



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: "Request for NFA Determination GW at FTMM-25"

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: BRAC Environmental Coordinator

Phone Number: (732) 380-7064 Ext: _____ Fax: _____

Mailing Address: P.O. Box 148

City/Town: Oceanport State: NJ Zip Code: 07757

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

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

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

Signature: *William R. Colvin* Date: 12/22/2016

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



DEPARTMENT OF THE ARMY

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

December 22, 2016

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

**SUBJECT: Request for No Further Action Determination for Groundwater at FTMM-25
Fort Monmouth, Oceanport, Monmouth County.
PI # G000000032**

Attachments:

- A. Previous Correspondence (see list below)
- B. Charles Wood Area Layout and Layout of FTMM-25

Previous Correspondence (provided in Attachment A)

- 1. NJDEP letter to U.S. Army dated February 5, 2015, re: Approval November 26, 2014 Response to Comments on the Final Baseline Groundwater Sampling Report (August 2013)
- 2. NJDEP letter to U.S. Army dated July 3, 2014, re: Final Baseline Groundwater Sampling Report (August 2013)
- 3. Tables 2 and 3 Historical Groundwater Data and August 2013 Groundwater Data from August 2013 Baseline Groundwater Sampling Report

Dear Ms. Range:

The Army is formally requesting a No Further Action (NFA) determination by the New Jersey Department of Environmental Protection (NJDEP) for groundwater at FTMM-25. This request is based on the groundwater data results presented in the Final August 2013 Baseline Groundwater Sampling Report (2013 Baseline Report) which was submitted to the NJDEP in March 2014. The NJDEP agreed with the report's recommendations to discontinue groundwater sampling at FTMM-25 in their February 5, 2015 approval letter (**Attachment A**). The following is a brief summary of the information provided in the Baseline Report that supports a NFA determination for groundwater at FTMM-25.

Background

FTMM-25 is an approximately 1.5-acre landfill located in the southwest corner of the Charles Wood Area (**Attachment B**) that was used as a disposal area for building demolition debris in 1955 and 1966.

A long-term groundwater monitoring program began in June 1997 using a network of four monitoring wells. Groundwater sampling was conducted quarterly from December 1997 through July 2011. Groundwater samples collected from December 1997 to October 2004 were analyzed for Target analyte list (TAL) metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and PCBs. From January 2005 to July 2011 samples were analyzed only for TAL metals since the NJDEP agreed (November 12, 2004 email) to reduce the sampling program and discontinue the analysis of VOCs, SVOC, pesticides and PCB since concentrations were below the NJDEP Groundwater Quality Standards (GWQS).

In August 2013, groundwater sampling was conducted at FTMM-25 to re-establish baseline groundwater conditions following temporary suspension of groundwater sampling in late 2011. Groundwater samples were collected from four monitoring wells using low flow purging and sampling (LFPS) methodology and analyzed for VOCs, pesticides, and TAL metals. The results of the August 2013 baseline sampling and historical data (January 2008 through July 2011) were provided in the 2013 Baseline Report.

Groundwater Chemistry

Groundwater data results from January 2008 through July 2011 and the August 2013 sampling event are presented in the tables provided in **Attachment A**.

VOCs and pesticides were not detected above their respective NJDEP GWQS in the groundwater samples collected during the 2013 sampling event.

Metals detected in the most recent eight quarters (October 2009 through July 2011) and the 2013 August sampling event were below the background concentrations for the Charles Wood Area established by Weston (1995). Aluminum, antimony, arsenic, iron, manganese, lead, thallium, and sodium were detected in exceedance of their respective NJDEP GWQS. However, only arsenic, sodium and manganese were detected above their background concentrations. The metal concentrations detected in the groundwater are attributed to background conditions and not indicative of historical site use. The NJDEP stated that the metals were attributed to background conditions in their July 3, 2014 comment letter (**Attachment A**).

Summary

The collective groundwater results continue to demonstrate that VOCs and pesticides concentrations are below their respective NJDEP GWQS and although several metals continue to be detected above their respective NJDEP GWQS, those compounds are attributed to background conditions and not indicative of historical site use. Based on the groundwater chemistry and the

Linda S. Range, NJDEP
Request for No Further Action Determination for Groundwater at FTMM-25
December 22, 2016
Page 3 of 3

NJDEP approval to discontinue sampling at FTMM-25 in 2014, the Army requests NJDEP concurrence that a NFA determination for groundwater is warranted for FTMM-25.

The technical point of contact for this matter is Cris Grill who can be reached at 617-449-1583 or email at cris.grill@parsons.com. Should you have any questions or require additional information, please contact me at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,



William R. Colvin, PMP, CHMM, PG
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth

cc: Linda Range, NJDEP (e-mail and 3 hard copies)
Delight Balducci, HQDA ACSIM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

Attachment A

**NJDEP letter to U.S. Army dated February 5, 2015, *re: Approval November 26, 2014*
Response to Comments on the Final Baseline Groundwater Sampling Report (August 2013)
Table 2 and Table 3 of Final Baseline Groundwater Sampling Report (August 2013)**



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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CHRIS CHRISTIE
Governor

KIM GUADAGNO
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BOB MARTIN
Commissioner

February 5, 2015

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

Approval

Re: *November 26, 2014 Response to Comments –on the Final Baseline Ground Water Sampling Report (August 2013)*
Fort Monmouth
Monmouth County
PI # G000000032
Activity Number: RPC000001

Dear Ms. Green:

The New Jersey Department of Environmental Protection (Department) has completed a review of the referenced Response to Comments dated November 26, 2014, submitted in response to the Department's comment letter dated July 3, 2014 regarding the Final Baseline Ground Water Sampling Report.

The *Response to Comments* agrees with or acknowledges the Department's comments for areas FTMM-03, FTMM-04, FTMM-05, FTMM-08, FTMM-12, FTMM-14, FTMM-22, FTMM-25, FTMM-53, FTMM-54, FTMM-55, FTMM-56, FTMM-57, FTMM-58, FTMM-59, FTMM-61, FTMM-64, and FTMM-66.

FTMM-18

The Department had indicated low-flow sampling must also be performed if Passive Diffusion Bag Sampling (PDBS) is conducted, for comparison purposes. The *Response to Comments* submittal contends as low-flow sampling has been historically conducted at this area, PDBS sampling only is appropriate. Based upon this reasoning, the Department agrees the performance via PDBS only is acceptable for the ensuing round of ground water sampling. The PDBS results are to be compared to the previous low-flow sampling results and presented in the forthcoming sampling report.

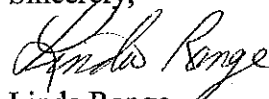
FTMM-68

The Department had expressed concern regarding the use of PDBS for long-term monitoring. FTMM-68 has not been fully characterized, and the use of PDBS for longer term monitoring is acceptable only for well characterized sites, as per the DEP's Field Sampling Procedures

Manual. As per information provided in the *Response to Comments* submittal, a Remedial Investigation to fully characterize the area is to be conducted in the near future using low-flow sampling methodology, and request approval for the use of PDBS to characterize contaminant concentrations in the interim. This is acceptable based on the stipulation that a full remedial investigation is to be performed. The November '14 *Response to Comments* (Section V), however, indicated the Remedial Investigation Workplan for FTMM-68 was awaiting DEP approval. Although some clarification was requested, the proposed remedial activities, soil and ground water, were approved for the FTMM-68 area via letter dated *January 8, 2014*, which addressed the RI/FS Workplan for FTMM-22, FTMM-53, FTMM-59 & FTMM-68.

If you have any questions, please contact me at (609)984-6606, or via email at Linda.Range@dep.nj.gov.

Sincerely,



Linda Range
Bureau of Case Management

cc: Joe Pearson, Calibre
Rick Harrison, FMERA
Joe Fallon, FMERA
Frank Barricelli, RAB



State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
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BOB MARTIN
Commissioner

July 3, 2014

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

Re: Final Baseline Groundwater Sampling Report (August 2013)
Remedial Investigation/Feasibility Study/Decision Documents
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Ms. Green:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, dated March 2014, received on April 7, 2014. The report was prepared by Parsons Government Services Inc. (Parsons), in support of the Remedial Investigation (RI), Feasibility Study (FS), and Decision Documents project at Fort Monmouth.

A baseline ground water sampling event was conducted at 21 "sites" at the Fort Monmouth property in August 2013. The purpose of the sampling event was to re-establish baseline conditions following suspension of ground water sampling in late 2011, as well as to evaluate Fort Monmouth's long-term ground water sampling program, and the current analytical conditions of the ground water at each site. Sampling methodologies used included low-flow and passive diffusion bag samplers (PDBS). At four sites (FTMM-14, 18, 59, 68), only PDBS sampling was conducted. At three sites (FTMM-05, 22, 58) both low-flow and PDBS samples were obtained for comparison purposes. Fourteen (14) sites were only sampled using low-flow. The report states that PDBS concentrations were consistently biased somewhat low compared to the low-flow concentrations. The report concludes, however, that the PDBS results were still similar to the low-flow results and are considered representative of ground water conditions at the sites. Based on this conclusion, the report states that for future ground water sampling, PDBS will be used for all sites where volatile organic compounds (VOCs) are the sole contaminants of concern. Comments are presented below.

Section 3.1; Table 6; Appendices & associated Tables - *The "background concentrations" submitted in the 1995 Weston report were not accepted by the Department as representative of background conditions for Fort Monmouth. The study was not performed in accordance with Departmental protocol and is not a consideration in our evaluations/determinations. As indicated in Section 3.1, background concentrations are evaluated on a site by site basis.*

FTMM-02 Landfill

Historic sampling at this parcel indicated levels of VOCs above the Ground Water Quality Standard (GWQS); metals were previously determined to be reflective of naturally occurring conditions. The August 2013 sampling of wells using low-flow confirmed the continued exceedance of the GWQS for VOCs. The report recommends VOC sampling of wells M2MW03, M2MW11, M2MW21, M2MW22 and M2MW24 for two additional rounds using PDBS. Well M2MW10 will be monitored as a downgradient sentinel well. Although the proposal is acceptable, for wells in which the saturated screen length exceeds 10 feet, the deployment of multiple PDBS will be required. At any point where a decision is made to terminate ground water sampling at this site, confirmatory sampling using low-flow due to PDBS biasing low as compared to low-flow results at the Fort Monmouth site will be required.

FTMM-03 Landfill

Historic sampling at this parcel revealed GWQS exceedances of vinyl chloride and metals. The August 2013 sampling of wells using low-flow confirmed the continued exceedance of the GWQS for vinyl chloride in well 3MW07. Well 3MW02 was not sampled due to low water column and silty conditions, however, Table 4 of Appendix B recommends sampling of 3MW02 for VOCs and metals. The report attributes the presence of vinyl chloride to leaching of PVC piping from well 3MW07. A temporary well point investigation was conducted in 2009 to delineate the vinyl chloride, the results were non-detect, and abandonment of 3MW07 is recommended. The recommendations are acceptable. However, a figure presenting the locations and sampling results from the 2009 temporary well point investigation must be provided to the Department.

FTMM-04 Landfill

Historic sampling at this parcel revealed GWQS exceedances of various metals. The August 2013 sampling of wells using low-flow confirmed the continued exceedance of the GWQS for metals. The metals are attributed to background conditions, and cessation of ground water sampling is recommended. The recommendation is acceptable. Monitoring wells at this parcel shall be properly abandoned if they are no longer subject to sampling or gaging for water elevation data.

FTMM-05 Landfill

Historic sampling at this parcel revealed GWQS exceedances of PCE, TCE and vinyl chloride, which the August 2013 sampling, using low-flow and PDBS, confirmed. The report recommends annual VOC sampling of wells M5MW11, M5MW16, M5MW20 and M5MW23 using PDBS. The Department finds the proposal to be acceptable. At any point where a decision is made to terminate ground water sampling at this parcel, the Department will require confirmatory sampling using low-flow due to PDBS results at this parcel biased low compared to the low-flow results.

FTMM-08 Landfill

Historic sampling at this parcel revealed GWQS exceedances of pesticides, benzene, PCE and lead. The August 2013 sampling of wells using low-flow confirmed the exceedance of the GWQS for PCE and lead. The well with historic pesticide exceedances (697MW01) could not be located and was not sampled. The report recommends annual ground water sampling of well M8MW11 for VOCs and lead, M8MW12, 15, 16 and 24 for VOCs and M8MW17 and 21 for lead only. Monitoring well 697MW01 will be located and sampled for pesticides, lead and VOCs. The recommendation is acceptable.

FTMM-12 Landfill

Historic sampling at this parcel revealed GWQS exceedances of various metals, including arsenic and lead. Historic exceedances of metals except for lead are attributed to background quality. The August 2013 sampling was conducted for lead analysis only. Lead was not detected. The report recommends discontinuing ground water sampling at this parcel. The Department finds the recommendation to be acceptable. Monitoring wells at this parcel shall be properly abandoned if they are no longer subject to sampling or gaging for water elevation data.

FTMM-14 Landfill

Historic sampling at this parcel revealed no GWQS exceedances of VOCs. The August 2013 sampling of wells using PDBS confirmed that there was no exceedance of the GWQS. The report recommends discontinuing ground water sampling at this parcel. The Department finds the recommendation to be acceptable. Monitoring wells at this parcel shall be properly abandoned if they are no longer subject to sampling or gaging for water elevation data. The Department also notes that on Table 1, well M14MW19 is listed as having 10 feet of total screen length. However, the table also lists the saturated screen length as 13.35 feet. This discrepancy should be clarified.

FTMM-18 Landfill

Historic sampling at this parcel revealed GWQS exceedances of benzene and 1,2-DCA. The August 2013 sampling results of wells using PDBS showed the exceedance of the GWQS for 1,2-DCA in well M18MW22. Well M18MW23 could not be located and was not sampled. The report recommends annual ground water sampling using PDBS for M18MW22 and M18MW23 if it can be located. Every reasonable effort, such as reviewing the NJ State Plane Coordinates of the well, must be made to locate M18MW23. The use of M18MW22 as the sole monitoring well at this parcel will not be acceptable due to the vast difference in historical concentrations between M18MW22 and M18MW23. Historic 2011 benzene concentrations for M18MW23 were 775 ppb and 664 ppb while 2011 concentrations for M18MW22 were 1.81 ppb and 1.65 ppb. The Department cannot approve the use of PDBS sampling only for this parcel. Once M18MW23 is located, the Department can approve the use of both PDBS and low-flow sampling for comparison purposes.

FTMM-22 Former Wastewater Treatment Lime Pit

Historic sampling at this parcel revealed GWQS exceedances of TCE. The August 2013 sampling of wells using low-flow and PDBS confirmed the continued exceedance of the GWQS for TCE in ground water. The report recommends quarterly VOC sampling of wells CW1MW27, CW1MW29, CW1MW31 and CW1MW281 using PDBS. The Department finds the proposal to be acceptable. At any point where a decision is made to terminate ground water sampling at this parcel, the Department will require confirmatory sampling using low-flow due to PDBS results biasing low compared to low-flow results at the Fort Monmouth site.

FTMM-25 Landfill

Historic sampling at this parcel revealed GWQS exceedances of various metals. The August 2013 sampling of wells using low-flow confirmed the continued exceedance of the GWQS for metals. The metals are attributed to background conditions. The report recommends discontinuing ground water sampling at this parcel. The Department finds the recommendation to be acceptable. Monitoring wells at this parcel shall be properly abandoned if they are no longer subject to sampling or gaging for water elevation data.

FTMM-53 Building 699

Historic sampling at this parcel revealed GWQS exceedances of benzene, PCE, TCE, TBA, VOC TICs and lead. The August 2013 sampling of wells using low-flow showed the exceedance of the GWQS for benzene, xylenes, PCE, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene and VOC TICs. The report recommends quarterly VOC sampling of wells 699MW01, 699MW04, 699MW06, 699MW09, 699MW16, 699RW03, 699RW05 and 699RW11 using PDBS. The Department finds the proposal to be acceptable. For wells in which the saturated screen length exceeds 10 feet, the deployment of multiple PDBS will be required. At any point where a

decision is made to terminate ground water sampling at this parcel, the Department will require confirmatory sampling using low-flow due to PDBS biasing low compared to low-flow at the Fort Monmouth site.

FTMM-54 Building 296

Historic sampling at this parcel revealed GWQS exceedances of benzene, lead and arsenic. The metals are attributed to background conditions. The August 2013 sampling of wells using low-flow showed an exceedance of the GWQS for benzene. The report recommends annual VOC sampling of wells 269MW04 and 296MW06 using PDBS. The Department finds the proposal to be acceptable. For wells in which the saturated screen length exceeds 10 feet, the deployment of multiple PDBS will be required. At any point where a decision is made to terminate ground water sampling at this parcel, the Department will require confirmatory sampling using low-flow due to PDBS biasing low compared to low-flow at the Fort Monmouth site.

FTMM-55 Building 290

Historic sampling at this parcel revealed GWQS exceedances of arsenic and lead. The August 2013 sampling of wells using low-flow confirmed the continued exceedance of the GWQS for lead. The metals are attributed to background conditions. The report recommends discontinuing ground water sampling at this parcel. The Department finds the recommendation to be acceptable. Monitoring wells at this parcel shall be properly abandoned if they are no longer subject to sampling or gaging for water elevation data.

FTMM-56 Building 80

Historic sampling at this parcel revealed GWQS exceedances of chlordane, arsenic, lead and cadmium. The August 2013 sampling of wells was conducted for lead only using low-flow. There were no exceedances of lead. The report recommends one additional sampling round of well 80MW02 for chlordane and 80MW05 for lead. The Department finds the recommendation for well 80MW02 to be acceptable. The Department disagrees with the recommendation to sample well 80MW05 for lead only. The last low-flow sampling event in August 2011 had lead, arsenic and cadmium exceeding both the GWQS and background concentrations. Well 80MW05 shall be sampled during the next round for TAL metals.

FTMM-57 Building 108

Historic sampling at this parcel revealed GWQS exceedances of lead. In the August 2013 sampling event, there were no exceedances of lead in ground water. The report recommends two additional sampling rounds of well 108MW04 for lead. The Department finds the recommendation acceptable.

FTMM-58 Building 2567

Historic sampling at this parcel revealed GWQS exceedances of TBA in wells 2567MW01 and 2567MW03. The August 2013 sampling results using low-flow and PDBS were below the GWQS for TBA. The report recommends two annual sampling events for TBA analyses of wells 2567MW01 and 2567MW03 using low-flow. The Department finds the proposal to be acceptable.

FTMM-59 Building 1122

Historic sampling at this parcel revealed no GWQS exceedances for VOCs. The August 2013 sampling results of wells using PDBS showed no exceedance of VOCs. The text of the report recommends VOC sampling of well 1122MW07 for one additional sampling round to confirm the 2013 results because August 2013 was the first time this well was sampled. The Department finds the proposal to be acceptable. The Department also notes that there is a discrepancy between the recommendation in the text and the recommendation in Table 7. Table 7 recommends that sampling at this parcel be discontinued. Table 7 shall be amended to indicate well 1122MW07 will be sampled for VOCs using PDBS methodology.

FTMM-61 Building 283

Historic sampling at this parcel revealed GWQS exceedances of metals, benzene and VOC TICs in 283MW02. The August 2013 sampling of wells using low-flow for VOCs and lead showed no exceedances. The report recommends VOC sampling of well 283MW02 for one additional sampling round using PDBS methodology to confirm the 2013 results. The Department finds the proposal to be conditionally acceptable. If the saturated screen length exceeds 10 feet, the deployment of multiple PDBS will be required. If a decision is made to terminate ground water sampling at this parcel based on PDBS results, the Department will require confirmatory sampling using low-flow due to PDBS biasing low compared to low-flow at the Fort Monmouth site.

FTMM-64 Building 812

Historic sampling at this parcel revealed GWQS exceedances of benzene, vinyl chloride and metals. The August 2013 sampling of wells using low-flow for VOCs and lead showed no exceedances. The report recommends VOC sampling of well 812MW04 for one additional sampling round using PDBS methodology to confirm the 2013 results (however Section 5.0 recommends sampling be continued on an annual basis). The Department finds the proposal to be conditionally acceptable. If the saturated screen length exceeds 10 feet, the deployment of multiple PDBS will be required. If a decision is made to terminate ground water sampling at this

parcel based on PDBS results, the Department will require confirmatory sampling using low-flow due to PDBS biasing low compared to low-flow at the Fort Monmouth site.

FTMM-66 Building 886

Historic sampling at this parcel revealed GWQS exceedances of benzene, VOC TICs, arsenic and lead. The August 2013 sampling results from wells using low-flow showed the exceedance of the GWQS for SVOC TICs. The report recommends that sampling at this parcel be discontinued. The Department finds the recommendation unacceptable. Total SVOC TICs exceeded the GWQS of 500 ppb in wells 886RW01 and 886RW06. Ground water monitoring of wells 886RW01, 886RW06 and 886RW08 shall continue for SVOC+TICs using low-flow methodology.

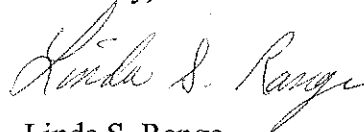
FTMM-68 Building 700

There are no historic sampling results for this parcel. The August 2013 sampling results of wells using PDBS showed the exceedance of the GWQS for PCE, TCE, cis-1,2-DCE and vinyl chloride in wells 565MW01 and 565MW01D. The report recommends quarterly ground water sampling for VOC+TICs using PDBS for these 2 wells. The Department agrees with the recommendation of quarterly sampling, however, has concerns regarding the use of PDBS for long-term monitoring at this parcel. Unlike the other Fort Monmouth parcels, there are no historical ground water sampling data for comparison with the PDBS results. The DEP's Field Sampling Procedures Manual states that "the intended application of Passive Diffusion Bag Samplers (PDBS) is for long-term monitoring of volatile organic compounds (VOCs) in ground water at well-characterized sites." The Department would find long-term sampling of the wells using PDBS acceptable if low-flow sampling is conducted concurrently once or twice for comparison.

Finally, each of the above comments speak only to the ground water findings and recommendations included in the referenced submittal, rather than to the ground water at the entire site.

Please contact this office if you have any questions.

Sincerely,



Linda S. Range

C: Joe Pearson, Calibre
Rick Harrison, FMERA
Julie Carver, Matrix
Frank Barricelli
Daryl Clark, BGWPA

Table 2
Historical Groundwater Analytical Results
Site FTMM-25
Fort Monmouth, New Jersey

	NJDEP GWQS	USEPA MCL	Weston 1995 Background (Main Post)	CW3AMW01															
Round No.				45	45 Dup	46	46 Dup	47	47 Dup	48	48 Dup	49	50	50 Dup	51	52	53	LF1	
Date Collected				1/9/2008	1/9/2008	4/8/2008	4/8/2008	7/23/2008	7/23/2008	10/15/2008	10/15/2008	2/17/2009	4/22/2009	4/22/2009	7/22/2009	10/7/2009	1/5/2010	4/7/2010	
ANALYTE/Lab ID				80011.03	80011.02	80116.03	80116.02	80249.03	80249.02	80366.03	80366.02	90055.03	90164.03	90164.02	90306.03	90407.03	10004.03	10129.04	
Metals (µg/L)																			
Aluminum	200	NLE	121000	ND	ND	ND	ND	ND	ND	268	396	ND	ND	ND	54.1	ER	ND	ND	
Antimony	6	6	20.70	ND	ND	ND	ND	ND	ND	ND	ND	7.12	ER	13.4	8.08	ER	ND	4.94	
Arsenic	3	10	89.30	ND	ND	ND	ND	ND	ND	ND	2.42	ER	35.7	49.3	40.6	28.3	ND	2	
Barium	6000	2000	699.00	1.36	ER	1.24	ER	ND	ND	31.3	24.5	26.2	26.4	2.61	ER	13.6	14.4	83.5	
Beryllium	1	4	2.10	0.177	ER	0.184	ER	ND	ND	0.108	ER	ND	0.217	ER	0.248	ER	ND	ND	
Cadmium	4	5	9.50	0.202	ER	ND	ND	ND	ND	1.14	ER	0.495	ER	0.676	ER	0.713	ER	0.221	
Calcium	NLE	NLE	45400.00	3550	3170	12800	13200	55100	48100	29100	29500	15500	38000	37200	66500	59000	11700	15500	
Chromium	70	100	191.00	3.91	ER	69.7	ND	ND	ND	1.02	ER	0.985	ER	4.09	ER	5.25	0.814	ER	
Cobalt	NLE	NLE	18.30	ND	0.662	ER	ND	ND	ND	0.272	ER	ND	3.88	3.73	ND	ND	ND	3.05	
Copper	1300	1300	65.60	ND	12.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.84	ER	
Iron	300	NLE	431000	ND	410	ER	ND	ND	ND	ND	ND	8960	6530	ND	60.8	ER	204	ER	
Lead	5	15	22.70	ND	ND	ND	ND	ND	ND	1.62	ER	4.03	ER	8.83	ND	2.13	ER	ND	
Magnesium	NLE	NLE	62700	817	723	ER	3690	3800	14000	12600	7590	7640	4060	9970	9710	17100	14600	3250	
Manganese	50	NLE	331	ND	2.85	ER	ND	ND	ND	20	11.1	153	121	2.13	ER	8.09	9.94	100	
Mercury	2	2	0.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Nickel	100	NLE	187	4.71	ER	33.4	ND	ND	ND	ND	ND	0.718	ER	1.1	ER	ND	0.676	ER	
Potassium	NLE	NLE	137000	1130	1010	776	751	ER	5700	5150	5100	4840	1370	1400	1460	5330	5520	1610	
Selenium	40	50	29.60	ND	ND	ND	ND	9.63	ER	ND	ND	ND	46.9	96.6	91.3	47.6	39.3	ND	
Silver	40	NLE	ND	ND	ND	0.878	ER	ND	ND	ND	ND	ND	ND	0.637	ER	ND	ND	2.89	
Sodium	50000	NLE	21500	48900	54500	11800	9800	187000	169000	205000	205000	27400	80000	85300	310000	269000	35200	22300	
Thallium	2	2	5.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Vanadium	NLE	NLE	108	5.51	5.08	1.88	ER	1.72	ER	5.02	3.38	ER	21.5	35.3	2.11	ER	1.97	ER	
Zinc	2000	NLE	233	ND	ND	ND	ND	ND	ND	6	ER	6.16	ER	ND	ND	ND	11.2	ER	

Notes:
Shaded cells= concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs and SVOCs. No individual compound can exceed 100 µg/L.

NJDEP GWQS = Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010)

USEPA MCL = U.S.Environmental Protection Agency Maximum Contaminant Level (2012)

For the July 2010 sampling event, metal analytical results were not available for: Ca, Co, Fe, Mg, Mn, K, Ag, Na, V, and Zn.

LF = Low flow sampling method used to collect sample

< = Analyte does not exceed the detection limit shown

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

NA = Not analyzed

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dup = duplicate

Table 2
Historical Groundwater Analytical Results
Site FTMM-25
Fort Monmouth, New Jersey

	NJDEP GWQS	USEPA MCL	Weston 1995 Background (Main Post)							CW3AMW02																								
Round No.				LF2	LF3	LF4	LF5	LF6	45	46	47	48	49	50	51	52	53	LF1	LF2															
Date Collected				7/26/2010	10/19/2010	3/4/2011	4/12/2011	7/6/2011	1/9/2008	4/8/2008	7/23/2008	10/15/2008	2/17/2009	4/22/2009	7/22/2009	10/7/2009	1/5/2010	4/7/2010	7/26/2010															
ANALYTE/Lab ID				10320.04	1044804	1108601	1114304	1128204	80011.04	80116.04	80249.04	80366.04	90055.04	90164.04	90306.04	90407.04	10004.04	10129.06	10320.06															
Metals (µg/L)																																		
Aluminum	200	NLE	121000			44.9	ER	<200	<200	<200	74.3	ER	ND		ND		369		ND		ND		67.8	ER	111		ND		ND		ND			
Antimony	6	6	20.70	9.51	ER	<4.70		<6.0	<6.0	<6.0	ND		ND		ND		3.83	ER	18.7		1.22	ER	8.06	ER	ND		ND		ND		5.38	ER	12.6	
Arsenic	3	10	89.30	1.77	ER	<0.62		<3.0	<3.0	<3.0	ND		9.13		113		32.6		121		62.5		51.3		66.3		2.57	ER	4.6	ER	3.02	ER		
Barium	6000	2000	699.00	146		56.3		<200	<200	<200	760		612		664		861		598		630		489		623		723		324		484			
Beryllium	1	4	2.10	ND		<0.40		<1.0	<1.0	<1.0	0.152	ER	ND		0.135	ER	0.129	ER	ND		ND		ND		ND		ND		ND		ND		ND	
Cadmium	4	5	9.50	1.05	ER	<0.40		<3.0	<3.0	<3.0	0.99	ER	6.29		4.32		ND		ND		5.87		2.04		2.54		ND		ND		3.64			
Calcium	NLE	NLE	45400.00			23100		<5000	<5000	69700	114000		98500		93600		111000		101000		84000		101000		103000		97500		44600					
Chromium	70	100	191.00	2.36	ER	0.737	ER	<10	<10	<10	ND		0.601	ER	0.852	ER	0.531	ER	0.395	ER	1.71	ER	ND		ND		ND		ND		ND		ND	
Cobalt	NLE	NLE	18.30			0.974	ER	<50	<50	<50	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Copper	1300	1300	65.60	ND		<0.80		<10	<10	<10	ND		ND		ND		ND		ND		4.14	ER	1.35	ER	ND		ND		ND		ND		ND	
Iron	300	NLE	431000			97.6		1320	330	629	60500		62000		40500		50900		61000		53700		57400		57700		55400		28100					
Lead	5	15	22.70	2.58	ER	<2.10		<3.0	<3.0	<3.0	ND		4.81	ER	4.99	ER	ND		11		ND		ND		3.41	ER	ND		3.41	ER	3.33	ER		
Magnesium	NLE	NLE	62700			5750		<5000	<5000	17200	12800		12800		12000		12400		12800		10400		12400		12800		12300		5470					
Manganese	50	NLE	331			36		36.9	<15	26.2	795		746		635		714		755		751		721		709		814		328					
Mercury	2	2	0.26	ND		<0.254		<0.20	<0.20	<0.20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Nickel	100	NLE	187	2.91	ER	1.48	ER	<10	<10	<10	2.8	ER	ND		1.18	ER	ND		ND		ND		2.22	ER	0.886	ER	ND		0.887	ER	ND		ND	
Potassium	NLE	NLE	137000			3710		<10000	<10000	<10000	8040		7560		9850		10700		7620		6220		10200		10900		8490		6140					
Selenium	40	50	29.60	NR		<1.36		<10	<10	<10	ND		ND		3.2	ER	ND		44.6		40.2		ND		ND		ND		29.5		NR			
Silver	40	NLE	ND			1.26	ER	<10	<10	<10	ND		9.76		5.64		ND		ND		ND		7.76		ND		ND		ND					
Sodium	50000	NLE	21500			254000		83000	56100	309000	10500		11300		10300		10500		10100		6560		12200		12400		8830		131000					
Thallium	2	2	5.50	ND		<0.53		<2.0	<2.0	<2.0	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vanadium	NLE	NLE	108			1.44	ER	<50	<50	<50	1.16	ER	0.823	ER	0.784	ER	1.51	ER	4.79	ER	3.97	ER	8.06		9.94		ND		3.48	ER				
Zinc	2000	NLE	233			4.75	ER	<20	<20	<20	ND		ND		ND		26.4		13.7	ER	ND		21.8	ER	14.5	ER	ND		2.23	ER				

Notes:
Shaded cells= concentrations exceed the NJDEP GWQS

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NJDEP GWQS = Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010)

USEPA MCL = U.S.Environmental Protection Agency Maximum Contaminant Level (2012)

For the July 2010 sampling event, metal analytical results were not available for: Ca, Co, Fe, Mg, Mn, K, Ag, Na, V, and Zn.

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NA = Not analyzed

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dup = duplicate

Table 2
Historical Groundwater Analytical Results
Site FTMM-25
Fort Monmouth, New Jersey

	NJDEP GWQS	USEPA MCL	Weston 1995 Background (Main Post)					CW3AMW03																								
Round No.				LF3	LF4	LF5	LF6	45	46	47	48	49	50	51	51 Dup	52	52 Dup	53	53 Dup													
Date Collected				10/19/2010	3/4/2011	4/12/2011	7/6/2011	1/9/2008	4/8/2008	7/23/2008	10/15/2008	2/17/2009	4/22/2009	7/22/2009	7/22/2009	10/7/2009	10/7/2009	1/5/2010	1/5/2010													
ANALYTE/Lab ID				1044806	1108602	1114306	1128206	80011.05	80116.05	80249.05	80366.05	90055.05	90164.05	90306.05	90306.02	90407.05	90407.02	10004.05	10004.02													
Metals (µg/L)																																
Aluminum	200	NLE	121000	33.8	ER	<200	<200	<200	ND		ND		ND		10000		176		ND		309		1210		1320		1470		644		1130	
Antimony	6	6	20.70	<4.70		<6.0	<6.0	<6.0	ND		ND		ND		18.7		17.8		17.7		ND		15		ND		6.79	ER	5.85	ER	5.59	ER
Arsenic	3	10	89.30	5.08		<3.0	3.5	123	3.9	ER	ND		ND		ND		92.6		61.4		14.7		21.3		4.82	ER	5.1		1.87	ER	2.82	ER
Barium	6000	2000	699.00	623		559	553	571	144		114		80.8		180		88.4		127		87.7		97.1		97.3		92.3		101		103	
Beryllium	1	4	2.10	<0.40		<1.0	<1.0	<1.0	0.17	ER	ND		0.1	ER	2.04		ND		ND		0.087	ER	0.193	ER	0.182	ER	0.209	ER	ND		ND	
Cadmium	4	5	9.50	0.568		<3.0	<3.0	<3.0	0.239	ER	1.23	ER	0.313	ER	0.697	ER	ND		0.243	ER	0.574	ER	1.95	ER	2.04		1.79	ER	ND		ND	
Calcium	NLE	NLE	45400.00	102000		77200	102000	91000	75700		51000		21200		62600		46700		86500		29000		30500		30500		27300		66100		68100	
Chromium	70	100	191.00	<0.60		<10	<10	<10	0.344	ER	0.857	ER	1.05	ER	92		3.91	ER	1.37	ER	3.09	ER	14.1		13.7		16.4		5.21		10.5	
Cobalt	NLE	NLE	18.30	<0.30		<50	<50	<50	ND		ND		1.62	ER	3.14		0.145	ER	ND		1.48	ER	1.56	ER	1.96	ER	1.95	ER	ND		ND	
Copper	1300	1300	65.60	<0.80		<10	<10	<10	2.76	ER	ND		ND		113		10		ND		6.55		88.3		21.9		35.1		3.36	ER	10.3	
Iron	300	NLE	431000	58000		47200	69100	41200	8710		11900		2140		93000		15900		6550		9570		17300		17200		15900		8540		10800	
Lead	5	15	22.70	<2.10		<3.0	<3.0	<3.0	ND		0.758	ER	ND		11		8.35		ND		ND		9.51		8.99		8.57		ND		4.86	ER
Magnesium	NLE	NLE	62700	12100		8760	12400	10500	12700		9810		6330		10400		7220		7400		7720		8160		7840		7850		10800		10900	
Manganese	50	NLE	331	705		633	851	666	262		201		123		260		133		145		161		170		176		173		203		208	
Mercury	2	2	0.26	<0.254		<0.20	<0.20	<0.20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Nickel	100	NLE	187	1.95	ER	<10	<10	<10	6.33		0.385	ER	2.66	ER	45.3		ND		2.59	ER	7.48		10.6		12.8		11.9		6		7.53	
Potassium	NLE	NLE	137000	10000		<10000	<10000	10600	9680		9380		4970		6190		5720		3530		5030		5360		4940		5400		9040		9070	
Selenium	40	50	29.60	<1.36		<10	<10	<10	ND		ND		8.14	ER	ND		80.6		132		19.8		ND		ND		ND		ND		ND	
Silver	40	NLE	ND	<0.60		<10	<10	<10	ND		2.58	ER	ND		ND		ND		ND		1.7	ER	3.61	ER	ND		ND		0.913		ND	
Sodium	50000	NLE	21500	21400		<10000	16500	19100	111000		90300		158000		140000		120000		15600		158000		160000		168000		161000		91800		91700	
Thallium	2	2	5.50	<0.53		<2.0	2.5	<2.0	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND		0.63	ER	ND	
Vanadium	NLE	NLE	108	6.57		<50	<50	<50	1.58	ER	2.42	ER	ND		146		7.38		5.1		6.53		17.5		20.2		18.7		7.58		12	
Zinc	2000	NLE	233	4.26	ER	<20	<20	<20	28.8		ND		21.7	ER	1250		52.3		16.3	ER	84.5		247		254		233		107		182	

Notes:

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dup = duplicate

Table 2
Historical Groundwater Analytical Results
Site FTMM-25
Fort Monmouth, New Jersey

	NJDEP GWQS	USEPA MCL	Weston 1995 Background (Main Post)								CW3AMW04																				
Round No.				LF1	LF2	LF3	LF4	LF5	LF6	45	46	47	48	49	49 Dup	50	51	52	53												
Date Collected				4/7/2010	7/26/2010	10/19/2010	3/4/2011	4/12/2011	7/6/2011	1/9/2008	4/8/2008	7/23/2008	10/15/2008	2/17/2009	2/17/2009	4/22/2009	7/22/2009	10/7/2009	1/5/2010												
ANALYTE/Lab ID				10129.05	10320.05	1044805	1108603	1114305	1128205	80011.06	80116.06	80249.06	80366.06	90055.06	90055.02	90164.06	90306.06	90407.06	10004.06												
Metals (µg/L)																															
Aluminum	200	NLE	121000	ND			94.2	ER	<200	<200	3260	ND		ND		ND		63.2	ER	ND		ND		ND		24.8	ER	15.9	ER	76.4	ER
Antimony	6	6	20.70	8.7	ER	ND	5.82	ER	<6.0	<6.0	9.2	ND		ND		ND		19.7		19.2		9.27	ER	6.72	ER	4.85	ER	ND			
Arsenic	3	10	89.30	1.78	ER	ND	0.84	ER	<3.0	<3.0	9.6	ND		3.74	ER	ND		ND		73.9		75.4		67.3		31		2.3	ER	ND	
Barium	6000	2000	699.00	82.1		109	109		<200	<200	<200	126		130		131		131		136		186		124		146		148		126	
Beryllium	1	4	2.10	ND		ND	<0.40		<1.0	<1.0	<1.0	0.226	ER	ND		0.138	ER	0.299	ER	ND		ND		ND		ND		ND		ND	
Cadmium	4	5	9.50	ND		0.924	ER	<0.40	<3.0	<3.0	<3.0	1.1	ER	4.26		1.42	ER	0.594	ER	ND		ND		2.51		2.07		1.43	ER	ND	
Calcium	NLE	NLE	45400.00	51100			16200		65000	30900	25900	59100		64500		69100		41200		50400		53300		55800		72200		47700		63500	
Chromium	70	100	191.00	ND		ND	<0.60		<10	<10	42	1.09	ER	0.71	ER	1.75	ER	1.09	ER	0.825	ER	0.874	ER	1.7	ER	ND		ND		ND	
Cobalt	NLE	NLE	18.30	ND			3.98		<50	<50	<50	1.13	ER	0.461	ER	ND		1.24	ER	1.22	ER	1.05	ER	0.55	ER	ND		1.33	ER	ND	
Copper	1300	1300	65.60	ND		ND	4.31	ER	<10	<10	109	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Iron	300	NLE	431000	3320			1110		7740	7390	34000	29300		38000		12500		11200		31500		45600		22900		47100		16800		39300	
Lead	5	15	22.70	ND		ND	<2.10		<3.0	<3.0	19.7	ND		2.93	ER	ND		ND		8.07		9.82		ND		ND		ND		ND	
Magnesium	NLE	NLE	62700	7000			8080		11900	8230	8300	6810		7700		6550		5840		8060		8230		7770		8400		9610		7620	
Manganese	50	NLE	331	131			138		315	199	215	266		425		244		182		320		344		286		422		254		414	
Mercury	2	2	0.26	ND		ND	<0.254		<0.20	<0.20	<0.20	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Nickel	100	NLE	187	6.6		9.03	6.19		<10	<10	16.6	6.92		2.3	ER	1.38	ER	3.67	ER	ND		ND		3.22	ER	3.99	ER	9.47		1.82	ER
Potassium	NLE	NLE	137000	6410			5910		<10000	<10000	<10000	6580		7270		9400		6640		5370		5590		6170		9360		6600		7810	
Selenium	40	50	29.60	55.1		NR	<1.36		<10	<10	<10	ND		ND		6.89	ER	ND		53		35.8		92.7		6.72	ER	ND		ND	
Silver	40	NLE	ND	2	ER		<0.60		<10	<10	<10	ND		6.28		1.65	ER	ND		ND		ND		ND		6.3		ND		ND	
Sodium	50000	NLE	21500	88400			154000		104000	145000	140000	96400		96100		51400		85000		115000		116000		104000		66800		134000		98700	
Thallium	2	2	5.50	ND		ND	<0.53		<2.0	<2.0	<2.0	ND		ND		ND		ND		ND		ND		ND		ND		ND		ND	
Vanadium	NLE	NLE	108	1.25	ER		0.501	ER	<50	<50	<50	2.35	ER	1.45	ER	1.51	ER	1.76	ER	5	ER	7.82		2.97	ER	7.59		4.36	ER	ND	
Zinc	2000	NLE	233	97.1			31.4	ER	<20	<20	421	ND		ND		ND		17.5	ER	19.4	ER	37		8.92	ER	6.35	ER	22.4	ER	ND	

Notes:
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Table 2
Historical Groundwater Analytical Results
Site FTMM-25
Fort Monmouth, New Jersey

	NJDEP GWQS	USEPA MCL	Weston 1995 Background (Main Post)																
Round No.				LF1		LF1 Dup		LF2		LF2 Dup		LF3		LF4		LF5		LF6	
Date Collected				4/7/2010		4/7/2010		7/26/2010		7/26/2010		10/19/2010		3/4/2011		4/12/2011		7/6/2011	
ANALYTE/Lab ID				10129.03		10129.02		10320.03		10320.02		1044803		1108604		1114303		1128203	
Metals (µg/L)																			
Aluminum	200	NLE	121000	ND		ND					143		<200		<200		<200		
Antimony	6	6	20.70	ND		7.25	ER	13.8		9.47	ER	<4.70		<6.0		<6.0		<6.0	
Arsenic	3	10	89.30	3.9	ER	4.01	ER	4.17	ER	4.04	ER	2.42	ER	3.1		4.4		7.4	
Barium	6000	2000	699.00	112		120		152		135		126		<200		<200		<200	
Beryllium	1	4	2.10	ND		ND		ND		ND		<0.40		<1.0		<1.0		<1.0	
Cadmium	4	5	9.50	1.18	ER	1.38	ER	3.9		3.24		<0.40		<3.0		<3.0		<3.0	
Calcium	NLE	NLE	45400.00	71100		76500						60400		101000		67900		61500	
Chromium	70	100	191.00	ND		ND		ND		ND		<0.60		<10		<10		<10	
Cobalt	NLE	NLE	18.30	ND		ND						0.344	ER	<50		<50		<50	
Copper	1300	1300	65.60	ND		ND		ND		ND		<0.80		<10		<10		<10	
Iron	300	NLE	431000	53200		57500						20400		79100		52200		49700	
Lead	5	15	22.70	2.82	ER	3.14	ER	5.46		2.53	ER	<2.10		<3.0		<3.0		<3.0	
Magnesium	NLE	NLE	62700	6510		6750						7150		7720		8610		7970	
Manganese	50	NLE	331	540		578						349		731		498		401	
Mercury	2	2	0.26	ND		ND		ND		ND		<0.254		<0.20		<0.20		<0.20	
Nickel	100	NLE	187	3.4	ER	3.18	ER	0.606	ER	0.539	ER	3.18	ER	<10		<10		<10	
Potassium	NLE	NLE	137000	8730		9390						8250		10900		<10000		<10000	
Selenium	40	50	29.60	24.5		29.9		NR		NR		<1.36		<10		<10		<10	
Silver	40	NLE	ND	ND		ND						<0.60		<10		<10		<10	
Sodium	50000	NLE	21500	51200		48800						102000		25200		96500		73300	
Thallium	2	2	5.50	ND		ND		ND		ND		<0.53		<2.0		<2.0		<2.0	
Vanadium	NLE	NLE	108	5.32		6.1						3.74	ER	<50		<50		<50	
Zinc	2000	NLE	233	5.26	ER	5.88	ER					12.9	ER	<20		<20		<20	

Notes:

Shaded cells= concentrations exceed the NJDEP GWQS

*TICs - Tentatively identified compounds, cannot exceed 500 µg/L for VOCs and SVOCs. No individual compound can exceed 100 µg/L.

NJDEP GWQS = Ground Water Quality Criteria as per N.J.A.C. 7:9-6 (July 22, 2010)

USEPA MCL = U.S.Environmental Protection Agency Maximum Contaminant Level (2012)

For the July 2010 sampling event, metal analytical results were not available for: Ca, Co, Fe, Mg, Mn, K, Ag, Na, V, and Zn.

LF = Low flow sampling method used to collect sample

< = Analyte does not exceed the detection limit shown

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

NA = Not analyzed

ND = Not detected

NLE = No limit established

ER = Estimated Result

dup = duplicate

Table 3
2013 Baseline Groundwater Analytical Detections
Site FTMM-25
Fort Monmouth, New Jersey

SAMPLE ID:			STANDARDS VALUES			FTMM-25-GW-CW3AMW01	FTMM-25-GW-CW3AMW02	FTMM-25-GW-CW3AMW03	FTMM-25-GW-CW3AMW04	FTMM-25-GW-CW3AMW10	
DATE SAMPLED:			NJDEP GWQS ^[1]	USEPA MCL ^[2]	Weston 1995 Background (Main Post)	21-Aug-2013	21-Aug-2013	21-Aug-2013	21-Aug-2013	21-Aug-2013	
LAB SAMPLE ID:						R1306112-018	R1306112-024	R1306112-011	R1306112-002	R1306112-006	
SAMPLE INTERVAL (ft bgs):						5-15	5-17	4-14	4-16	4-16	
	CAS No.	Unit									
Volatile Organics - SW8260C											
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
1,1,1-Trichloroethane	71-55-6	µg/L	30	200	--	1.0	U	1.0	U	1.0	U
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
1,1,2-Trichloroethane	79-00-5	µg/L	3	5	--	1.0	U	1.0	U	1.0	U
1,1-Dichloroethane	75-34-3	µg/L	50	NLE	--	1.0	U	1.0	U	1.0	U
1,1-Dichloroethene	75-35-4	µg/L	1	7	--	1.0	U	1.0	U	1.0	U
1,1-Dichloropropene	563-58-6	µg/L	5 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
1,2,3-Trichlorobenzene	87-61-6	µg/L	5 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
1,2,3-Trichloropropane	96-18-4	µg/L	0.03	NLE	--	1.0	U	1.0	U	1.0	U
1,2,4-Trichlorobenzene	120-82-1	µg/L	9	70	--	1.0	U	1.0	U	1.0	U
1,2,4-Trimethylbenzene	95-63-6	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
1,2-Dibromo-3-chloropropane	96-12-8	µg/L	0.02	0.2	--	1.0	U	1.0	U	1.0	U
1,2-Dibromoethane (EDB)	106-93-4	µg/L	0.03	NLE	--	1.0	U	1.0	U	1.0	U
1,2-Dichlorobenzene	95-50-1	µg/L	600	NLE	--	1.0	U	1.0	U	1.0	U
1,2-Dichloroethane	107-06-2	µg/L	2	NLE	--	1.0	U	1.0	U	1.0	U
1,2-Dichloropropane	78-87-5	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
1,3,5-Trimethylbenzene	108-67-8	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
1,3-Dichlorobenzene	541-73-1	µg/L	600	NLE	--	1.0	U	1.0	U	1.0	U
1,3-Dichloropropane	142-28-9	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
1,4-Dichlorobenzene	106-46-7	µg/L	75	NLE	--	1.0	U	1.0	U	1.0	U
2,2-Dichloropropane	594-20-7	µg/L	100 ¹⁰⁰	NLE	--	1.0	UJ	1.0	UJ	1.0	UJ
2-Butanone (MEK)	78-93-3	µg/L	300	NLE	--	1.0	U	1.0	U	1.0	U
2-Chlorotoluene	95-49-8	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
2-Hexanone	591-78-6	µg/L	300 ¹⁰⁰	NLE	--	5.0	U	5.0	U	5.0	U
4-Chlorotoluene	106-43-4	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
4-Methyl-2-pentanone (MIBK)	108-10-1	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Acetone	67-64-1	µg/L	6,000	NLE	--	5.0	U	1.6	BJ	5.0	U
Benzene	71-43-2	µg/L	1	5	--	1.0	U	1.0	U	1.0	U
Bromobenzene	108-86-1	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Bromochloromethane	74-97-5	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Bromodichloromethane	75-27-4	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
Bromoform	75-25-2	µg/L	4	NLE	--	1.0	U	1.0	U	1.0	U
Bromomethane	74-83-9	µg/L	10	NLE	--	1.0	U	1.0	U	1.0	U
Carbon tetrachloride	56-23-5	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
Chlorobenzene	108-90-7	µg/L	50	100	--	1.0	U	1.0	U	1.0	U
Chloroethane	75-00-3	µg/L	5 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Chloroform	67-66-3	µg/L	70	NLE	--	1.0	U	1.0	U	1.0	U
Chloromethane	74-87-3	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
cis-1,2-Dichloroethene	156-59-2	µg/L	70	70	--	1.0	U	1.0	U	1.0	U
cis-1,3-Dichloropropene	10061-01-5	µg/L	5 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Dibromochloromethane	124-48-1	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
Dichlorodifluoromethane (Freon 12)	75-71-8	µg/L	1,000	NLE	--	1.0	U	1.0	U	1.0	U
Ethylbenzene	100-41-4	µg/L	700	700	--	1.0	U	1.0	U	1.0	U
Hexachlorobutadiene	87-68-3	µg/L	1	NLE	--	1.0	U	1.0	U	1.0	U
Isopropylbenzene	98-82-8	µg/L	700	NLE	--	1.0	U	1.0	U	1.0	U
Methylene chloride	75-09-2	µg/L	3	NLE	--	1.0	U	1.0	U	1.0	U
Methyl-tert-butyl ether (MTBE)	1634-04-4	µg/L	70	NLE	--	1.0	U	1.0	U	0.55	J
Naphthalene	91-20-3	µg/L	300	NLE	--	1.0	U	1.0	U	1.0	U
n-Butylbenzene	104-51-8	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
n-Propylbenzene	103-65-1	µg/L	100	NLE	--	1.0	U	1.0	U	1.0	U
p-Isopropyltoluene	99-87-6	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
sec-Butylbenzene	135-98-8	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Styrene	100-42-5	µg/L	100	100	--	1.0	U	1.0	U	1.0	U
tert-Butylbenzene	98-06-6	µg/L	100 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Tetrachloroethene (PCE)	127-18-4	µg/L	1	5	--	1.0	U	1.0	U	1.0	U
Toluene	108-88-3	µg/L	600	1,000	--	1.0	U	1.0	U	1.0	U
trans-1,2-Dichloroethene	156-60-5	µg/L	100	100	--	1.0	U	1.0	U	1.0	U
trans-1,3-Dichloropropene	10061-02-6	µg/L	5 ¹⁰⁰	NLE	--	1.0	U	1.0	U	1.0	U
Trichloroethene (TCE)	79-01-6	µg/L	1	5	--	1.0	U	1.0	U	1.0	U
Trichlorofluoromethane (Freon 11)	75-69-4	µg/L	2,000	NLE	--	1.0	U	1.0	U	1.0	U
Vinyl chloride	75-01-4	µg/L	1	2	--	1.0	U	1.0	U	1.0	U
Xylene (Total)	1330-20-7	µg/L	1,000	10,000	--	3.0	U	3.0	U	3.0	U
Pesticides - SW8081B											
4,4'-DDD	72-54-8	µg/L	0.1	NLE	--	0.040	U	0.039	U	0.040	U
4,4'-DDT	50-29-3	µg/L	0.1	NLE	--	0.026	U	0.025	U	0.026	U
4,4'-DDE	72-55-9	µg/L	0.1	NLE	--	0.026	U	0.025	U	0.026	U
Aldrin	309-00-2	µg/L	0.04	NLE	--	0.026	U	0.025	U	0.026	U
alpha-BHC	319-84-6	µg/L	0.02	NLE	--	0.026	U	0.025	U	0.026	U
alpha-Chlordane	5103-71-9	µg/L	5 ¹⁰⁰	NLE	--	0.026	U	0.025	U	0.026	U

Table 3
2013 Baseline Groundwater Analytical Detections
Site FTMM-25
Fort Monmouth, New Jersey

SAMPLE ID:			STANDARDS VALUES			FTMM-25-GW-CW3AMW01	FTMM-25-GW-CW3AMW02	FTMM-25-GW-CW3AMW03	FTMM-25-GW-CW3AMW04	FTMM-25-GW-CW3AMW10	
DATE SAMPLED:			NJDEP GWQS ^[1]	USEPA MCL ^[2]	Weston 1995 Background (Main Post)	21-Aug-2013	21-Aug-2013	21-Aug-2013	21-Aug-2013	21-Aug-2013	
LAB SAMPLE ID:						R1306112-018	R1306112-024	R1306112-011	R1306112-002	R1306112-006	
SAMPLE INTERVAL (ft bgs):						5-15	5-17	4-14	4-16	4-16	
	CAS No.	Unit									
beta-BHC	319-85-7	µg/L	0.04	NLE	--	0.026	U	0.025	U	0.026	U
delta-BHC	319-86-8	µg/L	100 ^[5]	NLE	--	0.026	U	0.042	J	0.026	U
Dieldrin	60-57-1	µg/L	0.03	NLE	--	0.026	U	0.025	U	0.026	U
Endosulfan I	959-98-8	µg/L	40	NLE	--	0.026	U	0.025	U	0.026	U
Endosulfan II	33213-65-9	µg/L	40	NLE	--	0.026	U	0.025	U	0.026	U
Endosulfan sulfate	1031-07-8	µg/L	40	NLE	--	0.026	U	0.025	U	0.026	U
Endrin	72-20-8	µg/L	2	2	--	0.026	U	0.025	U	0.026	U
Endrin aldehyde	7421-93-4	µg/L	5 ^[5]	NLE	--	0.026	U	0.025	UJ	0.026	U
Endrin ketone	53494-70-5	µg/L	100 ^[5]	NLE	--	0.026	U	0.025	U	0.026	U
gamma-BHC (Lindane)	58-89-9	µg/L	0.03	NLE	--	0.026	U	0.025	U	0.026	U
gamma-Chlordane	5566-34-7	µg/L	5 ^[5]	NLE	--	0.026	U	0.025	U	0.026	U
Heptachlor	76-44-8	µg/L	0.05	0.4	--	0.026	U	0.025	U	0.026	U
Heptachlor Epoxide	1024-57-3	µg/L	0.2	0.2	--	0.026	U	0.025	U	0.026	U
Methoxychlor	72-43-5	µg/L	40	40	--	0.026	U	0.025	U	0.026	U
Toxaphene	8001-35-2	µg/L	2	3	--	0.51	U	0.50	U	0.51	U
Metals - SW6010C/SW7470A											
Aluminum	7429-90-5	µg/L	200	NLE	121000	25	U	25	U	126	U
Antimony	7440-36-0	µg/L	6	6	20.70	4.0	U	4.0	U	4.0	U
Arsenic	7440-38-2	µg/L	3	10	89.30	5.0	U	6.0	J	6.5	J
Barium	7440-39-3	µg/L	6,000	2,000	699.00	62.5		463		175	
Beryllium	7440-41-7	µg/L	1	4	2.10	0.30	U	0.30	U	0.237	J
Cadmium	7440-43-9	µg/L	4	5	9.50	0.40	U	0.40	U	0.751	J
Calcium	7440-70-2	µg/L	NLE	NLE	45400.00	108,000		71,800		20,600	
Chromium	7440-47-3	µg/L	70	100	191.00	2.4		0.989	J	0.355	J
Cobalt	7440-48-4	µg/L	NLE	NLE	18.30	1.1	BJ	1.0	U	9.2	B
Copper	7440-50-8	µg/L	1,300	1,300 ^[5]	65.60	1.1	BJ	4.0	U	5.8	BJ
Iron	7439-89-6	µg/L	300	NLE	431000	187		45,700		756	
Lead	7439-92-1	µg/L	5	15 ^[5]	22.70	2.0	U	2.0	U	2.0	U
Magnesium	7439-95-4	µg/L	NLE	NLE	62700	26,100		9,390		11,800	
Manganese	7439-96-5	µg/L	50	NLE	331	18.9		552		352	
Mercury	7439-97-6	µg/L	2	2	0.26	0.080	U	0.080	U	0.080	U
Nickel	7440-02-0	µg/L	100	NLE	187	1.2	BJ	5.0	U	9.5	BJ
Potassium	9/7/7440	µg/L	NLE	NLE	137000	4,220		7,480		5,660	
Selenium	7782-49-2	µg/L	40	50	29.60	3.3	J	2.9	J	4.0	J
Silver	7440-22-4	µg/L	40	NLE	ND	0.432	J	2.0	U	0.278	J
Sodium	7440-23-5	µg/L	50,000	NLE	21500	324,000		53,500		185,000	
Thallium	7440-28-0	µg/L	2	2	5.50	10	U	10	U	10	U
Vanadium	7440-62-2	µg/L	NLE	NLE	108	2.8	J	1.6	J	0.60	U
Zinc	7440-66-6	µg/L	2,000	NLE	233	3.0	BJ	4.0	U	68.7	BJ

QA NOTES AND DATA QUALIFIERS:

U - Analyte was not detected above the indicated limit of detection (LOD).
J - Analyte detected, estimated concentration.
UJ - Analyte not detected, reported LOD may be inaccurate or imprecise.
B - The analyte was found in an associated blank at concentration above one half the LOQ,
as well as in the sample.
BJ - Analyte detected, estimated concentration. Analyte also found in an associated blank at
concentration above one half the LOQ.
* - Field duplicate of sample on left.
Detections are bolded.
Detections above the NJDEP GWQS are highlighted.
For Detections above the USEPA MCL, the cell border is bolded.

NOTES:

[1] New Jersey Department of Environmental Protection Ground Water Quality Standards
Specific Ground Water Quality Criteria - Class IIA and Practical Quantitation Levels.
(http://www.state.nj.us/dep/wms/bwqsa/Appendix_Table_1.htm).
[2] USEPA 2012 Edition of the Drinking Water Standards and Health Advisories, Spring
2012. (<http://water.epa.gov/action/advisories/drinking/upload/dwstandards2012.pdf>).
[3] Interim generic groundwater quality criteria.
[4] Interim specific groundwater quality criteria.
[5] Value is the USEPA Action Level.
NLE - No screening level established.

Attachment B
Charles Wood Area Layout and Layout of FTMM-25



Source: Shaw Environmental Inc., 2011.

LEGEND

- Road Centerline
- Water Feature
- Building
- Municipal Boundary
- Installation Boundary

Note: Aerial photography (0.5-meter resolution) was obtained from ESRI ArcOnline USA Imagery Map Services.



Scale:
0 290 580 1,160
Feet

PARSONS
401 Diamond NW
Huntsville AL, 35806

Fort Monmouth
New Jersey

Charles Wood Area Layout

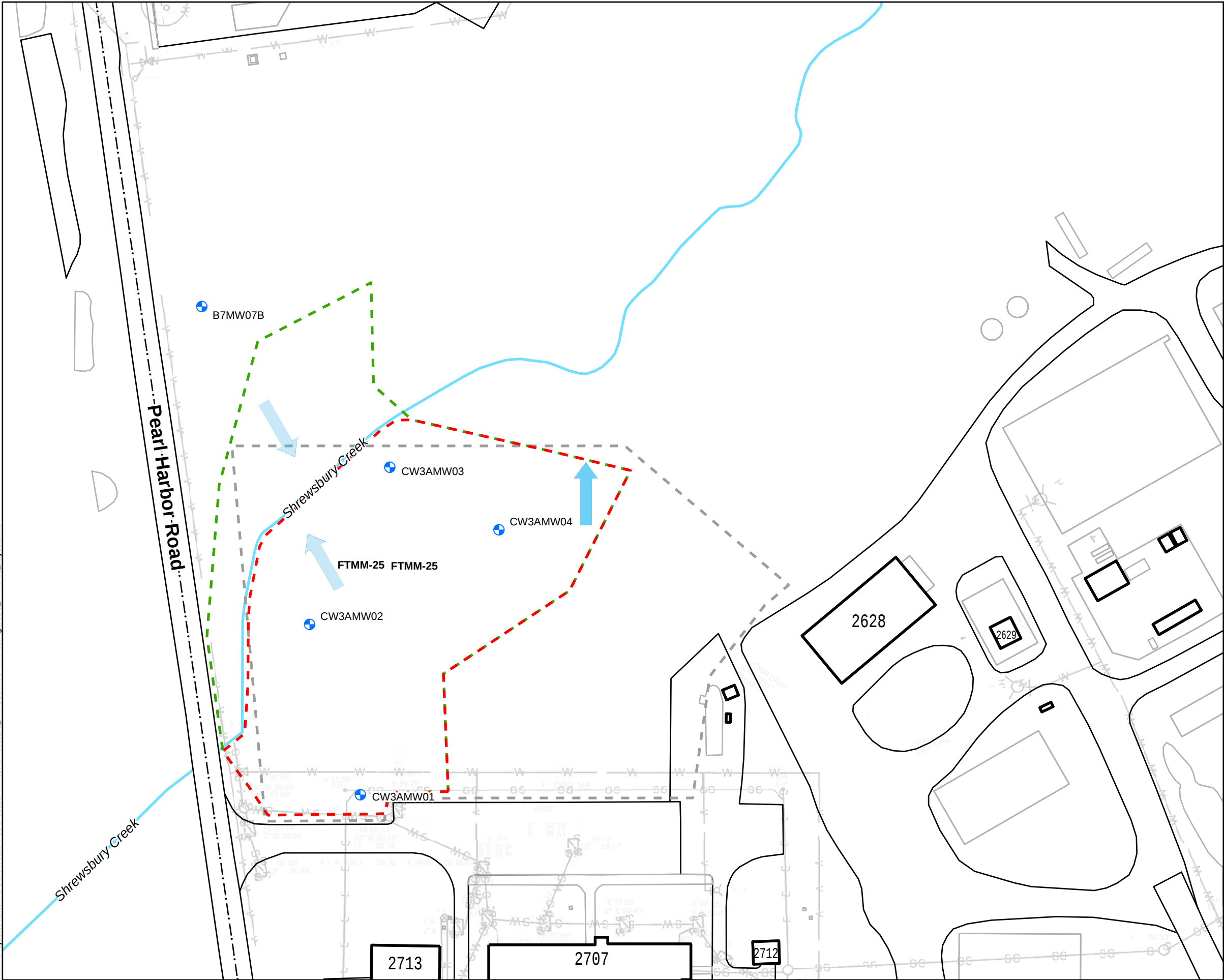
DATE:
November 7, 2012

FIGURE NUMBER:
Figure 1.3

PROJECT NUMBER:
748810.01000

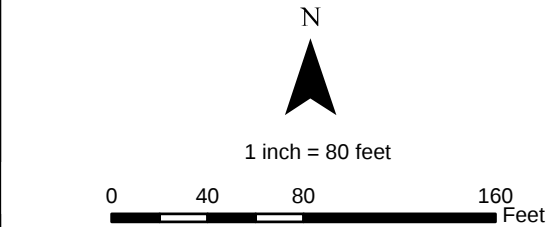
CREATED BY:
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LEGEND:

- Shallow Monitoring Well
- FTMM-25 Landfill Revised Boundary (2015)
- FTMM-25 Landfill Revised Boundary (2010)
- FTMM-25 Landfill Original Boundary
- Installation Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction



Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL		Fort Monmouth New Jersey	
LAYOUT OF FTMM-25			
CREATED BY: RR		REVIEWED BY: JH	
DATE: NOV. 2015		FIGURE NUMBER: FIGURE 1.3	
PROJECT NUMBER: 748810-02070		FILE: Figure1-3_FTMM-25_Layout.mxd	