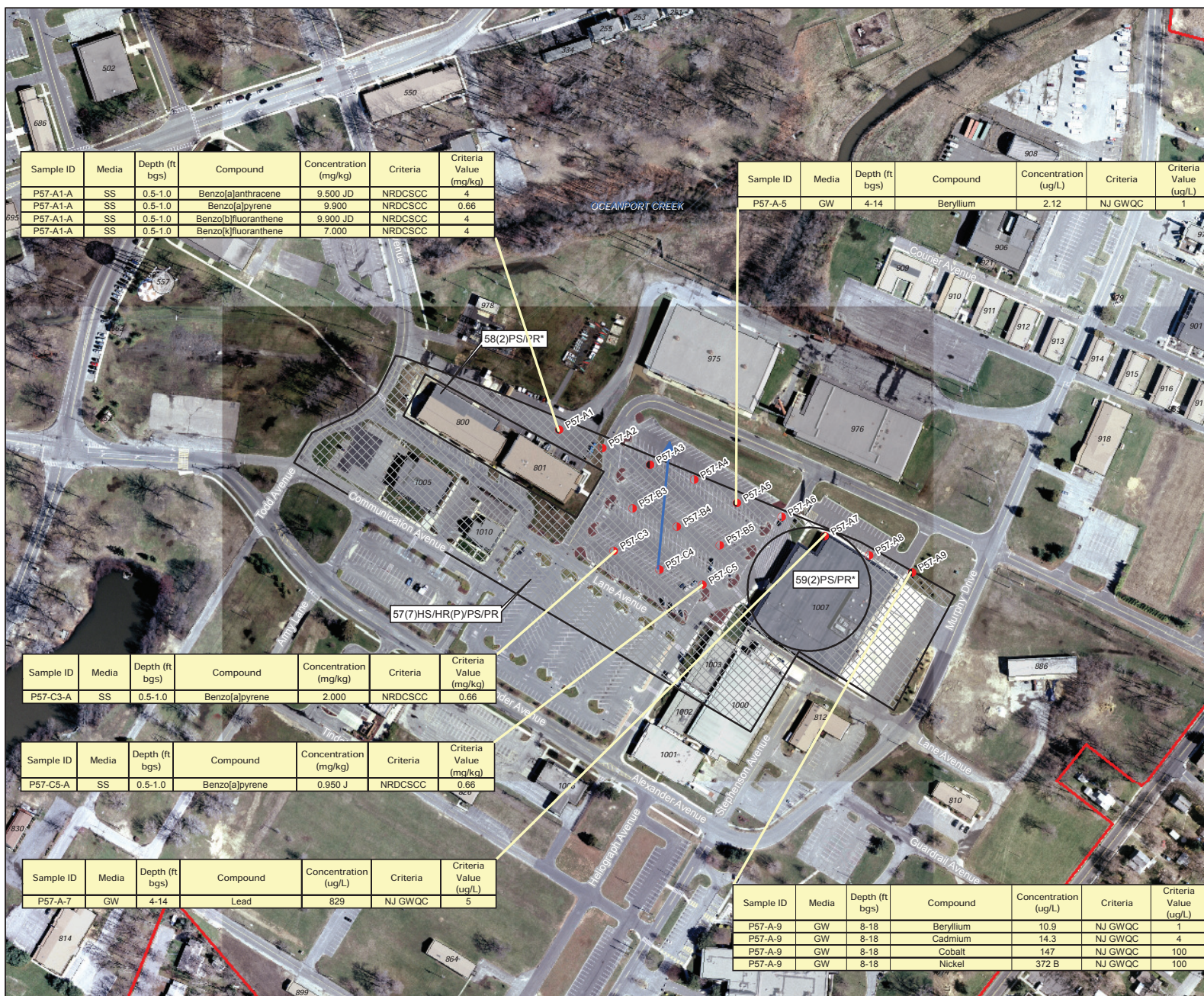
B = The compound was found in the associated method blank as well as in the sample.

D = Sample was diluted.

E = The compound's concentration exceeds the calibration range of the instrument for that specific analysis.

J = Mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.

U = The compound was analyzed for but not detected.



LEGEND

- Geoprobe Soil Sample Location
- Geoprobe Soil & Groundwater Sample Location
- Generalized Groundwater Flow Direction. Direction of Generalized Groundwater Flow derived from qualitative evaluation of surface topography, surface water features, and pre-existing IRP site groundwater potentiometric maps where available.
- Building
- Installation Boundary

ECP PARCEL CATEGORY DEFINITIONS

- Areas that are not evaluated or require additional evaluation.

* Parcel not included in Site Investigation. Information pertaining to parcels not included in this Site Investigation is presented in the Fort Monmouth Phase I ECP Report (January 2007).

BRAC PARCEL LABEL DEFINITIONS

- CONTAMINATION DESCRIPTION
 - HS - Hazardous Substance Storage
 - HR - Hazardous Substance Release
 - PS - Petroleum Storage
 - PR - Petroleum Release
 - (P) - Possible Release or Disposal
- CATEGORY NUMBER
- PARCEL NUMBER



SCALE:

0 100 200 400 Feet



Base Realignment and Closure 2005



Shaw Environmental, Inc.

FIGURE 3.14-1

FORT MONMOUTH ECP
SITE INVESTIGATION

PARCEL 57 SAMPLE LOCATIONS
AND CONSTITUENTS OF CONCERN

MAIN POST
FORT MONMOUTH
NEW JERSEY

Parcel 57 1962 Figure



E-NJ-03

TS-PIC-85X

43



Installation Assessment Relook Program Working Document

**FORT MONMOUTH COMPLEX
LONG BRANCH, NEW JERSEY
85X-11 SEPTEMBER 1985**

**EPIC File Copy
Do Not Remove**

**prepared for
U.S. Army Toxic and Hazardous
Materials Agency
Under Interagency Agreement
No. RW-21930148-01-8**



FIGURE 3

FORT MONMOUTH
MAIN POST

Fort Monmouth, BRAC 05 Facility
Contract Number W912DY-09-D-0062, Task Order 0012

SEPTEMBER 19, 1947

C-30

APPROX SCALE 1"=15,000'

July 2018

MAIN POST

July 2018



FIGURE 8

FORT MONMOUTH
MAIN POST

Fort Monmouth, BRAC 05 Facility
Contract Number W912DY-09-D-0062, Task Order 0012

MARCH 13, 1974

APPROX SCALE 1:11,000
July 2018

ATTACHMENT B



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: Fort Monmouth, NJ
Parcel 65 Carve Out Property Category Determination
PI G000000032

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.

Name/Title: William R. Colvin
BRAC Environmental Coordinator

8 August 2019

Date

Completed form and document 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



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

8 August 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: Fort Monmouth, NJ
Parcel 65 Carve Out Property Category Determination
PI G000000032

Dear Mr. Joshi:

The Army is in the process of preparing the required documentation to support the transfer of a portion of Fort Monmouth Main Post (various Carve Outs known as Group 3 Carve Outs). The areas being readied for transfer are former "carve outs" from the Phase 2 transfer. As part of that process, the Army has determined, based on further investigations, and evaluation, that re-categorization of the Environmental Condition of Property (ECP) for a part of Parcel 65 (Building 886 Area) is necessary¹. Pursuant to 42 U.S.C. § 9620(h)(4)(B)², the Army has prepared this letter to provide the New Jersey Department of Environmental Protection (NJDEP) with a request for concurrence on the determination that a portion of Parcel 65, previously categorized as Category 2, should now be categorized as Category 1.

Attachment 1, Figure 1 shows the area of the proposed change in category for the former carve out at a portion of Parcel 65. Parcel 65 was created as part of the Environmental Condition of Property (ECP), Fort Monmouth, New Jersey, January 29, 2007 to address the area covered by the petroleum release at Building 886 and surrounding area. The remediation of the petroleum release is still being addressed as Installation Restoration Program (IRP) site FTMM-66. However a part of the Carve Out at Parcel 65 was not impacted by the petroleum release and as such should be considered clean property and categorized as a Category 1 property. Figure 1 attached shows the Carve Out at Parcel 65 along with historical data from the FTMM-66 site

¹ The Army has an obligation under 42 U.S.C. § 9620(h)(4)(A) to "identify real property on which no hazardous substances and no petroleum products or their derivatives were known to have been released or disposed of." The Army's determination is based on an investigation of the real property to determine or discover the obviousness of a release including, a review of federal government records, recorded chain of title documents and aerial photographs and reasonably obtainable federal, state and local government records of each adjacent facility where there has been a release; a visual inspection of the real property; a physical inspection of adjacent property; and interviews with current and former employees involved in operations on the real property. See 42 U.S.C. § 9620(h)(4)(A).

² 42 U.S.C. § 9620(h)(4)(B) states that the Army's identification "is not complete until concurrence in the results of the identification is obtained . . . , in the case of real property that is not part of a facility on the National Priorities List, from the appropriate State official."

report (specifically the IRP Site FTMM-66 (Building 886 Area) Supplement to Summary Remedial Investigation Report, Request for Unrestricted Use, No further Action Approval, Fort Monmouth, Monmouth County, Oceanport New Jersey dated March 20, 2018). Figure 1 shows that the FTMM-66 site has been delineated and most of the site has been cleaned up to meet NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS). The area proposed for re-categorization is outside any impacted area from FTMM-66 and is surrounded by property already transferred. Figure 2 shows the current Environmental Condition of Property (ECP) map with the proposed change to this small piece of property proposed for re-categorization. It should be noted that the portion of the Parcel 65 Carve Out is recommended to be changed to Category 1 as no release was associated with this area.

According to the above referenced documentation, in order to support the property transfer the Army is proposing to change the property classifications for the former carve out from a Category 2, "Where only the release or disposal of petroleum products or their derivatives has occurred" to a Category 1, "Areas in which no release or disposal of hazardous substances or petroleum products have occurred (including no migration of such substances from adjacent areas) and a visual inspection indicates that both the land and the buildings are uncontaminated." The Army requests NJDEP's concurrence on the proposed change to Category 1 designation for Parcel 105.

Should you require additional information or have any questions please contact me at 732-383-5104.

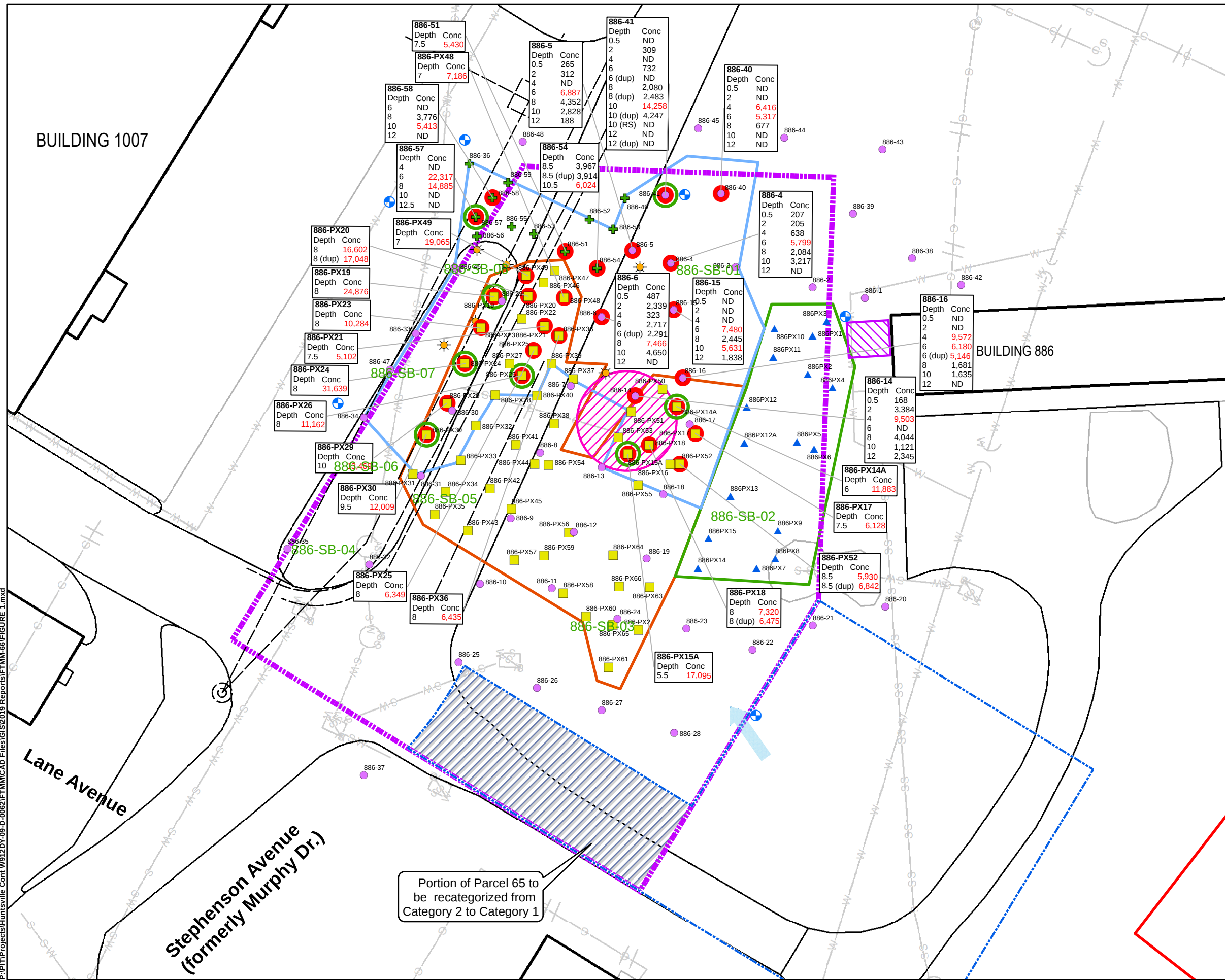
Sincerely,



William R. Colvin
BRAC Environmental Coordinator
Fort Monmouth

Cc: James Briggs, BRAC HQ

P:\PTT\Projects\Huntsville Cont W912\DY-09-D-0062\FTMMCAD Files\GIS\2019 Reports\FTMM-66\FIGURE 1.mxd

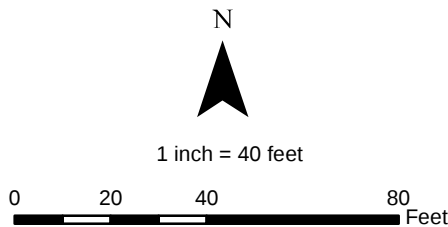


LEGEND:

- ▲ Phase 1 Post-Excav
- Phase 1 RI Soil Boring (March - June 2002)
- ✚ Phase 2 RI Soil Boring (November 2002)
- Phase 2 Post-Excavation Soil Sample (November 2002 - February 2003)
- ⊕ Shallow Monitoring Well
- ☀ Recovery Well
- Sample Location with TPH > 5,100 mg/Kg
- ▨ Former Aboveground Storage
- ▨ Former Underground Storage Tank
- ▭ Extent of Soil TPH > 5,100 mg/kg
- ▭ FTMM-66 Phase 1 Excavation
- ▭ FTMM-66 Phase 2 Excavation
- ▭ Parcel 65
- ▭ Cell Tower
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- ➡ Estimated Groundwater Flow Direction
- Subsurface Electric Utility Lines
- 2017 Soil Sample Location

NOTES:
(1) Concentrations are in milligrams per kilogram (mg/kg) and depths are in feet below ground surface.
(2) All TPH concentrations shown were left in place following Phase 2 Excavation in 2002-2003.

ND Not Detected
(dup) Field Duplicate Sample
(RS) Resampled at a Later Date



Source: FTMM Supplied CAD, 2013.

PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

FTMM-66 SITE LAYOUT AND SAMPLE LOCATIONS

CREATED BY: RR	REVIEWED BY: CL
DATE: AUG. 2019	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06020	FILE: FIGURE 1.mxd

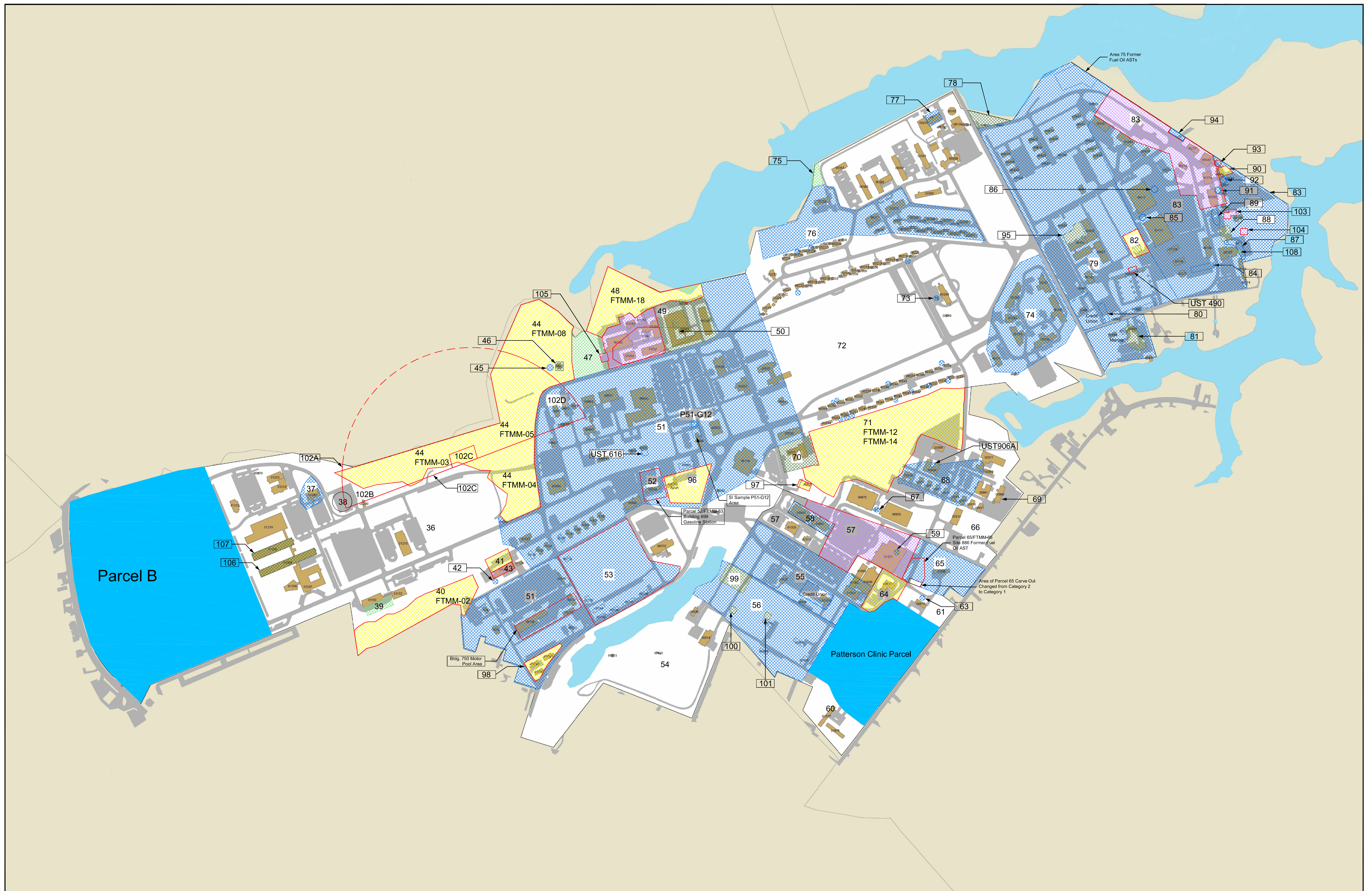


Figure 2
Fort Monmouth
ECP Property Category Map
Main Post

FILE: P:\PROJECTS\VAULTS\VAULTS\CONF\W01201-01-0-0062\VTMM\CAO FILES\DEV\VTMM MAP REQUESTS\VARIOUS SOURCE FILES FROM FTMM GOVERNMENT SERVER\FIGURE 2 REV 20-MAR-2019.DWG, DATE: 08/06/2019 12:30:37PM, P018397