



PARS
Environmental
Inc.

COMPREHENSIVE SITE ASSESSMENT REPORT

**Sievers Sandburg US Army Reserve Center
Oldmans Township, Salem County, NJ**

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PREPARED FOR

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**COMPREHENSIVE SITE ASSESSMENT REPORT
SIEVERS SANDBURG UNITED STATES ARMY RESERVE CENTER
OLDMANS TOWNSHIP, NEW JERSEY**

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1.0 INTRODUCTION

The United States Corps of Engineers, Louisville District (USACE) has retained the services of PARS Environmental, Inc. (PARS) to conduct a Comprehensive Site Assessment at the Sievers Sandburg US Army Reserve Center (Camp Pedricktown Reserve Enclave). Camp Pedricktown is located at Route 130 and Artillery Avenue in Oldmans Township, Salem County, New Jersey, hereinafter the "Site." A Site Location Map and Site Plan are included as Figure 1 and Figure 2, respectively.

1.1 PURPOSE AND SCOPE

The purpose of the Comprehensive Site Assessment is to provide a comprehensive review of environmental data collected at the Site. PARS reviewed available files for environmental assessments and investigations that have been performed at the Site. Files reviewed include records obtained from the US Army Reserve (USAR), 99th Regional Support Command (RSC) and the New Jersey Department of Environmental Protection (NJDEP).

These files included, but were not limited to, the following:

1. *Preliminary Site Assessment* (RMC Environmental Services, April 1991)
2. *Expanded Site Assessment (ESI)* (Versar, 1993)
3. *Ground Penetrating Radar (GPR) Survey* (Versar, August 1993)
4. *Environmental Baseline Survey* (Woodward-Clyde, March 1997)
5. *Results of GPR Surveys and Exploratory Excavations* (Earth Tech, November 1997)
6. *Underground Storage Tank System Closure* (Earth Tech, August 1997)
7. *Underground Storage Tank System Closure* (Earth Tech, October 1997)
8. *Remedial Investigation Report* (BES, 1998)
9. *Focused Remedial Action Report* (EA, 2000)
10. *Remedial Action Report for Soil* (ARCADIS, March 2002)
11. *Environmental Baseline Survey* (URS, 2003)
12. *Lead-Based Paint Risk Assessment Report* (Ogden Environmental Services, 2004)
13. *Hazardous Waste Management Consultation* (USACHPPM, April 2005)
14. *Site Investigation of Specific Areas of Potential Environmental Concern* (Kemron, 2005)
15. *Follow On Closure Activities* (CATI, 2006)
16. *Continued Site Investigation* (USACHPPM, April 2007)
17. *Human Health Risk Assessment* (USACHPPM, 2008)
18. *Site Investigation* (PARS Environmental, August 2010)
19. *Proposed Plan* (Department of the Army, 2012)
20. *Decision Document* (Department of the Army, 2012)

1.2 REPORT ORGANIZATION

The Comprehensive Site Assessment Report presents an overall description and comprehensive review of the results of environmental assessments, investigations and remediation activities at the Site. Section 2 provides background information pertaining to the Site, including general description and history of the Site. Section 3 provides a summary of previous investigations and Section 4 provides conclusions and recommendations.



2.0 BACKGROUND

2.1 SITE SETTING

The Site is located in the northwest section of Oldmans Township, Salem County, New Jersey. The Site is comprised of approximately 40 acres and is bound to the south by US Route 130. The Base Realignment and Closure (BRAC) property that was historically part of Camp Pedricktown and was transferred out of federal ownership under the 1995 BRAC law bounds the Site to the north. A Department of Defense (DoD) wildlife management area is located immediately west of the Site and Salem County Community College is located east of the Site.

The Site is currently vacant and was originally part of the Delaware Ordnance Depot that was established in 1917. The Site was most recently used to support administrative, supply, training and maintenance activities for the USAR. Most of the buildings located at the Site were constructed prior to World War II (URS, 2003).

The southern portion of the Site was used for housing and recreation areas. Building 273 was an enlisted barrack and Building 274 was a dispensary. Buildings 276, 277 and 278 were two-family noncommissioned officer quarters. Building 283, which was demolished, was used as a mess hall and service club. The northern portion of the Site was used as a military vehicle parking area and for warehousing. Building 404 was used for vehicle and heavy equipment maintenance and repairs. A summary table of all buildings currently located at the Sievers Sandburg USARC is included as Table 1.

Table 1: Buildings Located at the Sievers Sandburg USARC

Building #	Purpose	Year Constructed
171	Headquarters	1942
173	Dining Facility	1961
273	Enlisted Personnel Barracks	1939
274	Old Post Hospital/ Dispensary	1939
276, 277 & 278	Family Housing Units	1939
285, 286, 287 & 288	Detached Garages	1941
404	Vehicle Maintenance Storage	1942
413	Former Gas Station	1931
434 & 464	General Storage	1941

2.2 TOPOGRAPHY AND DRAINAGE

The Site is relatively flat with a slight slope to the northwest. The United States Geologic Survey (USGS) quadrangle for Pedricktown, New Jersey indicates that the elevation at the Site is approximately 10 feet above mean sea level. The Site is located within the Pennsville/Penns Grove Tributary and the Maurice, Salem and Cohansey Watershed Management Area.

No surface water bodies are located at the Site. A man-made lake (the Penns Grove Project) is located southwest of the Site within the wildlife management area and the Delaware River is approximately 0.5 miles west and northwest of the Site.

A series of storm sewer systems are located at the Site. Storm water runoff from paved areas is diverted to the storm sewer. The storm sewer lines continue onto the BRAC portion of former Camp Pedricktown and discharge into the Delaware River.



2.3 GEOLOGY

The Site is located within the Atlantic Coastal Plain Physiographic Province. Based on the *Surficial Geologic Map of Central and Southern New Jersey* (USGS, 2000), surficial soils underlying the Site are comprised of the Cape May Formation. The formation consists of sand, pebble gravel, minor silt, clay, peat and cobble gravel. Small amounts of glauconite and limonitic occur within the Cape May Formation. The thickness of the formation in the vicinity of the Site ranges from 20 to 30 feet.

The Cape May Formation is underlain by the Potomac Formation (*Bedrock Geology Map of Central and Southern New Jersey* [USGS, 1998]). The formation consists of fine to coarse grained sand interbedded with clay.

Investigation activities at the Site were limited to the upper portion of the Cape May Formation. Soils consist of well-sorted fine sand from 0.0 to 5.0 feet below ground surface (bgs) and fine sand with trace to some silt and some fine rounded gravel from 5.0 to 15.0 feet bgs.

2.4 HYDROGEOLOGY

The surficial aquifer at the Site is comprised of sediments of the Cape May Formation. Groundwater flow is generally to the north and northwest toward the Delaware River (*Environmental Baseline Survey* [Woodward-Clyde, March 1997]).

The bedrock aquifer underlying the Site is the Potomac-Raritan-Magothy Aquifer System. The Potomac-Raritan-Magothy Aquifer System is comprised of four distinct aquifers. The uppermost aquifer is encountered between 50 and 120 feet bgs. This aquifer ranges in thickness from 6 to 43 feet in the vicinity of the Site (*Environmental Baseline Survey* [Woodward-Clyde, March 1997]).

2.5 HISTORY OF OPERATIONS

In 1917, the USACE began acquiring farms along the Delaware River to serve as the Delaware Ordnance Depot. The Delaware Ordnance Depot was active from 1918 to 1958 and was used as a final assembly and storage area for munitions. During World War II, the installation specialized in manufacturing pentolite-based munitions, including grenades and rockets and was the location of an ammunition renovation school. In 1946, munitions burning, ordnance destruction, materials disassembly and ammunition demilitarization of materials left over from World War II occurred at the Site.

In 1946, in accordance with War Department Order 146, the Delaware Ordnance Depot became a sub-installation of the Raritan Arsenal. In 1947, Camp Pedricktown also served as the backup storage facility for the Picatinny and Frankford Arsenals and the Aberdeen Proving Ground. In 1954, the Delaware Ordnance Depot was redesignated by the Army as the Raritan-Delaware Storage Activity. In 1958, the post was placed on stand-by status and all ammunition was removed from the Site.



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In 1959, jurisdiction of the Site was transferred to the USACE and renamed the Pedricktown Disposal Facility, to be used as a disposal area for dredged materials. The remaining 120 acres was reassigned to the Philadelphia Air Defense and was designated as Camp Pedricktown.

In 1960, Camp Pedricktown became the headquarters for the 42nd and 43rd Artillery, which was responsible for the command and control of the Nike Missile sites in the Philadelphia area. Camp Pedricktown served as an Army Air Defense Command Post, operating an air defense coordination system for the Nike Missile Batteries within the Philadelphia Defense Area. The Site was completely renovated and many of the buildings were demolished. A North American Air Defense Command center was built during this time period. The 42nd and 43rd Artillery remained at Camp Pedricktown until 1965.

Camp Pedricktown was transferred to Fort Dix in 1962. In 1965, 42 facilities were leased to the Salem County Technical Institute until the late 1960s. The federal government declared 23 acres of the Philadelphia Air Defense Site as surplus, and transferred the property to Salem County in 1972.

In 1975, 11 of the 23 acres were transferred to Salem County Community College. In 1993, jurisdiction of the 23 acre property was given to the 79th Army Reserve Command. In 1996, the property was expanded to the present-day size of 40 acres and is known as the Sievers Sandburg Reserve Enclave. The remaining Camp Pedricktown was transferred out of federal ownership under the 1995 BRAC law.

2.6 PREVIOUS INVESTIGATIONS

The following is a brief overview of the previous investigations performed at the Site by others, which were used to identify areas of concern discussed in Section 3.0. Details regarding these investigations are provided in Section 3. A copy of the referenced reports is included on a CD located in Appendix E.

2.6.1 Preliminary Site Assessment (RMC Environmental Services, April 1991)

In 1991, RMC Environmental Services performed a Preliminary Site Assessment of the entire Camp Pedricktown property, including the Reserve Enclave. The preliminary assessment identified possible underground storage tanks (USTs) and transformers on the property based on historical records and a site reconnaissance. It was recommended that the status of the USTs and transformers be examined.

No soil or groundwater samples were collected during the Site Assessment, but a soil gas survey was conducted in the areas of Building 404 and 413. Trichloroethene (TCE) and tetrachloroethene (PCE) were detected in the samples near the two buildings. These buildings were part of a transportation motor pool and used as storage areas for drums of solvents, hydraulic fluid and waste oil. Several USTs were located in this area.



2.6.2 Expanded Site Assessment (ESI) Report (Versar, 1993)

An ESI was completed by Versar in 1993. The ESI included an investigation of the storm sewer system and catch basins for the entire Camp Pedricktown property, including the Reserve Enclave. Three surface water samples were collected from the storm sewer at the Site (one near Building 173 and two near Building 404). The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbon compounds (TPHC) and metals. The samples contained elevated concentrations of TPHC, arsenic, cadmium and chromium. Two sediment samples were also collected from the catch basins near Building 404. Elevated SVOCs and metals were detected in the samples.

Six soil borings were installed at the Site and five of the borings were converted to monitoring wells. Soil samples were collected and analyzed for VOCs, SVOCs, metals, TPHC and explosives. Arsenic was detected in several of the soil samples. Groundwater samples were collected from each monitoring well and analyzed for VOCs, SVOCs, metals, explosives and TPHC. One groundwater sample near Building 413 had an elevated concentration of PCE. Detailed results are discussed in Section 3.3.5.

2.6.3 Environmental Baseline Survey (EBS) Report (Woodward-Clyde, March 1997)

In 1997, Woodward-Clyde conducted an EBS for the entire Camp Pedricktown property, including a review of the Reserve Enclave.

In addition to the previously identified areas of concern by Versar, the EBS noted stains on the surface soil adjacent to Building 413. Remediation activities during the EBS involved the excavation of contaminated soil from a hydraulic fluid spill in the vehicle parking area (see Section 3.3.1). Planned remedial activities based on the results of the EBS included tank upgrade and removal and investigation of stressed vegetation beneath a transformer located on the Reserve Enclave (Section 3.3.7). It was also recommended to close the service pit located in Building 404.

2.6.4 EBS Report (URS, 2003)

In 2003, an EBS was conducted by URS. The survey focused on areas of concern previously identified at the Site. The survey included an evaluation of the following areas:

- § Lead in soil beneath the Water Tank at Facility 239
- § Hydraulic fluid spill in the Vehicle Parking Area
- § Fuel oil spill released on boiler room floor at Building 274
- § All USTs and ASTs at the Site
- § Arsenic in soil near Building 464
- § PCE in groundwater near Buildings 404 & 413
- § Storm water Catch Basin northwest of Building 173

URS also identified three additional areas of concern at the Site:

- Concern of the historical storage of hazardous waste at Buildings 404, 434, 464 and 274
- Paint fragments in a soil pile near Facility 249
- Rectangular depression at the north end of the Vehicle Parking Area



2.6.4 Site Investigation Report (Kemron, 2005)

In 2005, Kemron conducted a site investigation of 27 areas of concern that were identified in the EBS performed by URS. These areas of concern included USTs, transformers and surface spill areas. Investigation activities included the collection of soil and groundwater samples.

2.6.5 Continued Site Investigation Report (USACHPPM, April 2007)

In October 2006, the U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) conducted an investigation of the Military Parking Lot and Building 434 based on the investigation performed by Kemron.

Ten shallow borings were advanced and eight were converted into monitoring wells. Soil samples were collected from the borings at the Military Parking Lot and analyzed for SVOCs, TPH-DRO and metals. Soil samples collected from the soil borings around Building 434 were analyzed for explosive residues, arsenic, boron, cadmium, chromium, lead and molybdenum. Groundwater samples were collected from eleven monitoring wells (including the three newly installed wells).

2.6.6 Human Health Risk Assessment (USACHPPM, 2008)

USACHPPM conducted a Human Health Risk Assessment (HHRA) in 2008. The sampling results from the Kemron SI Report, CATI Follow-On Closure Report and USACHPPM Continued SI were used in the assessment. The risk assessment analyzed the exposure of future residents, construction workers and industrial workers to soil and groundwater at the Site. The risk assessment concluded that exposures to the soils at the Reserve Enclave are safe for industrial, construction and adult residential use. The report found a slight risk for the residential child's exposure to soil. There was no risk to residential or industrial exposures to groundwater and no unacceptable risk associated with lead exposure to industrial and construction workers or resident children and adults (USACHPPM, 2008).



3.0 SUMMARY OF AREAS OF CONCERN

This section provides a summary of the areas of concern identified at the Site. The areas of concern were identified based on previous assessments and investigations as discussed in Section 2.6. Areas of concern identified during these investigations are shown in Figure 3.

3.1 UNDERGROUND STORAGE TANKS

Based on the findings of the Preliminary Site Assessment performed by RMC and the Expanded Site Assessment performed by Versar, a Ground Penetrating Radar (GPR) Survey was performed to evaluate 11 suspect USTs. In May 1997, Earth Tech completed a GPR Survey and exploratory excavations to evaluate 19 suspected USTs.

3.1.1 550-Gallon #2 Fuel Oil UST South of Building 278 (278S)

Background

On August 26, 1997, Earth Tech removed a fiberglass 550-gallon #2 fuel oil UST at Building 278. The UST was noted to be in satisfactory condition. There was no visual evidence of soil impacts and groundwater was not encountered in the excavation.

Four sidewall post-excavation soil samples were collected and the samples were analyzed for total petroleum hydrocarbons (TPH). TPH was not detected in the soil samples at concentrations above the laboratory method detection limit (MDL). No further action was recommended for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the New Jersey Department of Environmental Protection (NJDEP) for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced one soil boring and collected a soil sample at the centerline of the former tank. The soil sample was analyzed for TPH. TPH was not detected in the soil sample at concentrations above the laboratory MDL. PARS concluded that no additional investigation was warranted. An unrestricted use response action outcome (RAO) was issued by PARS for this area of concern in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.

3.1.2 550-Gallon #2 Fuel Oil UST North of Building 278 (278N)

Background

On August 26, 1997, Earth Tech removed a fiberglass 550-gallon #2 fuel oil UST at Building 278. The UST was noted to be in satisfactory condition. There were no visual evidence of soil impacts and groundwater was not encountered in the excavation.



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Four sidewall post-excavation soil samples were collected and analyzed for TPH. TPH was not detected in the soil samples at concentrations above the laboratory MDL. No further action was recommended for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced one soil boring and collected a soil sample directly beneath the backfilled excavation along the centerline of the former tank. The soil sample was analyzed for TPH. TPH was not detected in the soil sample at concentrations above the laboratory MDL. PARS concluded that no additional investigation was warranted. An unrestricted use RAO was issued by PARS in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.

3.1.3 550-Gallon #2 Fuel Oil UST South of Building 277 (277S)

Background

Earth Tech removed a fiberglass 550-gallon #2 fuel oil UST at Building 277 on August 26, 1997. The UST was noted to be in satisfactory condition. No visual evidence of soil impacts was observed and groundwater was not encountered in the excavation.

Four sidewall post-excavation soil samples were collected and the samples were analyzed for TPH. TPH was detected in one soil sample at a concentration of 14 milligrams per kilogram (mg/kg), which was well below the soil remediation standard for petroleum hydrocarbons of 5,100 mg/kg. TPH was not detected in the remaining three samples at concentrations above the laboratory MDL. Earth Tech recommended no further action for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced one soil boring and collected a soil sample directly beneath the backfilled excavation at the former centerline of the tank. The soil sample was analyzed for TPH. TPH was not detected in the soil sample at concentrations above the laboratory MDL. PARS concluded that no additional investigation was warranted. An unrestricted use RAO was issued by PARS in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.



3.1.4 550-Gallon #2 Fuel Oil UST North of Building 277 (277N)

Background

On August 26, 1997, Earth Tech removed a fiberglass 550-gallon #2 fuel oil UST at Building 277. The UST was noted to be in satisfactory condition. No visual evidence of soil impacts was observed and groundwater was not encountered in the excavation.

Four sidewall post-excavation soil samples were collected and the samples were analyzed for TPH. TPH was detected in one soil sample at a concentration of 110 mg/kg, which was well below the soil remediation standard for petroleum hydrocarbons of 5,100 mg/kg. TPH was not detected in the remaining three samples at concentrations above the laboratory MDL. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced one soil boring and collected a soil sample directly beneath the backfilled excavation. The soil sample was analyzed for TPH. TPH was not detected in the soil sample at concentrations above the laboratory MDL. PARS concluded that no additional investigation was warranted. An unrestricted use RAO was issued by PARS in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.

3.1.5 550-Gallon #2 Fuel Oil UST South of Building 276 (276S)

Background

Earth Tech removed a fiberglass 550-gallon #2 fuel oil UST (276S) at Building 276 on August 25, 1997. The UST was noted to be in satisfactory condition. No visual evidence of soil impacts was observed and groundwater was not encountered in the excavation.

Four sidewall post-excavation soil samples were collected and the samples were analyzed for TPH. TPH was not detected in the soil samples at concentrations above the laboratory MDL. Earth Tech recommended no further action for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced one soil borings and collected a soil sample directly beneath the backfilled excavation along the former centerline of the tank. One soil boring was advanced and a soil sample was collected along the former pipeline. The soil samples were analyzed for TPH. TPH was not detected in the sample at concentrations above the laboratory MDL. PARS concluded that no additional investigation was warranted. An unrestricted use RAO was issued in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.



3.1.6 550-Gallon #2 Fuel Oil UST North of Building 276 (276N)

Background

On August 25, 1997, Earth Tech removed a fiberglass 550-gallon #2 fuel oil UST at Building 276. The UST was noted to be in satisfactory condition. No visual evidence of soil impacts was observed and groundwater was not encountered in the excavation.

Four sidewall post-excavation soil samples were collected and the samples were analyzed for TPH. TPH was not detected in the soil samples at concentrations above the laboratory MDL. Earth Tech recommended no further action for this UST (Earth Tech, 1997a). The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced one soil boring and collected a soil sample directly beneath the backfilled excavation along the center line of the former tank. The soil sample was analyzed for TPH. TPH was not detected in the soil sample at concentrations above the laboratory MDL. PARS concluded that no additional investigation was warranted. An unrestricted use RAO was issued in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.

3.1.7 1,000-Gallon #2 Fuel Oil UST at Building 274 (274)

Background

On August 12, 1997, Earth Tech removed a steel 1,000-gallon #2 fuel oil UST at Building 274. The UST was noted to be in satisfactory condition. No visual evidence of soil impacts was observed and groundwater was not encountered in the excavation.

Four sidewall post-excavation soil samples were collected and the samples were analyzed for TPH. TPH was detected in one soil sample at a concentration of 29 mg/kg, which was well below the soil remediation standard for petroleum hydrocarbons of 5,100 mg/kg. TPH was not detected in the remaining three samples at concentrations above the laboratory MDL. Earth Tech recommended no further action for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS advanced four soil borings and collected one soil sample from each boring. Three base soil samples were collected directly beneath the backfilled excavation along the centerline of the former tank and one sample was collected along the former pipe run. The soil samples were analyzed for TPH. TPH was not detected in the soil samples at concentrations above the MDL. PARS concluded that no additional investigation was warranted. An unrestricted use RAO was issued in May 2011. A copy of the RAO is included in Appendix A.

Conclusions

No further investigation is required for this area of concern.



3.1.8 6,000-Gallon #2 Fuel Oil UST at Building 404 (404SW)

Background

On August 12, 1997, Earth Tech removed a 6,000-gallon steel #2 fuel oil UST at Building 404. The UST was partially above grade and was located within a brick enclosure that was filled with soil. Slight soil staining was observed beneath the former fill pipe on the north end of the excavation and a discharge was reported to the NJDEP (Case # 97-09-16-1233-42). The UST was noted to be in satisfactory condition and groundwater was not encountered in the excavation.

One base and four sidewall post-excavation soil samples were collected and the samples were analyzed for TPH. TPH was detected at concentrations ranging from 61 to 3,900 mg/kg in the post-excavation soil samples, which was well below the soil remediation standard for petroleum hydrocarbons of 5,100 mg/kg. The sample with the highest TPH concentration was analyzed for volatile organic compounds (VOCs). No VOCs were detected at concentrations exceeding the most stringent soil remediation standards. Earth Tech recommended no further action for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.

In May 2010, PARS installed six soil borings and collected one soil sample from each boring. Four samples were collected at the centerline of the former tank, one soil sample was collected along the former pipe run and one sample was collected at the location of the previous post-excavation sample with a TPH concentration of 3,900 mg/kg. The samples were analyzed for TPH. TPH was detected in two of the centerline soil samples at concentrations of 9.9 and 17 mg/kg. TPH was not detected in the remaining samples. PARS concluded that no additional investigation was warranted and an unrestricted use RAO was issued in May 2011.

Conclusions

No further investigation is required for this area of concern.

3.1.9 1,500-Gallon #2 Fuel Oil UST at Former Building 283

Background

Building 283 was constructed in 1942 and was used as a mess hall and service club. Installation records from 1964 (Office of Engineer, Fort Dix) indicated that a 1,500-gallon # 2 fuel oil UST was associated with the building, which was demolished (Woodward-Clyde, 1997).

In August 1993, Versar conducted a GPR survey (50 feet by 150 feet) northeast of Building 283. No anomalies consistent with a UST were located during the survey (Versar, 1993). Earth Tech performed a GPR survey around the perimeter of former Building 283 in May 1997 and no anomalies consistent with a UST were located. Therefore, the tank was assumed to be removed and Earth Tech submitted documentation to NJDEP for closure of this UST on July 1, 1997 (Earth Tech, 1997).



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In 2005, Kemron performed an investigation adjacent to former Building 283. Investigation activities were discussed in the *Site Investigation of Specific Areas of Potential Environmental Concern* (Kemron 2005). Four soil borings were performed east of the former building and one soil sample for laboratory analysis was collected from each boring. TPH concentrations in the sample ranged from non-detect to 2,600 mg/kg. The sample with the highest TPH concentration (P0603SB06) also was analyzed for VOCs. No target compounds were detected in the sample at concentrations above the laboratory MDL. VOC tentatively identified compounds (TICs) were detected at a concentration of 148 mg/kg.

In May 2010, PARS advanced one soil boring adjacent to former Building 283 at the location of a boring installed in 2005 (PO603SB06). PID readings in the soil boring ranged from non-detect to 118.6 parts per milivolt (ppmV). One soil sample was collected from the 0.5-foot depth interval exhibiting the highest PID reading. The soil sample was analyzed for TPH. TPH was detected in the sample at a concentration of 1,000 mg/kg, which was below the soil remediation standard for petroleum hydrocarbons of 5,100 mg/kg. Additional analysis of the soil sample was triggered because the TPHC concentration of the soil sample was 1,000 mg/kg. Therefore, the soil sample was analyzed for naphthalene and 2-methylnaphthalene. Naphthalene and 2-methylnaphthalene were not detected in the soil sample at concentrations above the MDL. PARS concluded that no additional investigation was warranted and an unrestricted use RAO was issued in May 2011.

Conclusions

No further investigation is required for this area of concern.

3.1.10 1,000-Gallon #2 Fuel Oil AST at Former Building 273 (273N)

Background

On August 26 through 28, 1997, Earth Tech removed a 1,500-gallon steel #2 fuel oil steel AST (273N) at Building 273. The tank was registered as a UST with NJDEP as a UST. However, the tank was located on the concrete floor of the basement within a masonry enclosure that was partially filled with sand. This tank does not meet the definition of a UST as specified in the *Underground Storage Tank Rules* (N.J.A.C 7:14B).

A small corrosion hole was noted at the base of the UST and slight staining was noted on the concrete floor. Environmental sampling was not warranted because the tank was situated on the concrete floor in the basement of the building. A composite sample was collected from the sand that was located within the enclosure and the sample was analyzed for TPH. The TPH concentration of the composite sample was 329 mg/kg. The sand from within the enclosure was transported off-site for proper disposal.

Earth Tech recommended no further action for this UST. The *Underground Storage Tank Closure Report* (Earth Tech, October 23, 1997) was submitted to the NJDEP for review and approval. However, the report was not reviewed because the administration fees were not received by NJDEP.



On May 24, 2010, PARS inspected the concrete floor in the basement of Building 273. The inspection was performed to evaluate if there were any breaches in the floor at the location of the former AST. The concrete floor was observed to be intact with no breaches and no visual staining. A small amount of standing water was noted on the floor in the vicinity of the former tank. No sheen was visible on the water surface. PARS concluded that no additional investigation was warranted and an unrestricted use RAO was issued in May 2011.

Conclusions

No further investigation is required for this area of concern.

3.1.11 275-Gallon #2 Fuel Oil UST at Former Building 219

Background

Building 219 was 768 square feet and was used as living quarters. A 275-gallon # 2 fuel oil UST was identified in the *Environmental Baseline Survey* (Woodward-Clyde, 1997). The status of this tank was unknown. NJDEP Data Miner notes that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.

In 2005, Kemron conducted an investigation to confirm removal of the UST. One soil boring was advanced on each side of the former building. A soil sample was collected from each boring and was analyzed for TPH and VOCs. A groundwater screening sample was collected from each soil boring and was analyzed for VOCs and semi-volatile organic compounds (SVOCs). All soil and groundwater samples were below the laboratory MDL (Kemron, 2005).

Conclusions

Kemron recommended no additional investigation of this area of concern.

3.1.12 1,000-Gallon #2 Fuel Oil UST at Former Building 225

Background

Building 225 was constructed in 1942 and was used as living quarters. Installation documentation from 1964 (Office of Engineer, Fort Dix) indicated that a steel 1,000-gallon UST was installed at this building. NJDEP Data Miner notes that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.

Versar conducted a GPR survey in August 1993 and identified an unknown object at approximately three feet bgs in the vicinity of former Building 225 (depicted as Area 7). No anomalies consistent with a UST were identified as part of the survey (Versar, 1993).

Earth Tech performed a GPR survey at the Site in 1997. The report incorrectly identified former Building 225 at the intersection of Garrison Road and Artillery Avenue. All other historic maps depict Building 225 near the intersection of East Road and Barrack Avenue. A GPR Survey was performed in the vicinity of Building 225; however, Earth Tech Report identified the building as Building 235. No suspected UST was located by the GPR survey in the vicinity of former Building 225 (Earth Tech, 1997).



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In 2005, Kemron performed an investigation at former Building 225. Four subsurface soil samples were collected and analyzed for TPH and VOCs. Four groundwater screening samples were collected and analyzed for VOCs and SVOCs. TPH was detected in two soil samples at concentrations of 14.5 and 15.8 (mg/kg). All other analysis for soil and groundwater were below the laboratory MDL (Kemron, 2005).

Conclusions

Kemron recommended no additional investigation of this area of concern.

3.1.13 1,000-Gallon #2 Fuel Oil UST at Former Building 227

Background

Building 227 was constructed in 1942 and was used as an Officer's Club and living quarters. Installation documentation from 1964 (Office of Engineer, Fort Dix) identified a steel 1,000-gallon UST at this building. The *Environmental Baseline Survey* (Woodward-Clyde, 1997) indicated that this tank was abandoned in-place. However, no investigation of this UST was performed at the time of the EBS.

In 2005, Kemron performed an investigation at former Building 227. Four subsurface soil samples were collected and analyzed for TPH and VOCs. TPH was detected in one sample at a concentration of 22.8 mg/kg, which was below the soil remediation standard for petroleum hydrocarbons of 5,100 mg/kg. No other compounds were detected in the soil samples at concentrations above the laboratory MDL. Four groundwater screening samples were collected and analyzed for VOCs and SVOCs. Naphthalene was detected in one groundwater sample at a concentration of 0.066 micrograms per liter ($\mu\text{g/L}$), which was well below the New Jersey Groundwater Quality Standard (GWQS). No other compounds were detected in the groundwater samples at concentrations above the laboratory MDL (Kemron, 2005).

Conclusions

Kemron recommended no additional investigation of this area of concern.

3.1.14 1,000-Gallon #2 Fuel Oil UST at Former Building 235

Background

Historical records indicated that a 1,000-gallon # 2 fuel oil UST was present on the north side of Building 235. Two suspected fill ports were located north of former Building 235 and it was suspected that two USTs may have been present in this area (Woodward-Clyde, 1997).

A 1,000-gallon heating oil UST (235-1) was removed north of the building by Earth Tech in 1997. A second tank was not discovered during excavation activities. The NJDEP issued a No Further Action (NFA) determination for this UST on March 13, 2003. A copy of the NFA letter is included in Appendix B.

Conclusions

No further investigation is required for this area of concern.



3.1.15 #2 Fuel Oil UST at Former Building 259

Background

Facility 259 was constructed in 1942. The square footage and former use of the building is unknown. The *Environmental Baseline Survey* (Woodward-Clyde, March 1997) stated that the former facility was a ground storage reservoir and a tank was not associated with this structure. However, the *Environmental Baseline Survey* (URS, 2003) indicated that the facility was located in the housing and recreation area and may have contained a #2 fuel oil UST.

A GPR survey was conducted by Versar in August 1993. An anomaly was discovered on the southwest side of this facility consistent with the depth of a UST (3 to 4 feet bgs).

Kemron conducted an investigation of former Facility 259 in 2005. Four soil samples were collected along the northwest side of the former facility and the samples were analyzed for TPH and VOCs. Four groundwater screening samples were collected and were analyzed for VOCs and SVOCs. It should be noted that these samples were not collected in the vicinity of the anomaly that was discovered to the southwest by the GPR survey. No compounds were detected in the soil or groundwater samples at concentrations above the MDL (Kemron, 2005).

Conclusions

Kemron recommended no additional investigation of this area of concern.

3.1.16 275-Gallon #2 Heating Oil UST at Former Building 468

Building 468 was constructed in 1942 and was used as living quarters. The *Environmental Baseline Survey* (Woodward-Clyde, March 1997) identified a 275-gallon above ground storage tank (AST) at this building. However, the *Environmental Baseline Survey* (URS, 2003) identified the tank as a UST.

Earth Tech conducted a GPR survey in May 1997 (100 feet by 100 feet) and no anomalies were found. NJ Data Miner notes that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.

As part of the site investigation in 2005, Kemron recommended no further action regarding this area of concern because records indicate that the tank was an AST and no UST was discovered as part of the GPR survey performed in May 1997 (Kemron, 2005).

Conclusions

Kemron recommended no additional investigation of this area of concern.

3.1.17 275-Gallon Kerosene UST West of Building 413

Background

Earth Tech performed a GPR Survey in November 1997 which indicated that the survey of this area was inconclusive because of rebar in the concrete. An exploratory excavation was conducted at the location of the suspected UST. No UST was identified by the GPR survey or the exploratory excavations (Earth Tech, 1997).



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According to the *Site Investigation Report* (Kemron, 2005) installation records indicate that a kerosene UST of unknown size may have been located west of Building 413. Investigation of potential USTs in the vicinity of Building 413 is discussed in Section 3.1.18.

Kemron concluded that no additional investigation of this area of concern was warranted because no UST was discovered during the GPR survey and exploratory excavation work performed by Earth Tech in 1997. Additionally, Kemron indicated that the waste oil UST removed in 1997 may have mistakenly been identified as a kerosene UST (Kemron, 2005).

Conclusions

Based on the investigation performed by Earth Tech, Kemron concluded that no further investigation was required for this area of concern.

3.1.18 Former UST Investigation at Former Building 413

Background

Building 413 was previously used as a gas station and storage area for waste oil, solvents and flammable materials. Three USTs: 1,000-gallon waste oil UST (413-W), 11,000-gallon gasoline UST (413-NW) and 10,000-gallon diesel fuel UST (413-SW) were removed by Earth Tech in 1997. Lead was detected in the post-excavation samples from the gasoline UST at concentrations exceeding the most stringent NJ Soil Remediation Standard. No other compounds were detected in the post-excavation soil samples at concentrations exceeding the Soil Remediation Standard (Earth Tech, 1997b).

A GPR Survey was performed along the east, northeast and south perimeters of Building 413 to locate three suspected 5,000-gallon unleaded gasoline USTs (413NE, 413E and 413SE). Additionally, an exploratory excavation (30 feet by 10 feet and 5 feet deep) was conducted at the location of each suspected UST. No USTs were identified by the GPR survey or the exploratory excavations (Earth Tech, 1997).

In 1998, Brinkerhoff Environmental Services (Brinkerhoff) conducted a remedial investigation, which included the installation of four monitoring wells (413W-MW1, 413W-MW2, 413NW-MW1, and 413NW-MW2). Groundwater samples were collected from the monitoring wells and were analyzed for full Priority Pollutant List compounds (PPL+40). PCE was detected in the groundwater sample from 413W-MW1 at a concentration of 1.98 µg/L, which exceeded the NJ GWQS. All other compounds were below the NJ GWQS. PCE groundwater impacts are discussed in Section 3.2.5.

An investigation was performed by EA Engineering in 2000 to further evaluate potential impacts from the USTs adjacent to Building 413. One monitoring well (EA-413-01) was installed seven feet down gradient of the 11,000-gallon gasoline UST. A groundwater sample was collected and analyzed for VOCs and lead. VOCs were not detected above the laboratory MDL. Lead was detected at a concentration below the GWQS.



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Soil was excavated in the approximate area of the former 11,000-gallon gasoline UST and seven post-excavation soil samples were collected. The samples were analyzed for VOCs and lead. A groundwater sample was also collected from the base of the excavation and analyzed for VOCs and lead. No compounds were detected in the soil samples at concentrations exceeding the most stringent NJ Soil Remediation Standard and no compounds were detected in the groundwater sample at concentrations exceeding the NJ GWQS (EA Engineering, 2000). The NJDEP issued a NFA determination on March 13, 2003 for the three removed USTs (see Appendix B).

In 2005, Kemron collected six soil samples in the vicinity of former Building 413. All soil samples were analyzed for TPH. Two soil samples were also analyzed for VOCs, SVOCs and polychlorinated biphenyls (PCBs) and one soil sample was analyzed for metals. No compounds were detected at concentrations exceeding the most stringent NJ Soil Remediation Standard. Four soil borings were converted to temporary well points and two groundwater screening samples were collected from each boring. Groundwater samples also were collected from three monitoring wells (413-W-MW1, 413-NW-MW1 and MW-16-001). The groundwater samples were analyzed for VOCs, SVOCs, PCBs and metals. Arsenic, chromium and lead were detected at concentrations exceeding the NJ GWQC in six groundwater screening samples. No other compounds were detected a concentrations exceeding the GWQS (Kemron, 2005).

In 2006, USACHPPM installed two monitoring wells (413-MW-02 and 413-MW-03). Groundwater samples were collected from four monitoring wells (413-W-MW1, 413-NW-MW1, 413-MW-02 and 413-MW-03). The samples were analyzed for VOCs, SVOCs, TPH, arsenic, boron, cadmium, chromium, lead and molybdenum. Lead was detected in the groundwater sample from 413-W-MW1 at concentrations exceeding the NJ GWQS. No other compounds were detected at concentrations exceeding the GWQS. Trace concentrations of PCE were detected in the samples from 413-W-MW1 and 413-MW-03 (USACHPPM, 2006).

In 2008, USACHPPM conducted a Human Health Risk Assessment (HHRA), which concluded that there is no unacceptable risk from exposure to groundwater for commercial/industrial workers and residential exposure based on current or future land use.

In September 2012, a Decision Document was issued by the United States Army was issued by the United States Army stating that the remedial action to be taken to protect exposure of arsenic in soil to children is a land use control.

Conclusions

Based on the findings of the investigation and remediation activities, as wells at the findings of the HHRA, no further investigation is warranted for this area of concern.

3.1.19 1,500-Gallon #2 Fuel Oil UST at Building 171

Background

EnSolutions, Inc. (EnSolutions) was retained to remove a 1,500-gallon #2 fuel oil UST (171) at Building 171. The tank system was noted to be in satisfactory condition and there was no evidence of a discharge. No compounds were detected in the post-excavation soil samples at concentrations exceeding the most stringent Soil Remediation Standards.



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A *Closure Report* dated September 1998 was submitted to NJDEP for review and approval. NJDEP issued a NFA determination for this AOC on December 18, 1998. A copy of the NFA letter from NJDEP is included in Appendix C.

Conclusion

No further investigation is required for this area of concern.

3.1.20 USTs at Building 173

EnSolutions was retained to remove a 1,000-gallon #2 fuel oil UST and 4,000-gallon #2 fuel oil UST at Building 173. The tank systems were noted to be in satisfactory condition and there was no evidence of a discharge. No compounds were detected in the post-excavation soil samples at concentrations exceeding the most stringent NJ Soil Remediation Standards.

A *Closure Report* dated September 1998 was submitted to NJDEP and an NFA determination was issued on December 18, 1998. A copy of the NFA letter from NJDEP is included in Appendix C.

Conclusion

No further investigation is required for this area of concern.

3.1.21 UST at Building 229 (229-1)

On May 12, 1997, Earth Tech removed a 275-gallon unleaded gasoline UST at Building 229. The UST was noted to be in good condition with no visual holes. Groundwater was not encountered in the excavation. Three post-excavation soil samples were collected from the excavation and were analyzed for VOCs and lead. No VOCs were detected at concentrations above the laboratory MDL and lead was not detected at concentrations exceeding the most stringent NJ Soil Remediation Standard. Earth Tech recommended no further action for this area of concern (Earth Tech, 1997).

The *Underground Storage Tank Closure Report* (Earth Tech, July 28, 1997) was submitted to the NJDEP and a NFA determination was subsequently issued. A copy of the NFA letter is included in Appendix C.

Conclusion

No further investigation is required for this area of concern.

3.1.22 1,000-Gallon Diesel UST at Former Building 190

Background

Building 190 was an access control building (sentry house). Installation records indicated that a 1,000-gallon diesel UST was located adjacent to Building 190. An exploratory excavation was performed in the area of the suspected UST by Earth Tech in 1997. A UST was not located within the excavated area. A GPR survey was not performed for this area of concern.



Conclusions

It was concluded during a March 16, 2010 conference call between the Assistant Chief of Staff for Installation Management (ACSIM), National Environmental Protection Act (NEPA) Team, Army Environmental Command (AEC) and USAR that no additional investigation was required for this area of concern. This conclusion was based on previous investigation work performed for this area.

3.1.23 Two 1,000-Gallon #2 Fuel Oil USTs at Former Building 220

Background

Building 220 was an Officer Quarters and Officer Club. Installation records indicated that two 1,000-gallon #2 fuel oil USTs were located adjacent to this building. A GPR survey was performed of this area by Versar in 1993 (designated as Area 10-1 and Area 10-2). A suspected UST was identified by the survey at each location.

In 1997, a GPR survey was performed by Earth Tech west and southwest of the building foundation. Anomalies consistent with pipes were identified at each location. The report made no reference to the potential tank anomalies that were identified by Versar in Area 10-2 (south of the apparent utility lines). Earth Tech performed exploratory excavations at each location. A boiler was discovered and removed from the southwest survey area and a gas line was located in the western survey area. The report does not make reference to the extent of the exploratory excavation (Earth Tech, 1997).

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern. This conclusion was based on previous investigation work performed for this area.

3.1.24 275-Gallon #2 Fuel Oil UST at Former Building 270

Installation records indicated that a 275-gallon #2 fuel oil UST was located at Building 270 (Woodward-Clyde, 1997). In 1997, Earth Tech performed a GPR survey and exploratory excavation in this area. The survey and exploratory excavation did not identify a UST associated with Building 270. NJDEP Data Miner indicates that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern. This conclusion was based on previous investigation work performed for this area.

3.1.25 Three 1,000-Gallon #2 Fuel Oil USTs at Former Building 272

Background

Installation records indicated that three 1,000-gallon # 2 fuel oil USTs (272-1, 272-2 and 272-3) were located at Building 272. In 1997, Earth Tech performed an excavation adjacent to the northeast and southwest sides of the building foundation. No USTs were located during the exploratory excavations. A GPR survey was not performed in the vicinity of Building 272. NJDEP Data Miner notes that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.



Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern. This conclusion was based on previous investigation work performed for this area.

3.1.26 1,000-Gallon #2 Fuel Oil UST at Building 228

Background

Installation records indicated that a 1,000-gallon #2 fuel oil UST (282-1) was located at Building 282. A GPR survey of this area was performed by Versar in 1993 (designated as Area 8). The survey identified several targets that were likely utility lines. The area also contained an object that was identified as a potential UST.

In 1997, Earth Tech performed a GPR survey and exploratory excavation. No UST was located during the GPR survey or exploratory excavation. NJDEP Data Miner notes that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.

Conclusions

No additional investigation is required for this area of concern.

3.1.27 275-Gallon #2 Fuel Oil UST at Former Building 426

Installation records indicated that a 275-gallon # 2 fuel oil was located at Building 426. In 1997, Earth Tech performed a GPR survey and exploratory excavation. However, based on a review of the map included with the report, it appears that the survey and exploratory boring was performed at former Building 488 located northwest of Building 426. NJDEP Data Miner notes that the UST was removed on July 1, 1997. However, there is no additional information regarding the removal of the tank.

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern. This conclusion was based on previous investigation work performed for this area.

3.1.28 110-Gallon Gasoline UST at Building 404 (404-1)

Background

A 110-gallon gasoline UST (404-1) was excavated by Earth Tech in 1997. Post-excavation sampling was conducted and one soil sample had total VOC and naphthalene concentrations that exceeded the NJ Soil Remediation Standard.

In 1998, Brinkerhoff conducted a remedial investigation, which included the installation of three monitoring wells (401-1-MW1, 402-MW2 and 404-3-MW1). Soil samples and groundwater samples were collected as part of the investigation and were analyzed for VOCs. No compounds were detected at concentrations above the laboratory MDL (Brinkerhoff, 1998).



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In 1999, EA Engineering conducted a remedial action at Building 404. The former excavation was extended beyond the original boundaries (15 feet by 12 feet by 6 feet deep). Four post excavation soil samples were collected and were analyzed for VOCs and lead. Post-excavation soil sample results were below the most stringent NJ Soil Remediation Standard.

As part of the remedial action performed by EA Engineering, a groundwater sample was collected from monitoring well (MW-404-1). The sample was analyzed for VOCs and lead. No compounds were detected in the groundwater sample at concentrations exceeding the GWQS (EA Engineering, 1999). In March 2003, the NJDEP granted an NFA determination for UST 404-1. A copy of the NFA letter is included in Appendix B.

Conclusion

No further investigation is required for this area of concern.

3.2 OTHER AREAS OF CONCERN

The following areas of concern were identified as part of the Environmental Baseline Survey (EBS) by Woodward-Clyde in 1997, the EBS conducted by URS in 2003 and the Site Investigation of Specific Areas of Environmental Concern performed by Kemron in 2005.

3.2.1 Hydraulic Fuel Spill

Background

According to the *Memorandum Regarding Pedricktown ECS #24 Subshop Hydraulic Oil Release* (Fritz, 1995), a one gallon release of hydraulic fluid occurred on March 3, 1995. The release was from a hydraulic cylinder of a vehicle parked in the parking area on the northwestern portion of the Site. Approximately 2.4 to 3.6 cubic yards of soil was excavated from the area (8 feet by 8 feet by 1.5 feet deep). There were no records that post-excavation sampling was performed as part of the remedial action.

Based on this information and the location identified in the *Environmental Baseline Survey Report* (Woodward-Clyde, 1997), Kemron collected four soil samples (P08SB0106, 0206, 0306 and 0406) for TPH analysis. TPH was not detected in any of the samples above the laboratory MDL. Sample P06SB0306 also was analyzed for PAHs. PAHs were not detected above the MDL for the compounds.

Four groundwater screening samples (P08GW0110, 0210, 0310 and 0410) were collected and analyzed for VOCs and SVOCs. VOCs were not detected above the MDL for the compounds. No VOCs were detected at concentrations exceeding the GWQS.

Conclusions

No further action was recommended for the hydraulic fuel spill.



3.2.2 Arsenic in Soil at Buildings 464 & 434

Background

Elevated levels of arsenic were detected at the adjacent Base Closure and Realignment Commission (BRAC) portion of Camp Pedricktown. These investigation activities are summarized in the *Environmental Investigation/Alternatives Analysis* (EI/AA, IT Corporation 2000). Impacted soils were subsequently excavated based on the findings of the investigation. The excavation was not extended onto the Reserve Enclave. Four soil samples were inadvertently collected at the Site north of Building 464 in March 2001. Arsenic was detected in these samples at concentrations ranging from 58 to 107 mg/kg, which exceeded the NJ Soil Remediation Standard for the compound. The findings of the March 2001 sampling north of Building 464 are summarized in the *Soil Excavation from the BRAC Property* (ARCADIS, March 2002).

The following is a summary of additional investigations conducted at the Site involving Buildings 464 & 434:

Site Investigation of Specific Areas of Potential Environmental Concern (Kemron, 2005)

Two ConVault® above ground storage tanks (ASTs) containing fuel oil were present east of Building 464. These tanks were installed in 1995 and were constructed of double wall steel and contained fuel oil. As stated in the report, investigation of the ASTs was not warranted. However, investigation of the elevated arsenic concentrations was required.

Twelve subsurface soil samples (P10SB01104A-C; P10SB204A-C; P10SB304A-C and P10SB404A-C), ten surface soil samples (P10SS0100-P101SS01000) and one groundwater screening sample (P10GW0415) were collected east of Building 464 for arsenic analysis. Concentrations of arsenic exceeded the NJ Soil Remediation Standard for the compound in 14 soil samples. Arsenic was not detected in the groundwater screening sample at concentrations exceeding the GWQS. Based on the findings of the site investigation, Kemron recommended the excavation of arsenic impacted soils.

Follow-On Closure Activities (CATI, September 2006)

Additional investigation was performed at the Site in 2006 to evaluate the extent of arsenic impacts in the vicinity of Building 464. Six soil borings were advanced to depths ranging from 10 to 20 feet bgs. One soil sample was collected from each boring. Temporary well points were installed in five of the boreholes for the collection of groundwater samples. All samples collected were analyzed for metals. No compounds were detected in the soil samples at concentrations exceeding the most stringent NJ Soil Remediation Standards. Lead and arsenic exceeded the GWQS in the groundwater sample from one temporary well point (PED-GW03).

Coal slag was identified in the investigation area and two coal slag samples were collected as part of this investigation. The first sample (PED-SLAG01) was collected from the surface of the roadway between Buildings 464 and 434. The second sample (PED-SLAG02) was collected from boring B4 (east of Building 464). The samples were analyzed for metals. Elevated concentrations of arsenic and mercury were detected in the coal slag samples.



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Continued Site Investigation (USACHPPM, December 2006)

An investigation was performed between October and December 2006 to further evaluate the extent of arsenic impacts. Five soil borings were performed around the perimeter of Building 434 and soil samples were collected from each boring at three depth intervals. Arsenic was detected at concentrations exceeding the NJ Soil Remediation Standard in three soil samples (434-SB-03-0618, 434-SB-03-1830 and 434-SB-03-3042) which were collected east of Building 434.

Four of the soil borings were converted into monitoring wells (434-MW-01 through 434-MW-04). The four monitoring wells were sampled using low-flow purging methods and analyzed for explosive residues, arsenic, boron, cadmium, chromium, lead and molybdenum. Arsenic and lead exceeded the NJ GWQS in groundwater samples from two monitoring wells (434-MW-02 and 434-MW-04). The monitoring wells were abandoned in 2011 and the well abandonment records are included in Appendix E.

Human Health Risk Assessment (USACHPPM, 2008)

In 2008, USACHPPM conducted a HHRA, which concluded that exposure to arsenic impacted soil is safe for industrial, construction and adult residential use. The residential child's potential carcinogenic exposure is $1.3E 10^{-4}$, which is slightly above the USEPA acceptable carcinogenic risk range of $1.0E 10^{-4}$ to $1.0E 10^{-6}$. The residential child's potential non-carcinogenic exposure is 3.43, which is slightly above the non-carcinogenic threshold of 1.

Decision Document

In September 2012, a Decision Document was issued by the United States Army stating that the remedial action to be taken to protect exposure of arsenic in soil to children is a land use control.

Conclusion

Based on the findings and conclusions of the HHRA and Decision Document, the United States Army is developing a land use control implementation plan to restrict the use of the property for children is being developed to address the potential risk to the residential child.

The monitoring wells for this area of concern were abandoned in 2011 and the well abandonment records are included in Appendix D.

3.2.3 TPH and Cadmium in Storm Drain/Storm Sewer System near Bldg 173

Background

Three storm sewer samples were collected from catch basins at the Site by Versar in 1993. Samples were analyzed for VOCs, SVOCs, metals, TPH and explosive compounds. The surface water sample collected from the catch basin near former Building 173 contained a TPH concentration of 14,000 $\mu\text{g/L}$. Elevated concentrations of metals, including arsenic, cadmium and chromium, were also detected at two other surface water sample locations (SW16-001 and SW17-001).



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Versar collected sediment samples from two catch basins (SW16-001 and SW17-001). Several SVOCs and metals were detected in the sediment samples at concentrations above the NJ Freshwater Sediment Screening Levels (Versar, 1993).

Based on the findings of the investigation performed by Versar, Kemron collected one surface water sample (SW-18-001) from the catch basin near former Building 173 (Kemron, 2005). The surface water sample was analyzed for VOCs and cadmium. No compounds were detected in the surface water sample at concentrations above the laboratory MDL. Sediment was not present in the catch basins located within 20 feet upstream or downstream of the surface water sample location.

Conclusions

Kemron recommended no further investigation of this area of concern and the United States Army determined that no additional investigation of the storm sewer system is required.

The storm water utility system was included in the *Finding of Suitability to Transfer (FOST)* prepared in 2005. The FOST documented the suitability to transfer United States Army owned utilities, including the storm sewer system to the local redevelopment authority consistent with CERCLA and the Department of Defense (DoD) policy. The utilities were subsequently transferred to the local redevelopment authority.

3.2.4 Depression of Unknown Origin in Military Parking Lot

Background

Kemron investigated a second area in the military parking lot based on a visual depression thought to be related to the hydraulic oil spill. Four soil samples (P12SB0106, 0206, 0306 and 0406) were collected from this area. TPH was detected in one sample (P12SB0306) at a concentration of 25.4 mg/kg. This sample was also analyzed for VOCs and metals. VOCs were not detected above the applicable laboratory MDL and metals were not detected at concentrations exceeding the most stringent New Jersey Soil Remediation Standards.

Kemron collected two groundwater screening samples (P12GW0110 and 0210) from this area and analyzed the samples for VOCs, SVOCs, PCBs and metals. Arsenic, chromium and lead were detected in the groundwater screening samples at concentrations exceeding the GWQS (Kemron, 2005).

Based on the groundwater screening samples collected by Kemron, the USACHPPM installed monitoring wells in this area in November 2006. Soil samples were collected from each location and were analyzed for SVOCs, TPH, arsenic, boron, cadmium, lead and molybdenum. No compounds were detected at concentrations exceeding the most stringent New Jersey Soil Remediation Standards (USACHPPM, 2006).

Groundwater samples were collected from three wells (12-MW02, 12-MW03 and 13-MW01) in December 2006 and were analyzed for SVOCs, TPH, arsenic, boron, cadmium, chromium, lead and molybdenum. Lead was detected in all three samples at concentrations exceeding the GWQS and arsenic was detected in the groundwater sample from 12-MW02 at concentrations exceeding the NJ GWQS (USACHPPM, 2006).



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In 2008, USACHPPM conducted a HHRA, which examined the risk of contamination to groundwater for commercial/industrial workers and residents via ingestion and dermal exposure. The HHRA concluded that there is no unacceptable risk from exposure to groundwater for commercial/industrial workers and residential exposure based on current or future land use (USACHPPM, 2008).

In September 2012, a Decision Document was issued by the United States Army stating that the remedial action to be taken to protect exposure of arsenic in soil to children is a land use control.

Conclusions

Based on the findings of the HHRA, the United States Army concluded in the Decision Document that no additional investigation of this area of concern is warranted.

The monitoring wells were abandoned in 2011. Well abandonment records are included in Appendix D.

3.2.5 Site-Wide PCE Groundwater Contamination

Background

As part of previous investigations at the Site, tetrachloroethene (PCE) has been detected in groundwater samples at concentrations exceeding the GWQS.

Investigations at the adjacent Camp Pedricktown BRAC facility have revealed PCE groundwater contamination. This groundwater contamination included a main source area on the northern portion of this property, as well as several localized impacted areas. Some of these localized impacted areas are located near the boundaries between the BRAC facility and the Site. Natural attenuation was selected as the remedial option to address the localized groundwater impacts. In 2002, a Classification Exception Area (CEA) and Well Restriction Area (WRA) were implemented for the entire BRAC facility.

In 2005, Kemron conducted a groundwater investigation near the northeast corner of the Military Parking Area and near Building 413. PCE was detected in one groundwater sample in the Military Parking Area and two samples near Building 413 at concentrations exceeding the NJ GWQS. Metals were detected in the groundwater screening samples near Building 413. However, these samples were not considered representative because low-flow sampling methodologies were not employed (Kemron, 2005).

In September 2006, CATI conducted an investigation at Building 464 and collected groundwater samples from temporary well points installed around the perimeter of the building. The samples were analyzed for metals. Arsenic and lead were detected in one sample at concentrations exceeding the NJ GWQS (CATI, 2006).

In December 2006, USACHPPM collected groundwater samples from eleven monitoring wells. Arsenic was detected in two wells and lead was detected in six wells at concentrations exceeding the NJ GWQS. Trace concentrations of PCE were detected in the samples from two monitoring wells (413-W-MW1 and 413-MW-03) (USACHPPM, 2006).



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In 2008, USACHPPM conducted a HHRA, which examined the risk of contamination to groundwater for commercial/industrial workers and residents via ingestion and dermal exposure. The HHRA concluded that there is no unacceptable risk from exposure to groundwater for commercial/industrial workers and residential exposure based on current or future land use (USACHPPM, 2008).

In September 2012, a Decision Document was issued by the United States Army stating that the remedial action to be taken to protect exposure of arsenic in soil to children is a land use control.

Conclusion

Based on the findings of the HHRA, the United States Army concluded in the Decision Document that no additional investigation of this area of concern is warranted.

In 2011, four monitoring wells related to the investigation at Building 413 were abandoned. Well abandonment records are including in Appendix D.

3.2.6 Potential TPH, Solvents and Metals Contamination from Bldg 404

Background

Building 404 was historically used for vehicle maintenance, including areas for vehicle wash and drum storage. Petroleum waste generated at the Site included waste oil, grease and solvent.

Site Investigation

In 2005, Kemron advanced seven soil borings at the Site and collected one soil sample from each boring. Soil samples were analyzed for TPH. Two samples were also analyzed for VOCs, SVOCs, PCBs and metals. TPH was detected in one soil sample (P1503SB10) at a concentration of 23.2 mg/kg, which was well below the NJ Residential Direct Contact Soil Remediation Standard. Metals were detected in the soil samples at concentrations below the most stringent Soil Remediation Standards. VOCs, SVOCs and PCBs were not detected in the soil samples at concentrations above the laboratory MDLs.

Two groundwater samples were collected at each boring location (temporary screened intervals of 5 to 10 feet and 10 to 15 feet). Additionally, groundwater samples were collected from two monitoring wells (404-2-MW2 and 404-3-MW1). The groundwater samples were analyzed for VOCs, SVOCs, PCBs and metals. Arsenic, cadmium, chromium, lead and nickel were detected in the groundwater screening samples from the borings at concentrations exceeding the NJ GWQS. No other compounds were detected in the groundwater samples at concentrations exceeding the NJ GWQS. Based on the findings of the investigation, Kemron recommended no further investigation for this AOC (Kemron, 2005).



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Hydraulic Lift System

A hydraulic lift was identified in Building 404 during an inspection performed in February 2012. On February 23, 2012, personnel from the USAR, 99th Regional Support Command (RSC) opened the grate for the trough for the hydraulic lift and identified what appeared to be hydraulic oil. In August 2012, the oil was pumped from the trough and the trough was pressure washed. Generated liquids were transported off-site for proper disposal. The concrete trough was inspected and there was no visual evidence of cracks or breaches in the concrete.

Storm Sewer Pit

A pit was identified west of Building 404. The wall of the pit is constructed of brick and mortar and the floor of the pit is concrete. Based on facility diagrams, it appears that the pit is connected to the storm sewer system. No sheen was present on the water in the pit. In August 2012, the water from the pit was pumped and the walls were pressure washed. Generated water was transported off-site for proper disposal. The pit was inspected and there was no visual evidence of cracks or breaches in the brick walls and the concrete floor. There was also no evidence that petroleum products or hazardous substances had been discharged into the pit.

Conclusions

Based on the investigation and remedial action activities described above, no additional investigation is proposed for Building 404.

In 2011, two monitoring wells related to building 404 (404-1-MW3 and 404-1-MW2) were abandoned. Well abandonment records are including in Appendix E.

3.2.7 Potential PCB-Containing Transformers

Background

In 2004, Kemron collected soil samples from underneath potential PCB-containing pole mount transformers. PCBs were detected in one sample at concentrations above the laboratory MDL. PCBs in the surface soil under Transformer #62 were 0.12 mg/kg, which was well below the most stringent New Jersey Soil Remediation Standard. Kemron recommended that the transformer at this location be removed.

The *Transformer Survey Closeout Report* indicated that the dielectric mineral oil from this transformer contained PCBs at a concentration of 86 mg/kg. The report also noted that the transformer was active and was not leaking. It appears that this transformer was removed based on observations made during a reconnaissance of the Site in September 2009.

One of three leaking transformers identified in the *Transformer Survey Closeout Report* was investigated by Kemron. This transformer, which was removed in 2005, was designated as #49 in the *Transformer Survey Closeout Report*. The transformer was inactive at the time of the survey and dielectric mineral contained less than 5 mg/kg of PCBs. PCBs were not detected at concentrations above the MDL for soil samples collected at this AOC.

Conclusion

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern because all utilities had been transferred to the local redevelopment authority.



The transformers were included in the FOST prepared in 2005. The FOST documented the suitability to transfer United States Army owned utilities, including the transformers to the local redevelopment authority consistent with CERCLA and the DoD policy. The utilities were subsequently transferred to the local redevelopment authority.

3.2.8 Leaking Transformer #50

Background

During a reconnaissance of the Site in September 2009, stains were noted on a pole-mount transformer (#50) near the intersection of Depot Avenue and Delaware Road. No stains or stressed vegetation was visible on the ground surface beneath the transformer. This transformer was not investigated by Kemron. The *Electrical Transformer Survey Closeout Report* (ECG Industries, August 2005) indicated that this transformer was inactive and contained dielectric mineral oil with PCB concentrations of 150 mg/kg. The transformer was reportedly not leaking at the time of the survey.

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern because all utilities had been transferred to the local redevelopment authority.

The transformers were included in the FOST prepared in 2005. The FOST documented the suitability to transfer United States Army owned utilities, including the transformers to the local redevelopment authority consistent with CERCLA and the DoD policy. The utilities were subsequently transferred to the local redevelopment authority.

3.2.9 Leaking Transformer #37

Background

The *Transformer Survey Closeout Report* identified a leaking transformer west of Building 229 (#37). Based on the map included in the report, it appears that the transformer was located southeast of this building. The transformer, which was removed in 2005, was inactive and contained PCBs at a concentration of 24 mg/kg. This transformer was not investigated by Kemron.

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern because all utilities had been transferred to the local redevelopment authority.

The transformers were included in the FOST prepared in 2005. The FOST documented the suitability to transfer United States Army owned utilities, including the transformers to the local redevelopment authority consistent with CERCLA and the DoD policy. The utilities were subsequently transferred to the local redevelopment authority.



3.2.10 Leaking Transformer #51

Background

The *Transformer Survey Closeout Report* identified a leaking transformer (# 51) southwest of Building 464. The transformer, which was removed in 2005, was inactive and contained no detectable concentrations of PCBs. This transformer was not investigated by Kemron. During the ECP site reconnaissance in February 2012, Transformer #51 was present and in good condition. The transformer had a non-PCB sticker. No ground surface staining or stressed vegetation was present.

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern because all utilities had been transferred to the local redevelopment authority.

The transformers were included in the FOST prepared in 2005. The FOST documented the suitability to transfer United States Army owned utilities, including the transformers to the local redevelopment authority consistent with CERCLA and the DoD policy. The utilities were subsequently transferred to the local redevelopment authority.

3.2.11 Lead Surface Soil Impacts from Water Towers

Background

Two water towers (Structures 239 and 249) are located on the southwest portion of the Site. In January 2000, the Department of the Army collected four surface soil samples for arsenic and lead analysis. Arsenic was not detected above the laboratory MDL, but lead concentrations ranged from 2,740 to 6,390 mg/kg.

In January 2003, AMEC was retained to remove lead-based paint from the interior and exterior of the tanks and to resurface the tanks with epoxy-based paint. Soil was excavated from beneath the two water towers at depths ranging from 0.5-2.0 feet below ground surface based on pre-abatement soil sample results. The report indicates that post-excavation soil sample results were below 400 mg/kg (AMEC, 2003).

In 2005, Kemron collected five surface soil samples near Building 219 to determine if lead impacts in the soil extended beyond the water tower boundaries. Lead was detected in the soil samples at concentrations ranging from 123 to 351 mg/kg. The soil results did not exceed the Residential or Non-Residential Direct Contact Soil Remediation Standard for lead (Kemron, 2005).

Conclusions

It was concluded during a March 16, 2010 conference call between the ACSIM, NEPA Team, AEC and USAR that no additional investigation was required for this area of concern because all utilities had been transferred to the local redevelopment authority.

The water towers were included in the FOST prepared in 2005. The FOST documented the suitability to transfer United States Army owned utilities, including the water towers to the local redevelopment authority consistent with CERCLA and the DoD policy. The utilities were subsequently transferred to the local redevelopment authority.



4.0 CONCLUSIONS

The Comprehensive Site Assessment provides a comprehensive review of environmental data collected at the Site. PARS reviewed available files for environmental assessments and investigations that have been performed at the Site. Files reviewed include records obtained from the USAR, 99th RSC and the NJDEP.

Based on the review of available records and discussions with the United States Army, no additional investigation of the identified areas of concern is warranted for the Site. The HHRA concluded that there is slightly elevated risk to the residential child's exposure to soil. The remedial action chosen by the Army, as documented in the Decision Document, is in the form of a land use control. Therefore, a land use control implementation plan is being developed to address the potential risk to the residential child from exposure to arsenic in soil.



5.0 REFERENCES

1. ARCADIS, 2002. *Remedial Action Report for Soil*, ARCADIS, March 2002.
2. Brinkerhoff, 1998. *Remedial Investigation Report*, Brinkerhoff Environmental Services, September 1998.
3. CATI, 2006. *Follow On Closure Report*, CATI, Inc., September 2006.
4. Department of the Army, 2005. *Finding of Suitability to Transfer*, Department of the Army, May 2005.
5. Department of the Army, 2012. *Decision Document*, Department of the Army, September 2012.
6. Department of the Army, 2012. *Proposed Plan*, Department of the Army, March 2012.
7. EA, 2000. *Focused Remedial Investigation Report*, EA Engineering, Science and Technology Inc., January 2000.
8. Earth Tech, 1997. *Results of GPR Surveys and Exploratory Excavations*, Earth Tech, November 1997.
9. Earth Tech, 1997a. *Underground Storage Tank System Closure*, Earth Tech, August 1997.
10. Earth Tech, 1997b. *Underground Storage Tank System Closure*, Earth Tech, October 1997.
11. ECG Industries, 2005. *Electrical Transformer Survey Closeout Report*, ECG Industries, Inc., August 2005.
12. Kemron, 2005. *Site Investigation of Specific Areas of Potential Environmental Concern*, Kemron, 2005.
13. Ogden Environmental, 2004. *Lead Based Paint Risk Assessment Report*, Ogden Environmental & Energy Services Co. Inc., 2004.
14. Tetra Tech, 1998. *Phase I Archaeological Survey of Pedricktown Support Facility*, Tetra Tech, January 1998.
15. Traceries, 1998. *Historic Architectural Inventory Survey and Determination of Eligibility*, Traceries, January 1998.
16. PARS Environmental, 2010. *Site Investigation*, PARS Environmental, August 2010.
17. PARS Environmental, 2012. *Comprehensive Site Assessment*, PARS Environmental, March 2012.
18. RMC Environmental Services, 1991. *Preliminary Site Assessment*, RMC Environmental Services, April 1991.
19. URS, 2003. *Environmental Baseline Survey*, URS, 2003.
20. USACE NYD, 1995. *Evaluation of Structures Report*, USACE NYD, 1995.
21. USACHPPM, 1995. *Hazardous Waste Management Consultation*, USACHPPM, April 1995.
22. USACHPPM, 2007. *Continued Site Investigation*, USACHPPM, April 2007.



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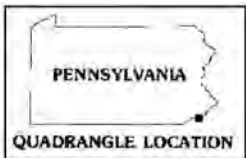
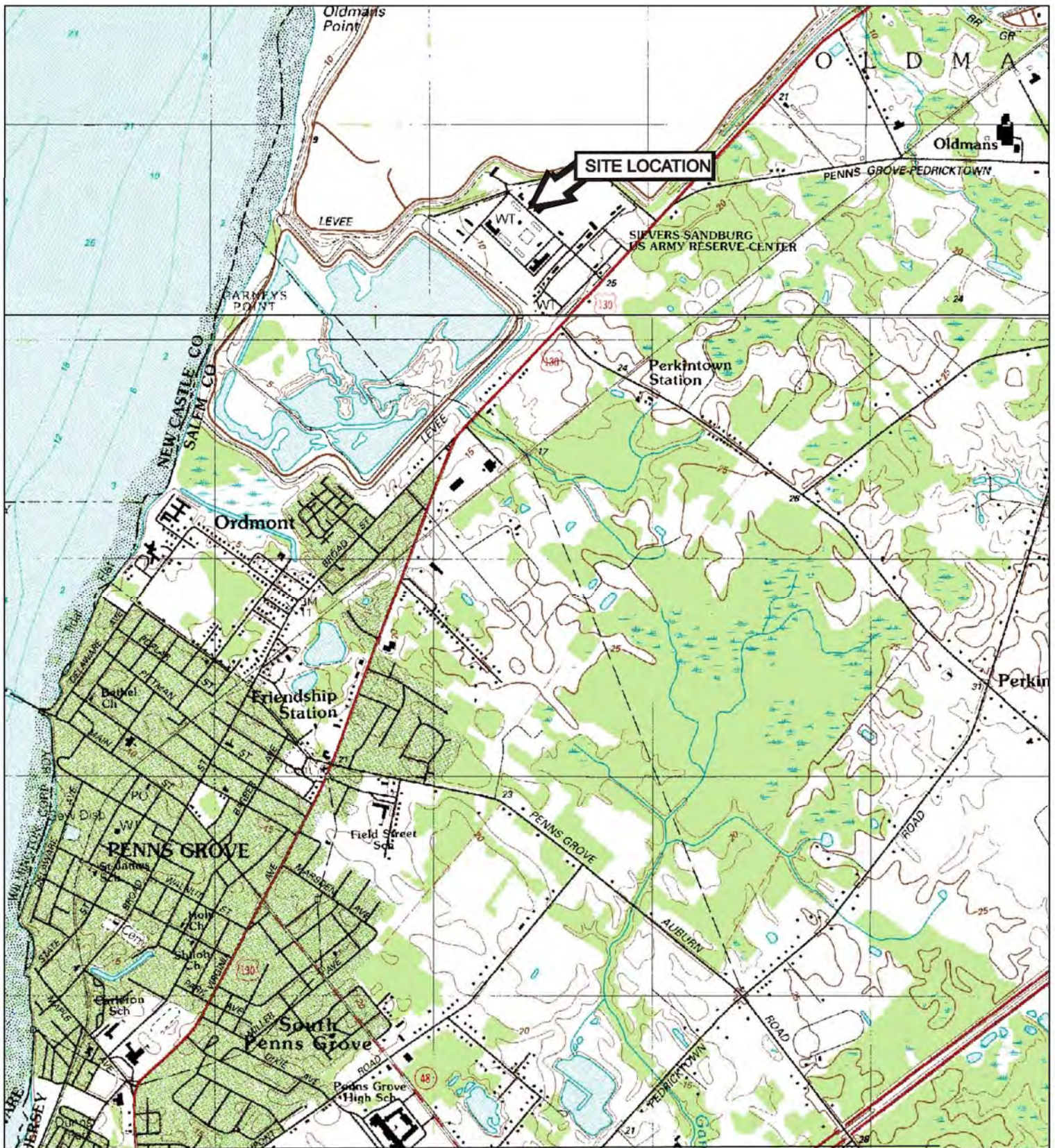
23. USACHPPM, 2008. *Human Health Risk Assessment*, USACHPPM, 2008.
24. Versar, 1993. *Ground Penetrating Radar (GPR) Survey*, Versar, August 1993.
25. Woodward-Clyde, 1997. *Environmental Baseline Survey*, Woodward-Clyde, March 1997.



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FIGURES



Contour Interval: 10 feet

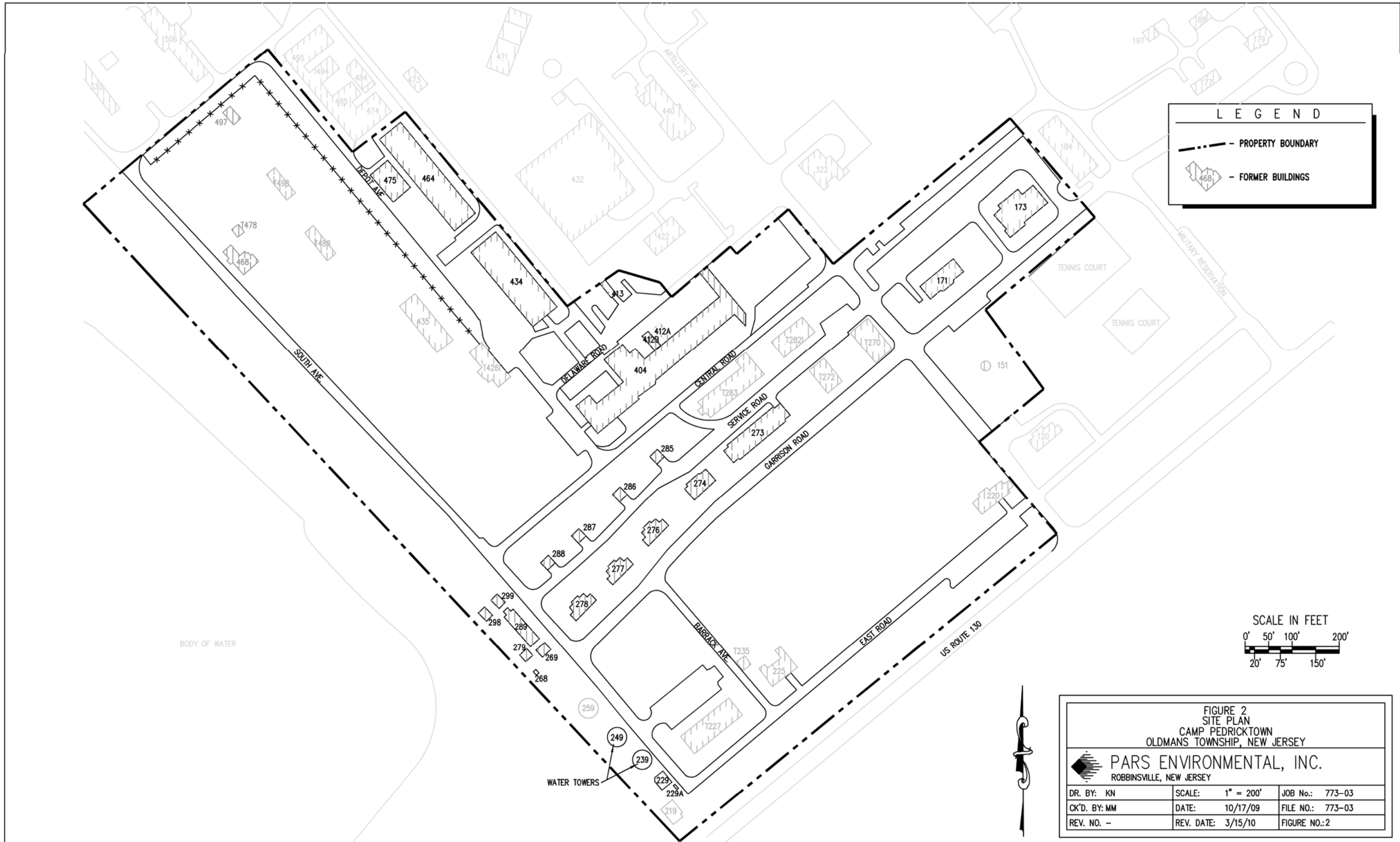
Marcus Hook, PA-NJ-DEL
USGS Quadrangle 1993



FIGURE 1
SITE LOCATION MAP
CAMP PEDRICKTOWN
OLDMANS TOWNSHIP, NEW JERSEY

PARS ENVIRONMENTAL, INC.
ROBBINSVILLE, NEW JERSEY

DR. BY: KN	SCALE: 1" = 2,000'	JOB No.: 773-03
CK'D. BY: MM	DATE: 10/10/09	FILE NO.: 773-03
REV. NO. -	REV. DATE: 3/15/10	FIGURE NO.: 1



LEGEND

--- PROPERTY BOUNDARY

▭ FORMER BUILDINGS

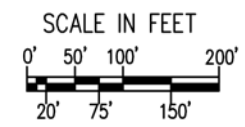

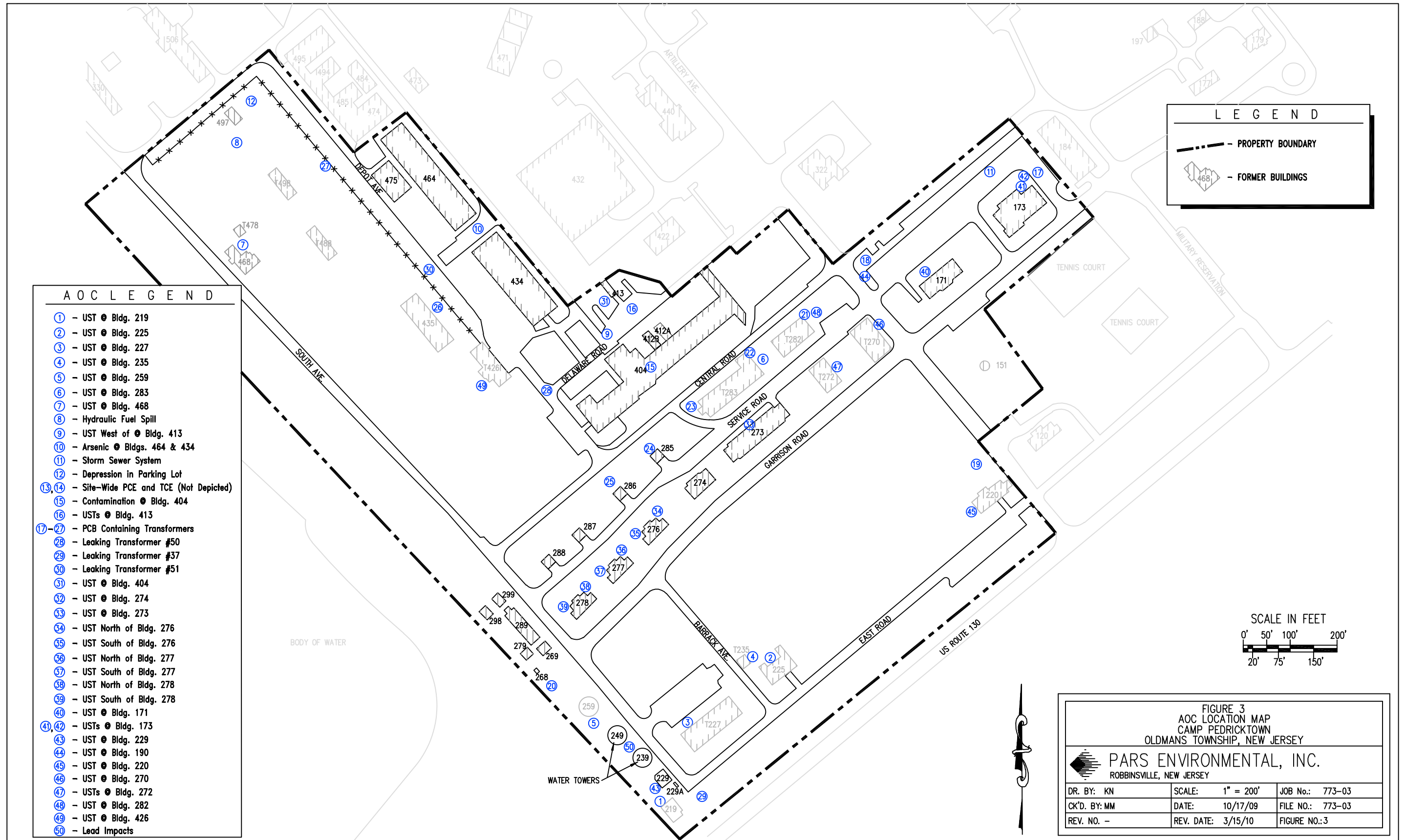


FIGURE 2
SITE PLAN
CAMP PEDRICKTOWN
OLDMANS TOWNSHIP, NEW JERSEY


PARS ENVIRONMENTAL, INC.
 ROBBINSVILLE, NEW JERSEY

DR. BY: KN	SCALE: 1" = 200'	JOB No.: 773-03
CK'D. BY: MM	DATE: 10/17/09	FILE NO.: 773-03
REV. NO. -	REV. DATE: 3/15/10	FIGURE NO.: 2



L E G E N D

- PROPERTY BOUNDARY
 - FORMER BUILDINGS

- A O C L E G E N D
- ① - UST @ Bldg. 219
 - ② - UST @ Bldg. 225
 - ③ - UST @ Bldg. 227
 - ④ - UST @ Bldg. 235
 - ⑤ - UST @ Bldg. 259
 - ⑥ - UST @ Bldg. 283
 - ⑦ - UST @ Bldg. 468
 - ⑧ - Hydraulic Fuel Spill
 - ⑨ - UST West of @ Bldg. 413
 - ⑩ - Arsenic @ Bldgs. 464 & 434
 - ⑪ - Storm Sewer System
 - ⑫ - Depression in Parking Lot
 - ⑬, ⑭ - Site-Wide PCE and TCE (Not Depicted)
 - ⑮ - Contamination @ Bldg. 404
 - ⑯ - USTs @ Bldg. 413
 - ⑰-⑳ - PCB Containing Transformers
 - ㉑ - Leaking Transformer #50
 - ㉒ - Leaking Transformer #37
 - ㉓ - Leaking Transformer #51
 - ㉔ - UST @ Bldg. 404
 - ㉕ - UST @ Bldg. 274
 - ㉖ - UST @ Bldg. 273
 - ㉗ - UST North of Bldg. 276
 - ㉘ - UST South of Bldg. 276
 - ㉙ - UST North of Bldg. 277
 - ㉚ - UST South of Bldg. 277
 - ㉛ - UST North of Bldg. 278
 - ㉜ - UST South of Bldg. 278
 - ㉝ - UST @ Bldg. 171
 - ㉞, ㉟ - USTs @ Bldg. 173
 - ㊱ - UST @ Bldg. 229
 - ㊲ - UST @ Bldg. 190
 - ㊳ - UST @ Bldg. 220
 - ㊴ - UST @ Bldg. 270
 - ㊵ - USTs @ Bldg. 272
 - ㊶ - UST @ Bldg. 282
 - ㊷ - UST @ Bldg. 426
 - ㊸ - Lead Impacts

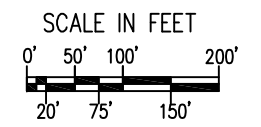


FIGURE 3
 AOC LOCATION MAP
 CAMP PEDRICKTOWN
 OLDMANS TOWNSHIP, NEW JERSEY

PARS ENVIRONMENTAL, INC.
 ROBBINSVILLE, NEW JERSEY

DR. BY: KN	SCALE: 1" = 200'	JOB No.: 773-03
CK'D. BY: MM	DATE: 10/17/09	FILE NO.: 773-03
REV. NO. -	REV. DATE: 3/15/10	FIGURE NO.: 3



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APPENDIX A

RAO Letter



May 19, 2011

500 Horizon Drive
Suite 540
Robbinsville, NJ 08691

Tel: 609-890-7277
Fax: 609-890-9116

Mr. Jose Cepeda
COL, EN, DPW Regional Engineer
5231 South Scott Plaza
Fort Dix, NJ 08640

Re: Response Action Outcome
Remedial Action Type: Unrestricted Use
Scope of Remediation: Areas of Concern: USTs 278N, 278S, 277N, 277S, 276N, 276S, 274, 404, 283, AST 273 and no other areas
Case Name: Camp Pedricktown Reserve Enclave
Address: Route 130 & Artillery Avenue
Municipality: Oldmans Township
County: Salem
Block: 45 **Lot:** 5.02
Preferred ID: 0071994
Communication Center # 97-09-16-1233-42
UST Closure # C97-0652, # C97-0793

Dear Mr. Cepeda:

This Response Action Outcome supersedes the Response Action Outcome issued on April 13, 2011 because of an administrative oversight regarding the scope of the remediation. Two additional areas of concern (UST 283 and AST 273) have been included as part of the Response Action Outcome.

As a Licensed Site Remediation Professional authorized pursuant to N.J.S.A. 58:10C to conduct business in New Jersey, I hereby issue this Response Action Outcome for the remediation of the areas of concern specifically referenced above. I personally reviewed and accepted all of the referenced remediation and based upon this work, it is my professional opinion that this remediation has been completed in compliance with the Administrative Requirements for the Remediation of Contaminated Sites -N.J.A.C. 7:26C-6.2(c), that is protective of public health, safety and the environment and full payment has been made for all Department fees and oversight costs pursuant to N.J.A.C.7:26C-4.

This remediation includes the completion of a Site Investigation, as defined pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E).

My decision in this matter is made upon the exercise of reasonable care and diligence and by applying the knowledge and skill ordinarily exercised by licensed site remediation professionals in good standing practicing in the State at the time these professional services are performed.



As required pursuant to N.J.A.C. 7:26C - three electronic copies of all records related to the remediation activities that occurred at this location is being simultaneously filed with the New Jersey Department of Environmental Protection (Department). These records contain all information upon which the decision was based to issue this Response Action Outcome.

By operation of law a Covenant Not to Sue pursuant to N.J.S.A. 58:10B-13.2 applies to this remediation. The Covenant Not to Sue is subject to any conditions and limitations contained herein. The Covenant Not to Sue remains effective only as long as the real property referenced above continues to meet the conditions of this Response Action Outcome.

CONDITIONS

Pursuant to N.J.S.A. 58:10B-12o, the United States Army Reserve (USAR), 99th Regional Support Command and any other person who is liable for the cleanup and removal costs, and remains liable pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. shall inform the Department in writing, on a form available from the Department, within 14 calendar days of when its name or address changes. Any notices you submit pursuant to this paragraph shall reference the above case numbers and shall be sent to: New Jersey Department of Environmental Protection, Bureau of Case Assignment and Initial Notice – Case Assignment Section, P.O. Box 434, Trenton, N.J. 08625.

In concluding that this remediation has been completed, I am offering no opinions concerning whether either primary restoration (restoring natural resources to their pre-discharge condition) or compensatory restoration (compensating the citizens of New Jersey for the lost interim value of the natural resources) has been completed.

Pursuant to N.J.S.A. 58:10C-25, the Department may audit this Response Action Outcome and associated documentation up to three years following issuance. Based on a finding by the Department that a Response Action Outcome is not protective of public health, safety and the environment, the Department can invalidate the Response Action Outcome. In addition, a Department audit following issuance of this document may be initiated at any time if: a) undiscovered contamination is found that should have been addressed by the Response Action Outcome, b) if the Licensed Site Remediation Professional Board conducts an investigation of the Licensed Site Remediation Professional issuing the Response Action Outcome or, c) if the license of that person is suspended or revoked.



Thank you for your attention to these matters. If you have any questions, please contact me at (609-890-7277).

Sincerely,

PARS Environmental, Inc.

Michael D. Moore, PG
LSRP # 507735
Senior Project Manger

cc: Salem County Department of Health, Ms. Virginia Preesada
Oldsman Township Environmental Department, Mr. Samuel Guida
Oldsman Township Mayor, Mr. William Miller
Oldsman Township Municipal, Clerk, Ms. Susan Miller
NJDEP Northern Field Office, Mr. Gary Charyak
USACE, Louisville District, Mr. Lenard Gunnell



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OLDMANS TOWNSHIP, NEW JERSEY**

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APPENDIX B

No Further Action Letter for USTs #229, 235, 404 & 413



State of New Jersey

Department of Environmental Protection
Bureau of Southern Case Management
401 East State Street
P.O. Box 433
Trenton, NJ 08625-0433
Fax (609)777-4285

James E. McGreevey
Governor

Bradley M. Campbell
Commissioner

Paul Bertrand
U.S. Army 77th Regional Support Command Engineers
Head Quarters 77th RSC
Ernie Pyle United States Reserve Center
Fort Totten
Flushing, New York 11359-1016

MAR 13 2003

Re: Area(s) of Concern: AOC #1: one (1) 1000 gal. #2 Fuel Oil UST (#235-1)
AOC #2: one (1) 220 gal. Gasoline UST (#229-1)
AOC #3: one (1) 110 gal. Gasoline UST (#404-1)
AOC #4: one (1) 1000 gal. Waste OIL UST (#413-W)
AOC #5: one (1) 11,000 gal. Gasoline UST (#413-NW)
AOC #6: one (1) 10,000 gal. Diesel UST (#413-SW)

Unrestricted Use

No Further Action Letter and Covenant Not to Sue

Siever-Sandberg United States Army

Block: 1 and 5, Lot: 1 and 5

U.S. Route 130

Oldmans Township, Salem County

KCSL # NJ6210090068

Case # 97-06-04-1510-40 and 97-06-30-1600-08, UST # 0071994, Closure #C97-0177

Well Permit # 30-12914 and 30-22625

Dear Mr. Bertrand:

Pursuant to N.J.S.A. 58:10B-13.1 and N.J.A.C. 7:26C, the New Jersey Department of Environmental Protection (Department) makes a determination that no further action is necessary for the remediation of the area(s) of concern specifically referenced above, except as noted below, so long as Siever-Sandberg - U.S. Army did not withhold any information from the Department. This action is based upon information in the Department's case file and EA Engineering's final certified report dated January 13, 2003. In issuing this No Further Action Determination and Covenant Not to Sue, the Department has relied upon the certified representations and information provided to the Department.

By issuance of this No Further Action Determination, the Department acknowledges the completion of a Remedial Investigation and Remedial Action pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E) for the areas of concern:

AOC #1: one (1) 1000 gal. #2 Fuel Oil UST (#235-1)
AOC #2: one (1) 220 gal. Gasoline UST (#229-1)
AOC #3: one (1) 110 gal. Gasoline UST (#404-1)
AOC #4: one (1) 1000 gal. Waste OIL UST (#413-W)
AOC #5: one (1) 11,000 gal. Gasoline UST (#413-NW)
AOC #6: one (1) 10,000 gal. Diesel UST (#413-SW)

and no other areas. The Department reserves its rights to require any person responsible for the contamination at the site to address Natural Resource Injuries.

NO FURTHER ACTION CONDITIONS

As a condition of this No Further Action Determination pursuant to N.J.S.A. 58:10B-12o, Siever-Sandberg - U.S. Army and any other person who was liable for the cleanup and removal costs, and remains liable pursuant to the Spill Act, shall inform the Department in writing within 14 calendar days whenever its name or address changes. Any notices submitted pursuant to this paragraph shall reference the above case numbers and shall be sent to: Director, Division of Responsible Party Site Remediation, P.O. Box 28, Trenton, N.J. 08625.

Well Sealing

Pursuant to N.J.S.A. 58:4A, Siever-Sandberg - U.S. Army shall properly seal all monitoring wells installed as part of a remediation that will no longer be used for ground water monitoring. A certified and licensed well driller shall seal the wells in accordance with the requirements of N.J.A.C. 7:9D-3.1 (et seq.). The well abandonment forms shall be completed and submitted to the Bureau of Water Allocation. Please call (609) 984-6831 for forms and information.

COVENANT NOT TO SUE

The Department issues this Covenant Not to Sue pursuant to N.J.S.A. 58:10B-13.1. That statute requires a covenant not to sue with each no further action letter. However, in accordance with N.J.S.A. 58:10B-13.1, nothing in this Covenant shall benefit any person who is liable, pursuant to the Spill Compensation and Control Act (Spill Act), N.J.S.A. 58:10-23.11, for cleanup and removal costs and the Department makes no representation by the issuance of this Covenant, either express or implied, as to the Spill Act liability of any person.

The Department covenants, except as provided in the preceding paragraph, that it will not bring any civil action against the following :

- (a) the person who undertook the remediation;
- (b) subsequent owners of the subject property;
- (c) subsequent lessees of the subject property; and
- (d) subsequent operators at the subject property,

for the purposes of requiring remediation to address contamination which existed prior to the date of the final certified report for the real property at the area(s) of concern identified above, including payment of compensation for damages to, or loss of, natural resources and the payment of cleanup and removal costs for such additional remediation.

Pursuant to N.J.S.A. 58:10B-13.1d, this Covenant does not relieve any person from the obligation to comply in the future with laws and regulations. The Department reserves its right to take all appropriate enforcement for any failure to do so.

The Department may revoke this Covenant at any time after providing notice upon its determination that either:

- (a) any person with the legal obligation to comply with any condition in this No Further Action Letter has failed to do so;
or
- (b) any person with the legal obligation to maintain or monitor any engineering or institutional control has failed to do so.

This Covenant Not to Sue, which the Department has executed in duplicate, shall take effect immediately once the person who undertook the remediation has signed and dated the Covenant Not to Sue in the lines supplied below and the Department has received one copy of this document with original signatures of the Department and the person who undertook the remediation.

Siever-Sandberg U.S. Army

Name: _____

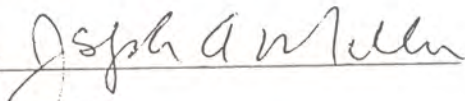
Signature: _____

Title: _____

Dated: _____

**NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

Name: Joseph Miller

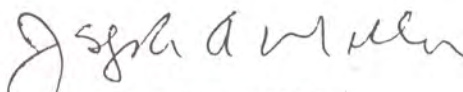
Signature: 

Title: Section Chief

Dated: March 13 2003

Thank you for your attention to these matters. If you have any questions, please contact Michael Cowan at (609) 984-1731.

Sincerely,



Joseph Miller, Section Chief
Bureau of Southern Case Management

- c: Salem County Health Department
Municipal Clerk
Vincent Williams, EA Engineering, Science and Technology
Michael Cowan, Case Manager
NJDEP-Bureau of Water Allocation



**COMPREHENSIVE SITE ASSESSMENT REPORT
SIEVERS SANDBURG UNITED STATES ARMY RESERVE CENTER
OLDMANS TOWNSHIP, NEW JERSEY**

PARS

APPENDIX C

No Further Action Letter USTs #171 & 173

1/6/99

2 original copies
mailed back to NJDEP



State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection

Robert C. Shinn, Jr.
Commissioner

Bureau of Field Operations
Underground Storage Tanks Unit
PO BOX 435
401 East State Street
Trenton, NJ 08625-0435

DEC 18 1998

Mr. George W. Thomas
US ARMY, Environmental Division
AFRC-CNY-EN, Bldg 200, #399
77th Regional Support Command
Fort Totten, NY 11359-1016

Re: Area of Concern
Unrestricted Use
No Further Action Letter and Covenant Not to Sue
Sievers-Sandberg USARC
Route 130 S, Bldg 171 & 173
Pedricktown, Camden County
UST # 0071994, Closure #C98-1079
Block: 1 & 5, Lot(s): 1 & 45

Dear Mr. Thomas:

Pursuant to N.J.S.A. 58:10B-13.1 and N.J.A.C. 7:26C, the New Jersey Department of Environmental Protection (Department) makes a determination that no further action is necessary for the remediation of the area(s) of concern as specifically referenced above, except as noted below, so long as the US Army did not withhold any information from the Department. This action is based upon information in the Department's case file and the US Army's final certified report received on October 7, 1998. In issuing this No Further Action Determination and Covenant Not to Sue, the Department has relied upon the certified representations and information provided to the Department.

By issuance of this No Further Action Determination, the Department acknowledges the completion of a Site Investigation pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E) for removal of one 4000 gallon #2 heating oil underground storage tank (UST) system(s), one 1500 gallon #2 heating oil UST, one 1000 gallon #2 heating oil UST, and no other areas.

NO FURTHER ACTION CONDITIONS

As a condition of this No Further Action Determination the US Army, as well as each subsequent owner, lessee and operator (collectively "Successors") shall comply with each of the following:

Name and Address Changes

Pursuant to N.J.S.A. 58:10B-12, the US Army and the Successors shall inform the Department in writing whenever its name or address changes, within 14 calendar days after the change.

COVENANT NOT TO SUE

The Department issues this Covenant Not to Sue pursuant to N.J.S.A. 58:10B-13.1. That statute requires a covenant not to sue with each no further action letter. However, in accordance with N.J.S.A. 58:10B-13.1, nothing in this Covenant shall benefit any person who is liable, pursuant to the Spill Compensation and Control Act (Spill Act), N.J.S.A. 58:10-23.11, for cleanup and removal costs and the Department makes no representation by the issuance of this Covenant, either express or implied, as to the Spill Act liability of any person.

The Department covenants, except as provided in the preceding paragraph, that it will not bring any civil action against the following :

- (a) the person who undertook the remediation;
- (b) subsequent owners of the subject property;
- (c) subsequent lessees of the subject property; and
- (d) subsequent operators at the subject property,

for the purposes of requiring remediation to address contamination which existed prior to the date of the final certified report for the real property at area(s) of concern identified above, or payment of cleanup and removal costs for such additional remediation.


Pursuant to N.J.S.A. 58:10B-13.1d, this Covenant does not relieve any person from the obligation to comply in the future with laws and regulations. The Department reserves its right to take all appropriate enforcement for any failure to do so.

The Department may revoke this Covenant at any time after providing notice upon its determination that either:

- (a) any person with the legal obligation to comply with any condition in this No Further Action Letter has failed to do so; or
- (b) any person with the legal obligation to maintain or monitor any engineering or institutional control has failed to do so.

This Covenant Not to Sue, which the Department has executed in duplicate, shall take effect immediately once the person who undertook the remediation has signed and dated the Covenant Not to Sue in the lines supplied below and the Department has received one copy of this document with original signatures of the Department and the person who undertook the remediation.

Name: MAIOS ELIADES

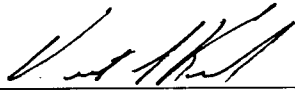
Signature: 

Title: DEPUTY CHIEF OF STAFF, ENGINEERS

Dated: 12/29/98

NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Name: Vincent S. Krisak


Signature: _____

Title: Section Chief

Dated: 12-17-98

Thank you for your attention to these matters. If you should have any questions, please contact Hasmukh Patel, Case Manager at (609) 633-0735.

Sincerely,



Vincent S. Krisak, Section Chief
Bureau of Field Operations

c: Mr. Robert Larry Lynch, EnSolutions, Inc.
Hasmukh Patel, Case Manager



APPENDIX D

Well Abandonment Forms

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 3000017115
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER Ft Dix Brac Office

ADDRESS 5317 Snyder Lane, Fort Dix, NJ 08640

WELL LOCATION US Route 130 Oldmans Twp, Salem County
Street & No., Township, County

mw-3(P13mw02)
Well No.

5
Lot No.

45
Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

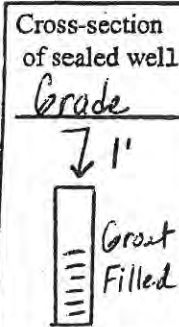
PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 13'
DIAMETER 2"
CASING LENGTH 3'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1

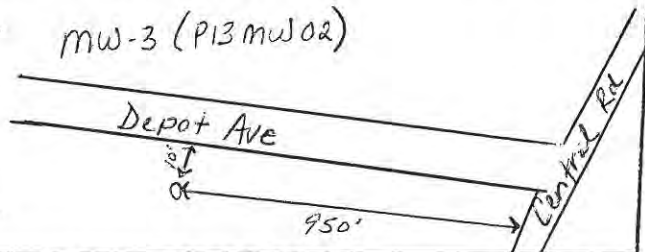
MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.



AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

LATITUDE: _____ OR _____
LONGITUDE: _____

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joseph Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

WELL PERMIT # 3000019163
of well sealed

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)
ADDRESS Bldg. 434, Camp Pedricktown, NJ
WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

413-mw-03
Well No.

5
Lot No.

45
Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 11.5'
DIAMETER 2"
CASING LENGTH 6.5'
SCREEN LENGTH 5'
NUMBER OF CASINGS 1

MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

<p>Cross-section of sealed well</p> <p>Grade</p> <p>7'11"</p> <p>Grout Filled</p>	<p>Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.</p> <p>413-mw-03</p>
<p>AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM) NJ STATE PLACE COORDINATE IN US SURVEY FEET</p> <p>NORTHING: _____ EASTING: _____ OR LATITUDE: _____ LONGITUDE: _____</p>	

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109016 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

WELL PERMIT # 3000019162
of well sealed

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)
ADDRESS Bldg 434, Camp Pedricktown, NJ
WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

413-MW-02
Well No.

5
Lot No.

45
Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 11.5'
DIAMETER 2"
CASING LENGTH 6.5'
SCREEN LENGTH 5'
NUMBER OF CASINGS 1

MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

Cross-section of sealed well

Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.

413-MW-02

Depot Ave

Central Rd

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109015 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joseph Barnak Signature of NJ Licensed Well Driller Performing Work MW534717 Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 3000019161
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)

ADDRESS Bldg. 434, Camp Pedricktown, NJ

WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

434-mw-04
Well No.

5
Lot No.

45
Block No.

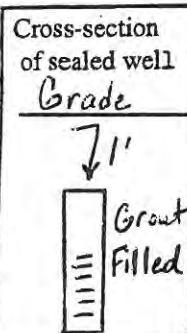
USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

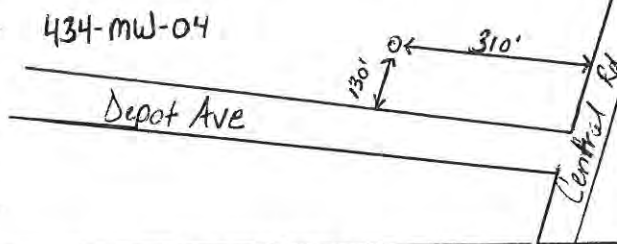
WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 11.5'
DIAMETER 2"
CASING LENGTH 6.5'
SCREEN LENGTH 5'
NUMBER OF CASINGS 1



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.



MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ " LONGITUDE: _____ "

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109012 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 3000019160
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)
ADDRESS Bldg. 434, Camp Pedricktown, NJ.
WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

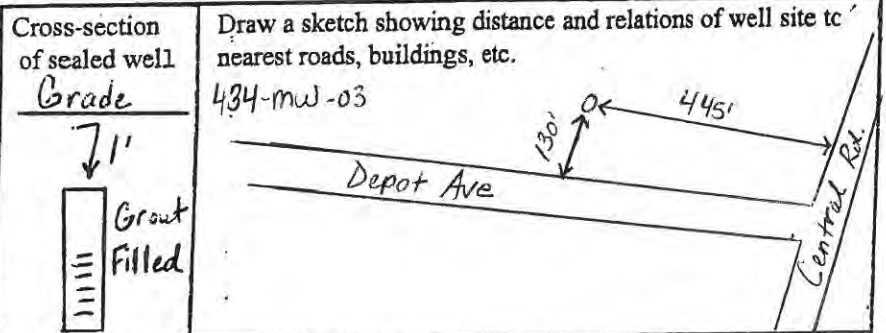
434-mw-03 Well No. 5 Lot No. 45 Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 11.5'
DIAMETER 2"
CASING LENGTH 6.5'
SCREEN LENGTH 5'
NUMBER OF CASINGS 1



MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ " LONGITUDE: _____ "

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109011 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

WELL PERMIT # 3000019159
of well sealed

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)

ADDRESS Bldg. 434, Camp Pedricktown, NJ

WELL LOCATION US Route 130 Oldmans Twp, Salem County
Street & No., Township, County

434-mw-02
Well No.

5
Lot No.

45
Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

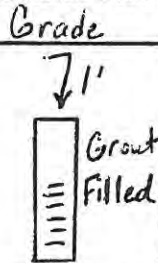
REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

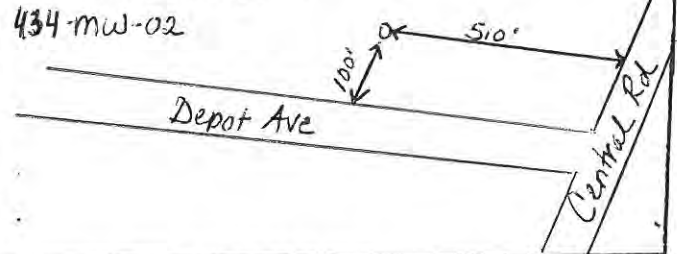
PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 11'
DIAMETER 2"
CASING LENGTH 6'
SCREEN LENGTH 5'
NUMBER OF CASINGS 1

Cross-section of sealed well



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.



MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ " LONGITUDE: _____ "

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109010 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller JM Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 3000019158
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)

ADDRESS Bldg. 434, Camp Pedricktown, NJ

WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

434-mw-01
Well No.

5
Lot No.

45
Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 115'
DIAMETER 2"
CASING LENGTH 6.5'
SCREEN LENGTH 5'
NUMBER OF CASINGS 1

MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

<p>Cross-section of sealed well</p> <p>Grade</p> <p>7' ↓</p> <p>Grout Filled</p>	<p>Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.</p> <p>434-MW-01</p>
<p>AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM) NJ STATE PLACE COORDINATE IN US SURVEY FEET</p> <p>NORTHING: _____ EASTING: _____ OR LATITUDE: _____ LONGITUDE: _____</p>	

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109009 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 3000019157
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)

ADDRESS Bldg 434, Camp Pedricktown, NJ

WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

12-MW-03
Well No.

5
Lot No.

45
Block No.

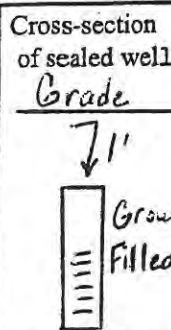
USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

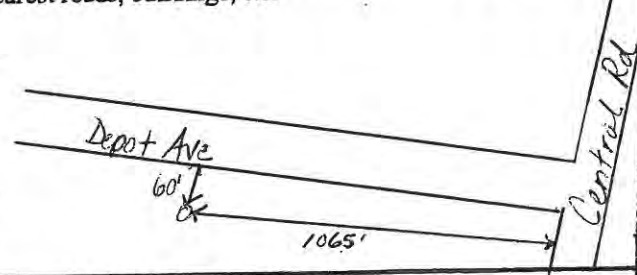
WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 12.5'
DIAMETER 2"
CASING LENGTH 2.5'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.



MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109014 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

WELL PERMIT # 3000019156
of well sealed

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Reserve Command (Former Camp Pedricktown)
ADDRESS Bldg. 434, Camp Pedricktown, NJ
WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

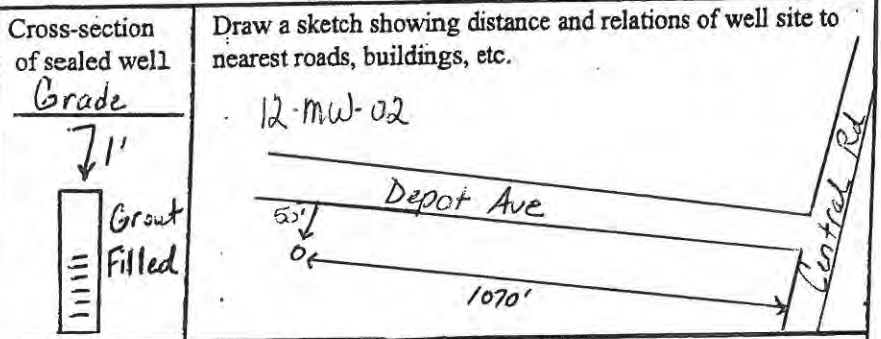
12-mw-02 Well No. 5 Lot No. 45 Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 12.5'
DIAMETER 2"
CASING LENGTH 2.5'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1



MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by Brian Buttari #A1109013 ON 9/14/2011
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St, Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 3000017114
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER Ft Dix Brac Office

ADDRESS 5317 Snyder Lane, Fort Dix, NJ 08640

WELL LOCATION US Route 130, Oldmans Twp, Salem County
Street & No., Township, County

mw2(p13mw01)
Well No.

5
Lot No.

45
Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

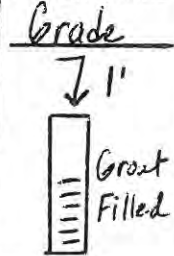
REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

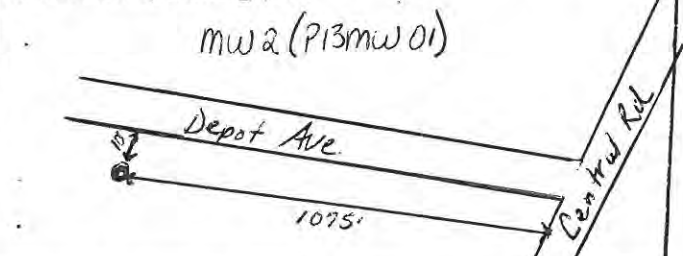
PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 13'
DIAMETER 2"
CASING LENGTH 3'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1

Cross-section of sealed well



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.



MATERIAL USED TO DECOMMISSION WELL:

4 Gallons of Water
47 Lbs. of Cement
2.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

LATITUDE: _____ OR _____
LONGITUDE: _____

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date

Joe Barnak MW534717
Name of NJ Licensed Well Driller Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-09303
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER U.S. Army Corps of Engineers

ADDRESS Phila. District US Custom House, Phila, PA 19106

WELL LOCATION Route 130, Oldmans Twp, Salem County
Street & No., Township, County

MW14-002
Well No.

NJ011
Lot No.

NJ013
Block No.

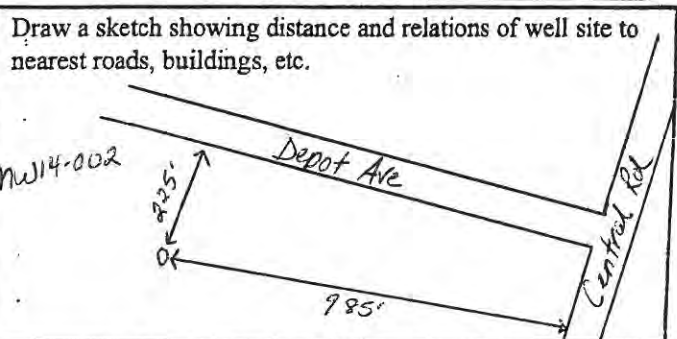
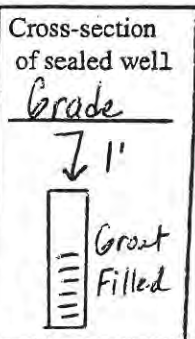
USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 11.5'
DIAMETER 4"
CASING LENGTH 1.5'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1



MATERIAL USED TO DECOMMISSION WELL:
8 Gallons of Water
94 Lbs. of Cement
5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak Signature of NJ Licensed Well Driller Performing Work MW534717 Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-09296
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER U.S. Army Corps of Engineers

ADDRESS Phila. District US Custom House, Phila., PA 19106

WELL LOCATION Route 130, Oldmans Township, Salem County
Street & No., Township, County

MW 24-001
Well No.

NJ 011
Lot No.

NJ 013
Block No.

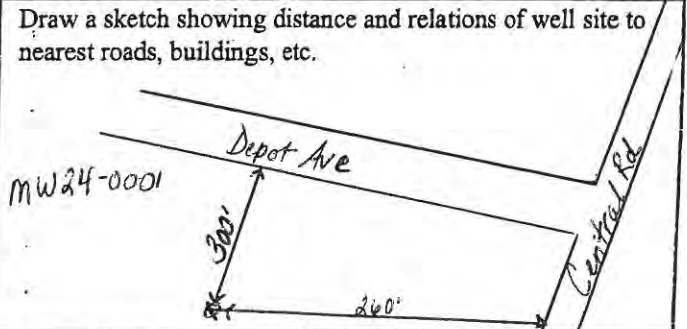
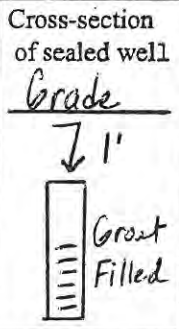
USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO

PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 12'
DIAMETER 4"
CASING LENGTH 2'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1



MATERIAL USED TO DECOMMISSION WELL:
8 Gallons of Water
94 Lbs. of Cement
5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-09312
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER US Army Corps of Engineers

ADDRESS Phila. District US Custom House, Phila, PA 19106

WELL LOCATION Route 130, Oldmans Township, Salem County
Street & No., Township, County


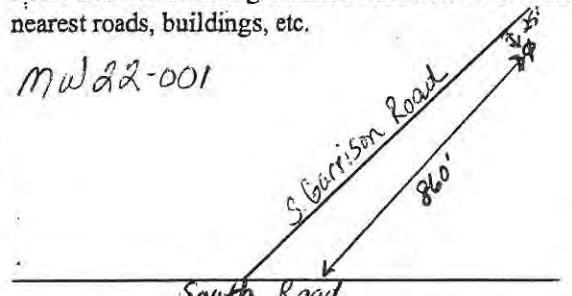
MW 22-001 Well No. N5011 Lot No. N5013 Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 12.5'
DIAMETER 4"
CASING LENGTH 2.5'
SCREEN LENGTH 10'
NUMBER OF CASINGS 1

<p>Cross-section of sealed well</p> <p><u>Grade</u></p> <p>↓ 11'</p>  <p>Grout Filled</p>	<p>Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.</p> <p><u>MW 22-001</u></p>  <p><u>Garrison Road</u></p> <p><u>80'</u></p> <p><u>South Road</u></p> <p><u>80'</u></p>
--	---

MATERIAL USED TO DECOMMISSION WELL:

<u>8</u>	Gallons of Water
<u>94</u>	Lbs. of Cement
<u>5</u>	Lbs. of Bentonite
<u>0</u>	Lbs. of Sand/Gravel

(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnale 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnale Signature of NJ Licensed Well Driller Performing Work MW534717 Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-12916
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER 77th Regional Support Command

ADDRESS Bldg. 200, Fort Totten, NJ 11359

WELL LOCATION Rt. 130 South, Oldmans Twp, Salem County
Street & No., Township, County

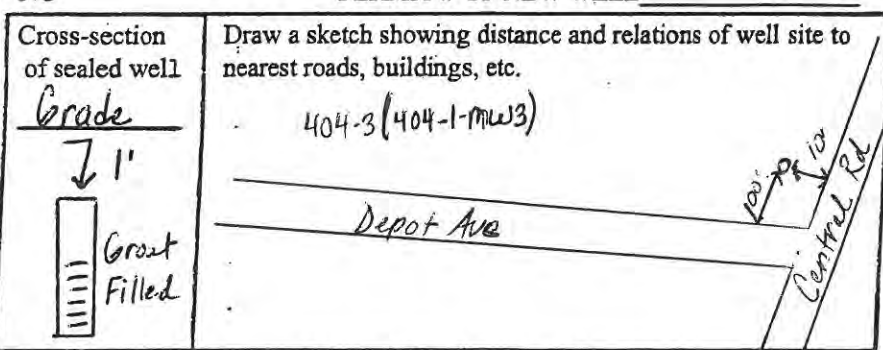
404-3(404-1-mw3) Well No. 5.02 Lot No. 45 Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 20'
DIAMETER 4"
CASING LENGTH 3'
SCREEN LENGTH 17'
NUMBER OF CASINGS 1



MATERIAL USED TO DECOMMISSION WELL:
16 Gallons of Water
188 Lbs. of Cement
10 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.
Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-12915
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER 77th Regional Support Command

ADDRESS Bldg. 200, Fort Totten, NY 11359

WELL LOCATION Rt 130 South, Oldmans Twp, Salem County
Street & No., Township, County

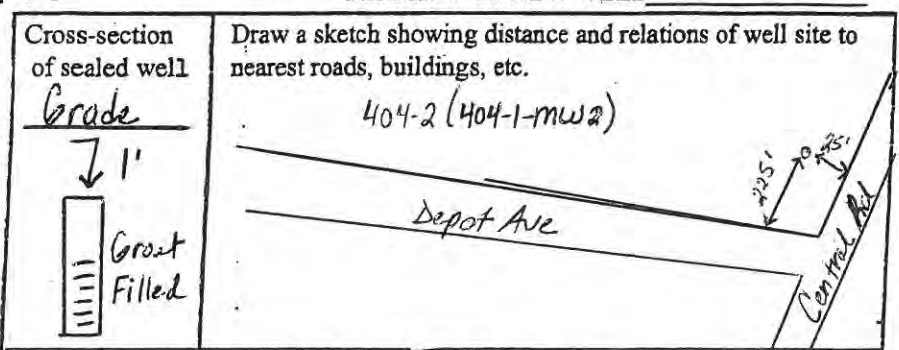
404-2 (404-1-mw2) 5.02 45
Well No. Lot No. Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 20'
DIAMETER 4"
CASING LENGTH 3'
SCREEN LENGTH 17'
NUMBER OF CASINGS 1



MATERIAL USED TO DECOMMISSION WELL:
16 Gallons of Water
188 Lbs. of Cement
10 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-12917
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER 77th Regional Support Command

ADDRESS Bldg 200, Fort Totten, NY 11359

WELL LOCATION Rt 130 South, Oldmans Twp, Salem County
Street & No., Township, County

413-NW-1 Well No. 5.02 Lot No. 45 Block No.

USE OF WELL PRIOR TO ABANDONMENT: Monitoring


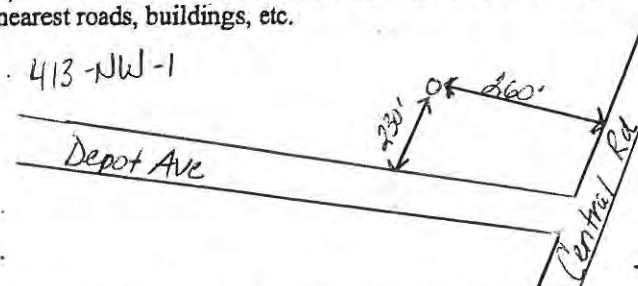
REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 18'
DIAMETER 4"
CASING LENGTH 3'
SCREEN LENGTH 15'
NUMBER OF CASINGS 1

MATERIAL USED TO DECOMMISSION WELL:
12 Gallons of Water
141 Lbs. of Cement
7.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: Consolidated
 Unconsolidated

<p>Cross-section of sealed well</p> <p>Grade</p> <p>↓ 11'</p>  <p>Grout Filled</p>	<p>Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.</p> <p>413-NW-1</p> 
<p>AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM) NJ STATE PLACE COORDINATE IN US SURVEY FEET</p> <p>NORTHING: _____ EASTING: _____ OR LATITUDE: _____ LONGITUDE: _____</p>	

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #

WELL ABANDONMENT REPORT

MAIL TO: Bureau of Water Systems & Well Permitting
PO Box 426
Trenton, NJ 08625-0426

WELL PERMIT # 30-12911
of well sealed

DATE WELL SEALED 10/4/2011

PROPERTY OWNER 77th Regional Support Command

ADDRESS Bldg. 200, Fort Totten, NY 11359

WELL LOCATION Rt 130 South, Oldmans Twp, Salem County
Street & No., Township, County

413-W-1 Well No. 5.02 Lot No. 45 Block No.

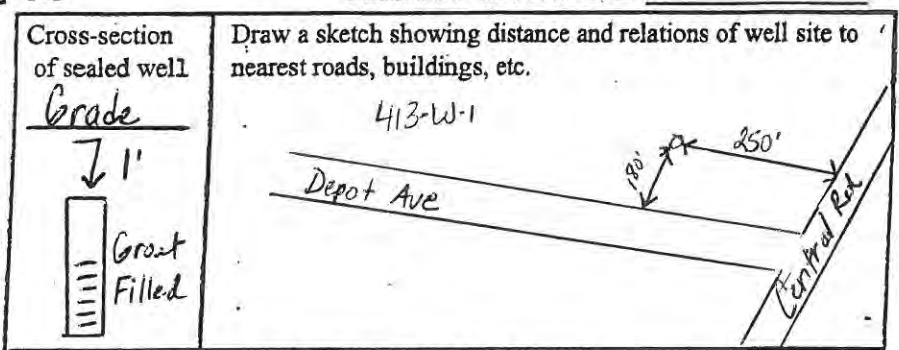
USE OF WELL PRIOR TO ABANDONMENT: Monitoring

REASON FOR ABANDONMENT: No Longer Needed

WAS A NEW WELL DRILLED? YES NO PERMIT # OF NEW WELL _____

TOTAL DEPTH OF WELL 18'
DIAMETER 4"
CASING LENGTH 3'
SCREEN LENGTH 15'
NUMBER OF CASINGS 1

MATERIAL USED TO DECOMMISSION WELL:
12 Gallons of Water
141 Lbs. of Cement
7.5 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)



AS-BUILT WELL LOCATION
(NAD 83 HORIZONTAL DATUM)
NJ STATE PLACE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FORMATION: Consolidated
 Unconsolidated

To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? YES NO CASING MATERIAL: PVC

WERE OTHER OBSTRUCTIONS LEFT IN WELL? YES NO WHAT WERE THE OBSTRUCTIONS: _____

IF "YES", AUTHORIZATION GRANTED BY _____ ON _____
(NJDEP Official) (Date)

Was an alternative decommissioning method used and/or approval to decommission granted by a DEP official? YES NO

IF "YES", authorization granted by _____ ON _____
(NJDEP Official) (Date)

I certify that this well was sealed in accordance with N.J.A.C. 7:9D-3 et seq.

Joseph Barnak 1256 North Church St Moorestown, NJ 08057 10/14/11
Performing Work (Print or Type) Address Mailing Date
Name of NJ Licensed Well Driller Joe Barnak MW534717
Signature of NJ Licensed Well Driller Performing Work Registration #



APPENDIX E

Electronic Copies of Historical Reports