

**United States Army**  
Fort Monmouth, New Jersey

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**Underground Storage Tank  
Closure and Site Investigation  
Report**

***Building 200  
Main Post-West Area***

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**NJDEP UST Registration No. 0081533-2  
Dicar No. 96-05-02-0853-33**

**January 2002**

**UNDERGROUND STORAGE TANK  
CLOSURE AND SITE INVESTIGATION REPORT**

**BUILDING 200**

**MAIN POST-WEST AREA  
NJDEP UST REGISTRATION NO. 0081533-2  
DICAR NO. 96-05-02-0853-33**

**JANUARY 2002**

**PREPARED FOR:**

**UNITED STATES ARMY, FORT MONMOUTH, NEW JERSEY  
DIRECTORATE OF PUBLIC WORKS  
BUILDING 167  
FORT MONMOUTH, NJ 07703**

**PREPARED BY:**

**SMC ENVIRONMENTAL SERVICES GROUP  
501 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406**

**PROJECT NO. 2429-3080**

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## EXECUTIVE SUMMARY

### UST Closure

On May 5, 1997, a steel underground storage tank (UST) was closed by removal in accordance with the New Jersey Department of Environmental Protection (NJDEP) at the Main Post-West area of the U.S. Army Fort Monmouth, Fort Monmouth, New Jersey. The UST, NJDEP Registration No. 0081533-2 (Fort Monmouth ID No. 200), was located south of Building 200. UST No. 0081533-2 was a 1,000-gallon No. 2 fuel oil UST. The fill port was located directly above the UST.

### Site Assessment

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedures Manual*. The sampling and laboratory analysis conducted during the site assessment were performed in accordance with Section 7:26E-2.1 of the *Technical Requirements for Site Remediation*. Soils surrounding the tank were screened visually and with air monitoring equipment for evidence of contamination. Following removal, the UST was inspected for corrosion holes. Several holes were noted in the UST. Excavation of the piping run revealed a discharge at the corner of the building caused by a leak in the fitting. Soils located at the holes and fitting were dark in color and appeared to be contaminated. OVA readings taken during the assessment ranged from non-detect to 30 parts per million. The NJDEP hotline was called and the case was assigned Dicar No. 96-05-02-0853-33. A total of 136 cubic yards of contaminated soil were removed. Perched water was encountered at 7.5 feet and no sheen was observed.

### Site Restoration

Following receipt of all post-excavation soil sampling results, the excavation was backfilled to grade with clean crushed stone and native backfill and restored to its original condition.

### Conclusions and Recommendations

Based on the post-excavation soil sampling results, soils with TPH concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg, do not exist in the former location of the UST or associated piping. Based on groundwater data collected at the site, there are not compounds of concern present in groundwater at concentrations that exceed the NJDEP Groundwater Quality Standards.

No further action is proposed in regard to the closure and site assessment of UST No. 0081533-2 at Building 200.

## **1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES**

### **1.1 OVERVIEW**

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No. 0081533-2, was closed at Building 200 at the Main Post-West area of U.S. Army Fort Monmouth, Fort Monmouth, New Jersey on May 5, 1997. Refer to site location map on Figure 1. This report presents the results of the Department of Public Works (DPW) implementation of the UST Decommissioning approved by the NJDEP. The UST was a steel 1,000-gallon tank containing No. 2 fuel oil.

Decommissioning activities for UST No. 0081533-2 complied with all applicable Federal, State and Local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 & 1910.120. All permits including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. The decommissioning activities were conducted by DPW personnel who are registered and certified by the NJDEP for performing UST closure activities. Closure of UST No. 0081533-2 proceeded under the approval of the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST). The signed Site Assessment Summary form for UST No. 0081533-2 is included in Appendices A and B, respectively.

Based on inspecting the UST, field screening of subsurface soils and groundwater, and reviewing analytical results of collected soil samples, the DPW has concluded that no significant historical discharges are associated with the UST or associated piping.

### **1.2 SITE DESCRIPTION**

Building 200 is located in the Main Post-West area of the Fort Monmouth Army Base. UST No. 0081533-2 was located south of Building 200 and appurtenant piping ran approximately fifteen (15) feet north from the excavation to Building 200. The fill port was located directly above the tank. A site map is provided on Figure 2.

#### **1.2.1 Geological/Hydrogeological Setting**

The following is a description of the geological/hydrogeological setting of the area surrounding Building 200. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Main Post area.

##### Regional Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood, and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, New Jersey Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on Precambrian and lower Paleozoic rocks (Zapeczka, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansy Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and Zapeczka, 1990).

### Local Geology

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile. The upper member (Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish brown clayey, medium-to-coarse-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray to black, medium-to-fine grained sand with abundant clay, mica, and glauconite.

The Tinton sand conformably overlies the Red Bank Sand and ranges from a clayey medium to very coarse grained feldspathic quartz and glauconite sand to a glauconitic coarse sand. The color varies from dark yellowish orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit (Minard, 1969). The upper part of the Tinton is often highly oxidized and iron oxide encrusted (Minard).

### Hydrogeology

The water table aquifer in the Main Post area is identified as part of the "composite confining units", or minor aquifers. The minor aquifers include the Navesink formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation.

Based on records of wells drilled in the Main Post area, water is typically encountered at depths of 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Due to the proximity of the Atlantic Ocean to Fort Monmouth, shallow groundwater may be tidally

influenced and may flow toward creeks and brooks as the tide goes out, and away from creeks and brooks as the tide comes in. However, an abundance of clay lenses and sand deposits were noted in borings installed throughout Fort Monmouth. Therefore, the direction of shallow groundwater should be determined on a case by case basis.

Shallow groundwater is locally influenced within the Main Post area by the following factors:

1. tidal influence (based on proximity to the Atlantic Ocean, rivers, and tributaries)
2. topography
3. nature of the fill material within the Main Post area
4. presence of clay and silt lenses in the natural overburden deposits
5. local groundwater recharge areas (i.e., streams, lakes)

Due to the fluvial nature of the overburden deposits (i.e., sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. This is consistent with lithologies observed in borings installed within the Main Post area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of gravel silt and/or clay.

Building 200 is located approximately 350 feet southwest of Oceanport Creek, the nearest water body. Based on the Main Post topography, the groundwater flow in the area of Building 200 is anticipated to be to the northeast.

### **1.3 HEALTH AND SAFETY**

Before, during, and after all decommissioning activities, hazards at the work site which may have posed a threat to the Health and Safety of all personnel who were involved with, or were affected by, the decommissioning of the UST system were minimized. All areas, which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing an organic vapor analyzer (OVA). The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

### **1.4 REMOVAL OF UNDERGROUND STORAGE TANK**

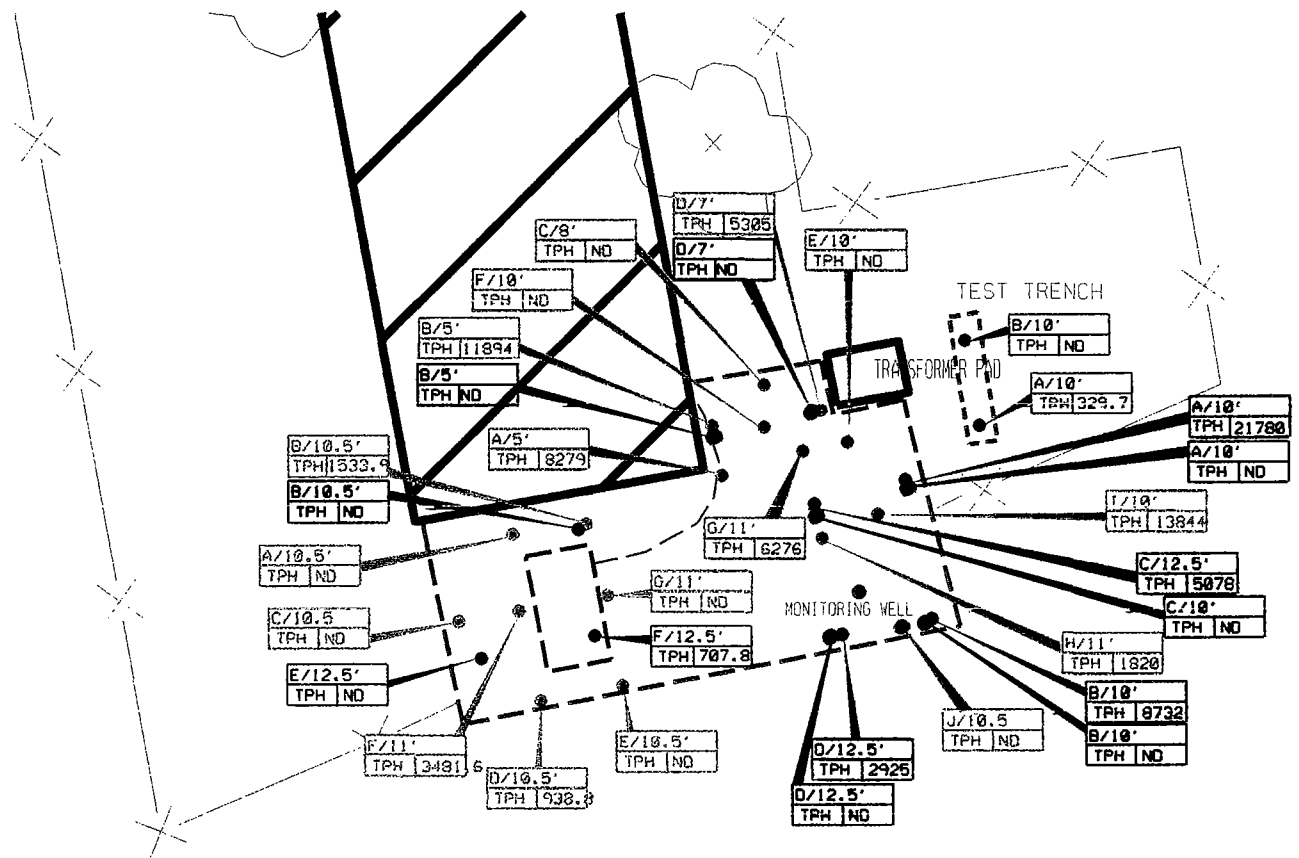
#### **1.4.1 General Procedures**

- All underground obstructions (utilities, etc.) were identified by the contractor performing the closure prior to excavation activities.
- All activities were carried out with the greatest regard to safety and health and the safeguarding of the environment.
- All excavated soils were visually examined and screened with an OVA for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.









**LEGEND**

- SOIL SAMPLE LOCATION (JULY 6, 1994)
- SOIL SAMPLE LOCATION (MAY 14, 1996)
- SOIL SAMPLE LOCATION (MAY 30, 1996)
- SOIL SAMPLE LOCATION (MAY 31, 1996)
- RE-SAMPLE SOIL LOCATION (SEP 29, 2001)

▭ LIMIT OF EXCAVATION

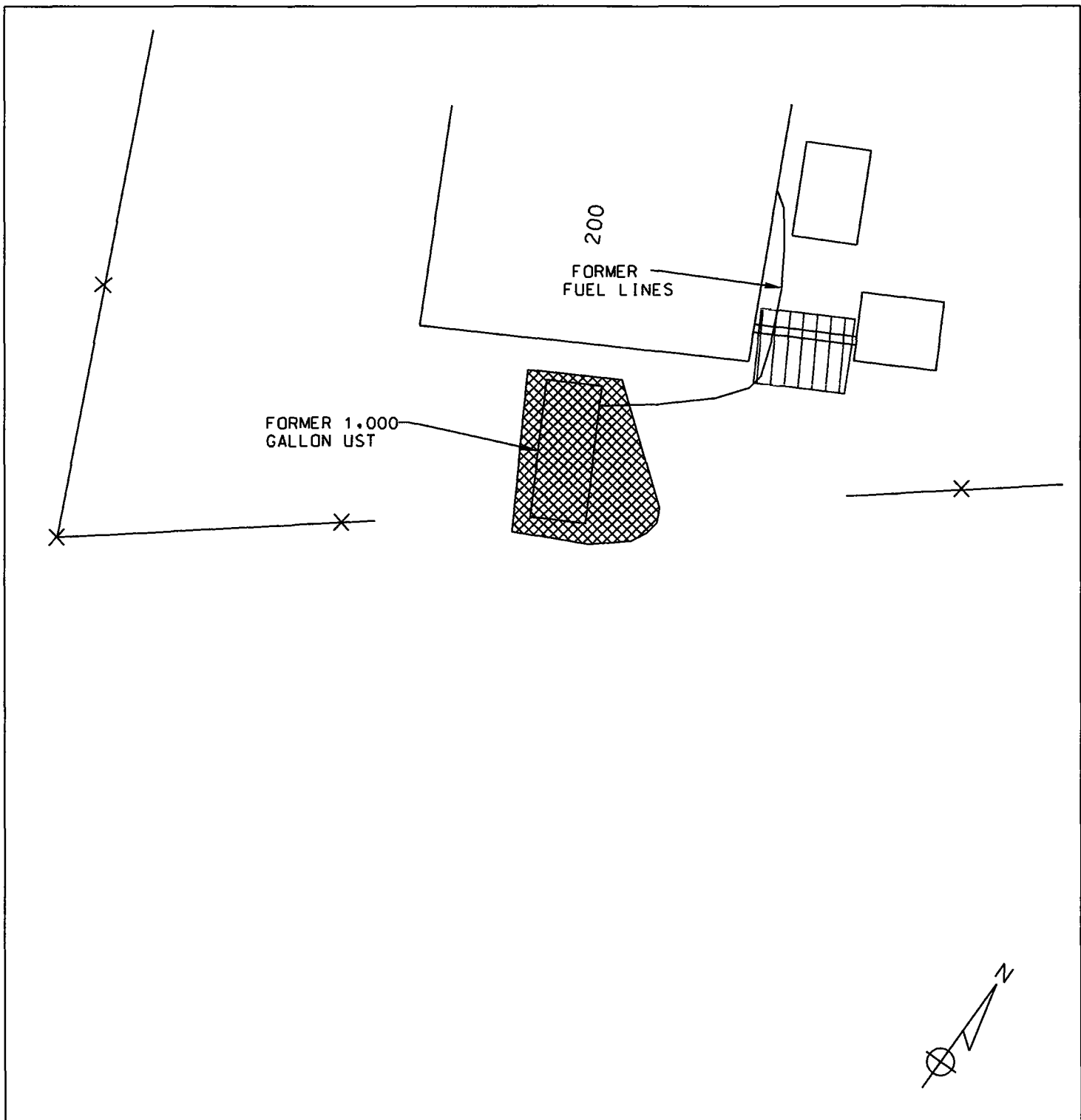


FIGURE 3  
 SITE MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ


VERSAR  
 BRISTOL, PA.

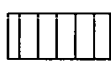
SCALE: 1" = 100'

DATE: JAN 2002




LEGEND

 LIMIT OF EXCAVATION (MAY 1, 1996)

 LIMIT OF EXCAVATION (MAY 2, 1996)

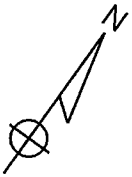
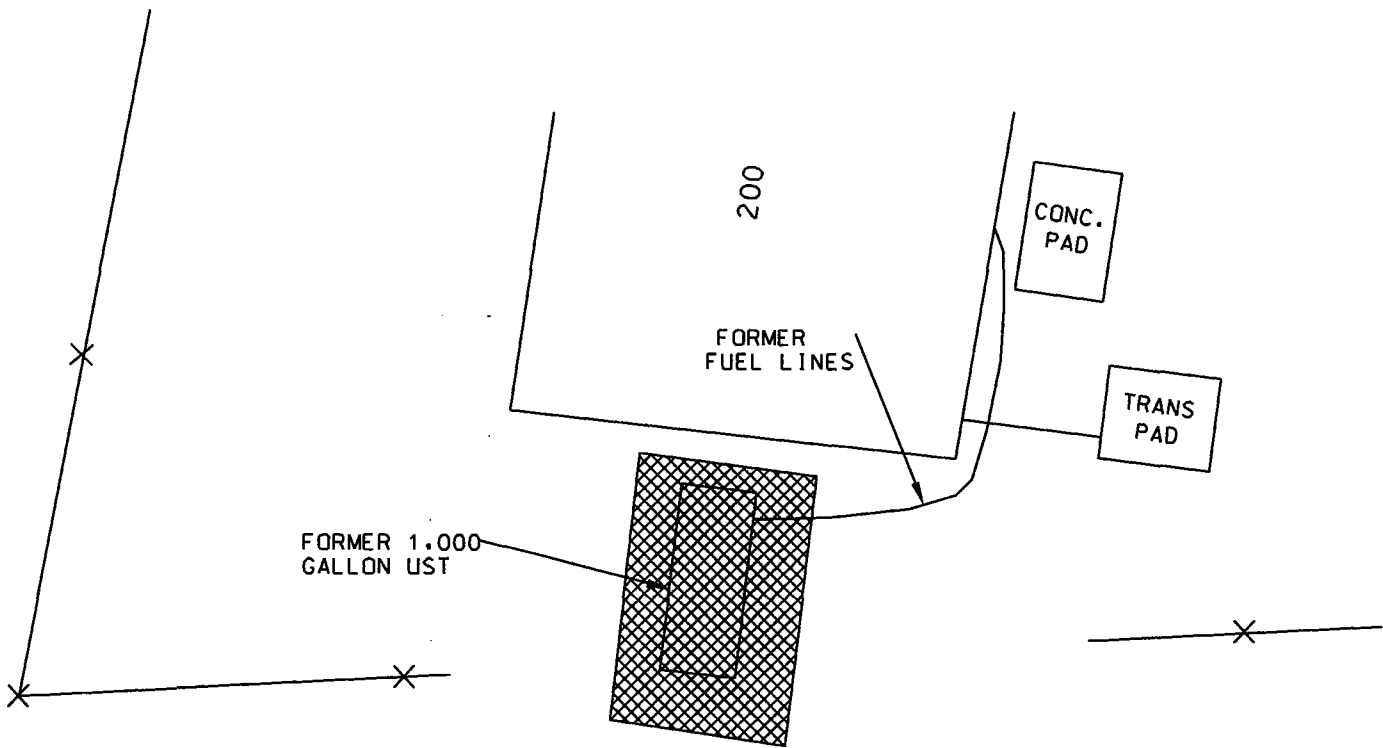
- NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE

FIGURE 4  
 SOIL SAMPLING LOCATION MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ


 SMC ENVIRONMENTAL SERVICES GROUP  
 Engineers, Managers, Scientists & Planners  
 VALLEY FORGE, PA.

SCALE: 1"=10'

DATE: MARCH 1998




LEGEND

 LIMIT OF EXCAVATION (MAY 8, 1996)

- NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE

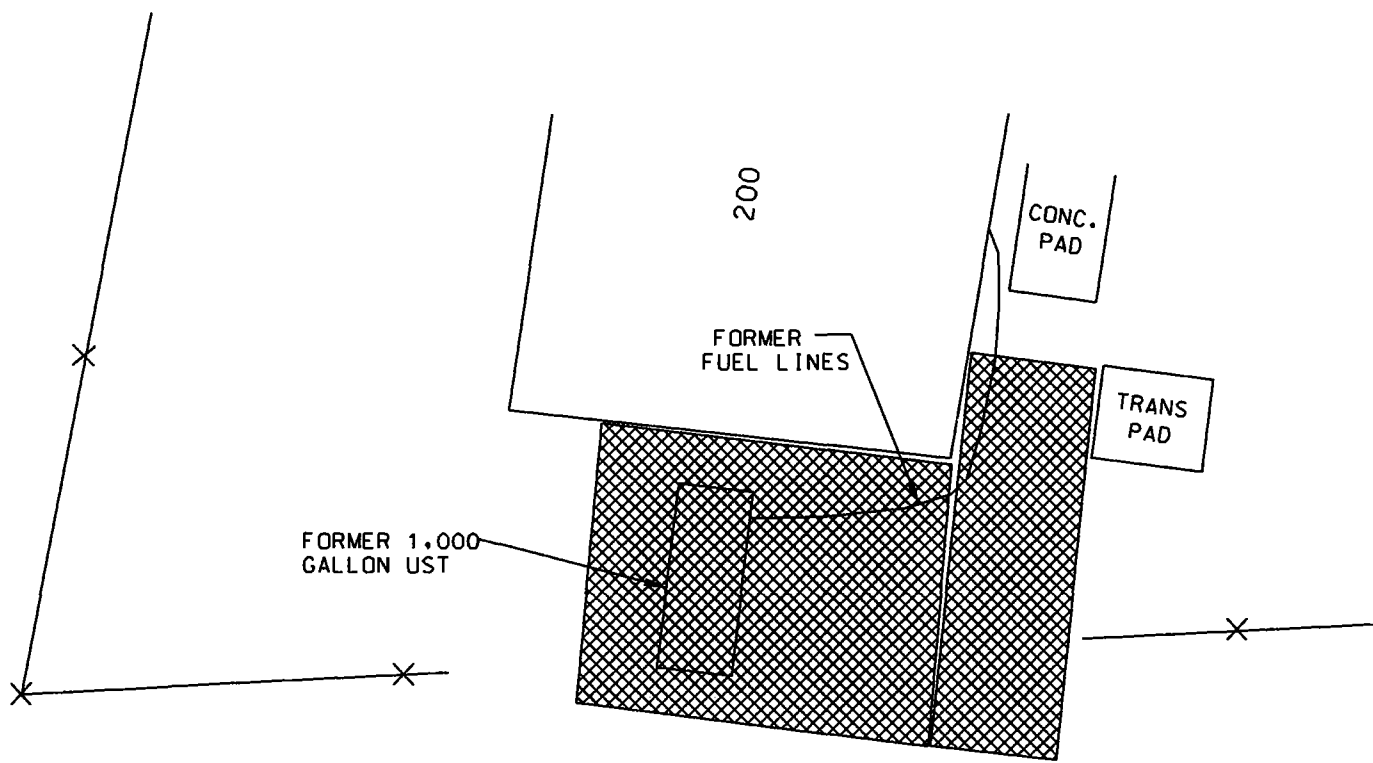
FIGURE 4A  
 SOIL SAMPLING LOCATION MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ

 SMC ENVIRONMENTAL SERVICES GROUP  
 Engineers, Managers, Scientists & Planners  
 VALLEY FORGE, PA.


SCALE: 1"=10'

DATE: MARCH 1998

200A 2429 FIG4



LEGEND

 LIMIT OF EXCAVATION  
(MAY 9, 1996)

- NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE

FIGURE 4B  
 SOIL SAMPLING LOCATION MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ

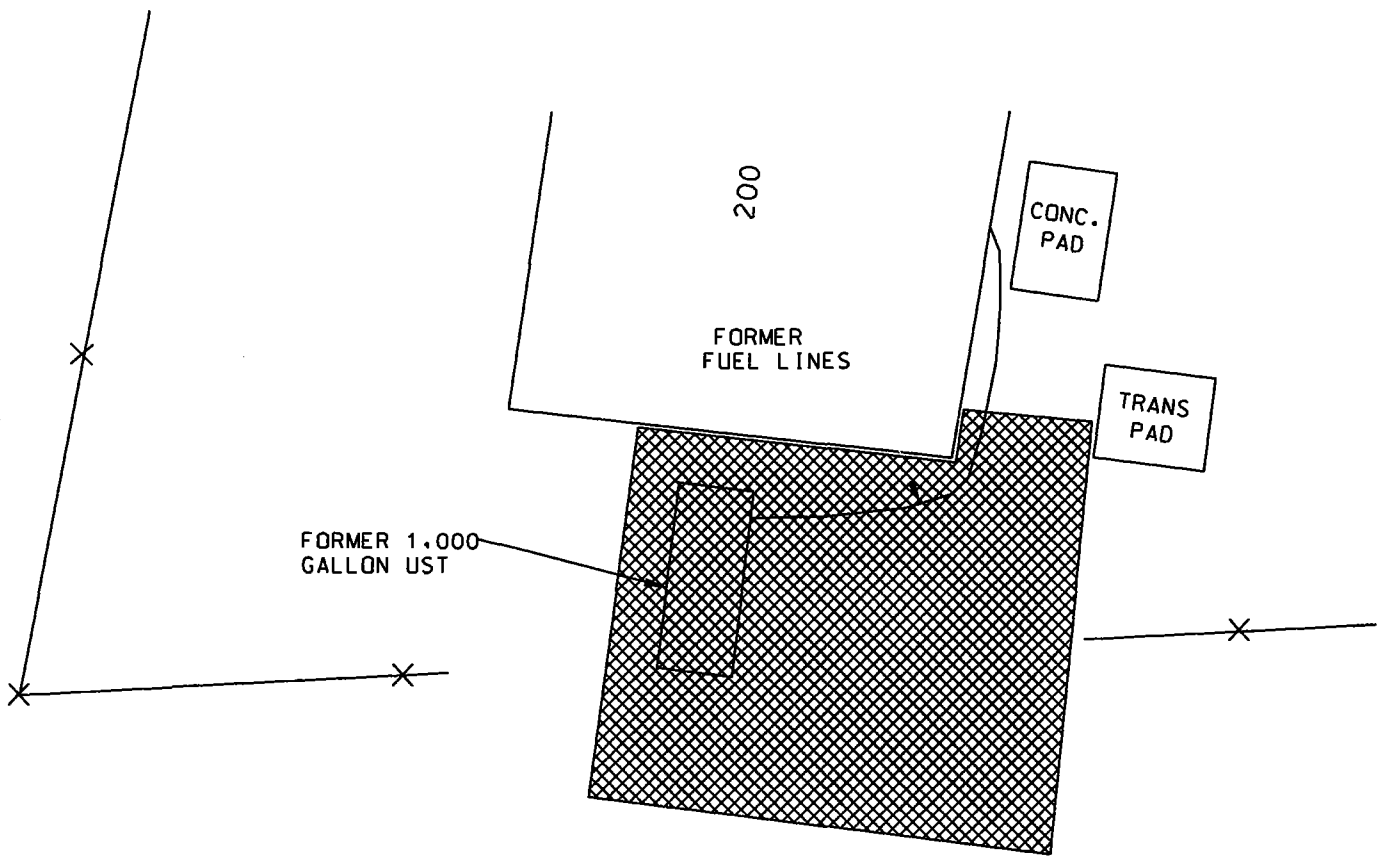


SMC ENVIRONMENTAL  
 SERVICES GROUP  
 Engineers, Managers, Scientists & Planners  
 VALLEY FORGE, PA.

SCALE: 1"=10'

DATE: MARCH 1998

200B 2429 FIG4



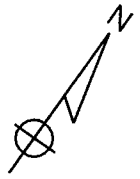
FORMER 1,000 GALLON UST

200

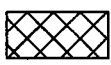
FORMER FUEL LINES

CONC. PAD


TRANS PAD



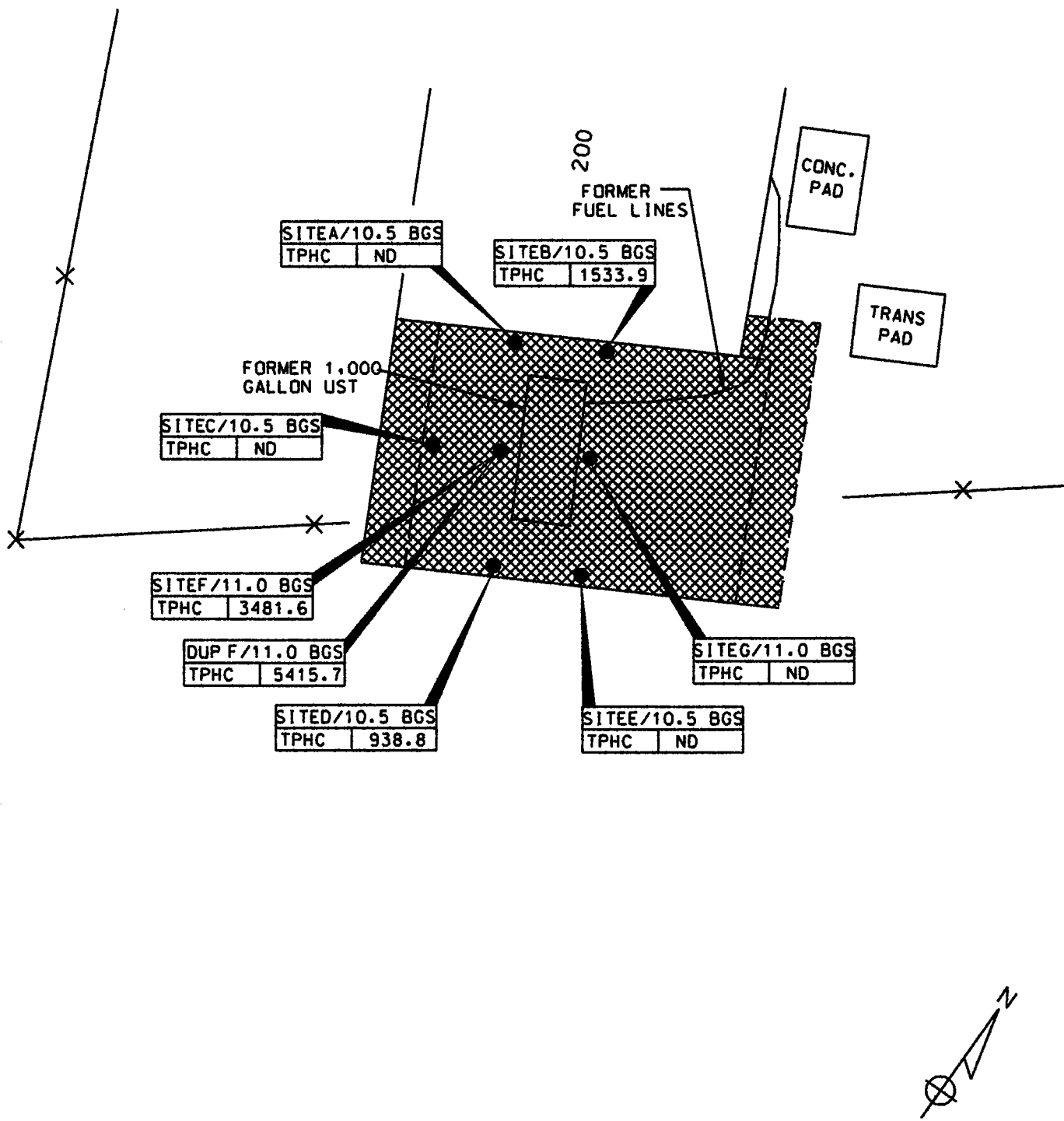
LEGEND

 LIMIT OF EXCAVATION (MAY 10, 1996)

- NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE

|  |                  |
|--|------------------|
| <p>FIGURE 4C<br/>         SOIL SAMPLING LOCATION MAP<br/>         BUILDING 200<br/>         FORT MONMOUTH ARMY BASE<br/>         MONMOUTH COUNTY, NJ</p>   |                  |
| <p> SMC ENVIRONMENTAL SERVICES GROUP<br/>         Engineers, Managers, Scientists &amp; Planners<br/>         VALLEY FORGE, PA.</p> |                  |
| SCALE: 1"=10'  | DATE: MARCH 1998 |


200C 2429 FIG4



**LEGEND**

- SOIL SAMPLE LOCATION (MAY 13, 1996)
- ▨ LIMIT OF EXCAVATION (MAY 13, 1996)

**FIGURE 4D**  
 SOIL SAMPLING LOCATION MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ

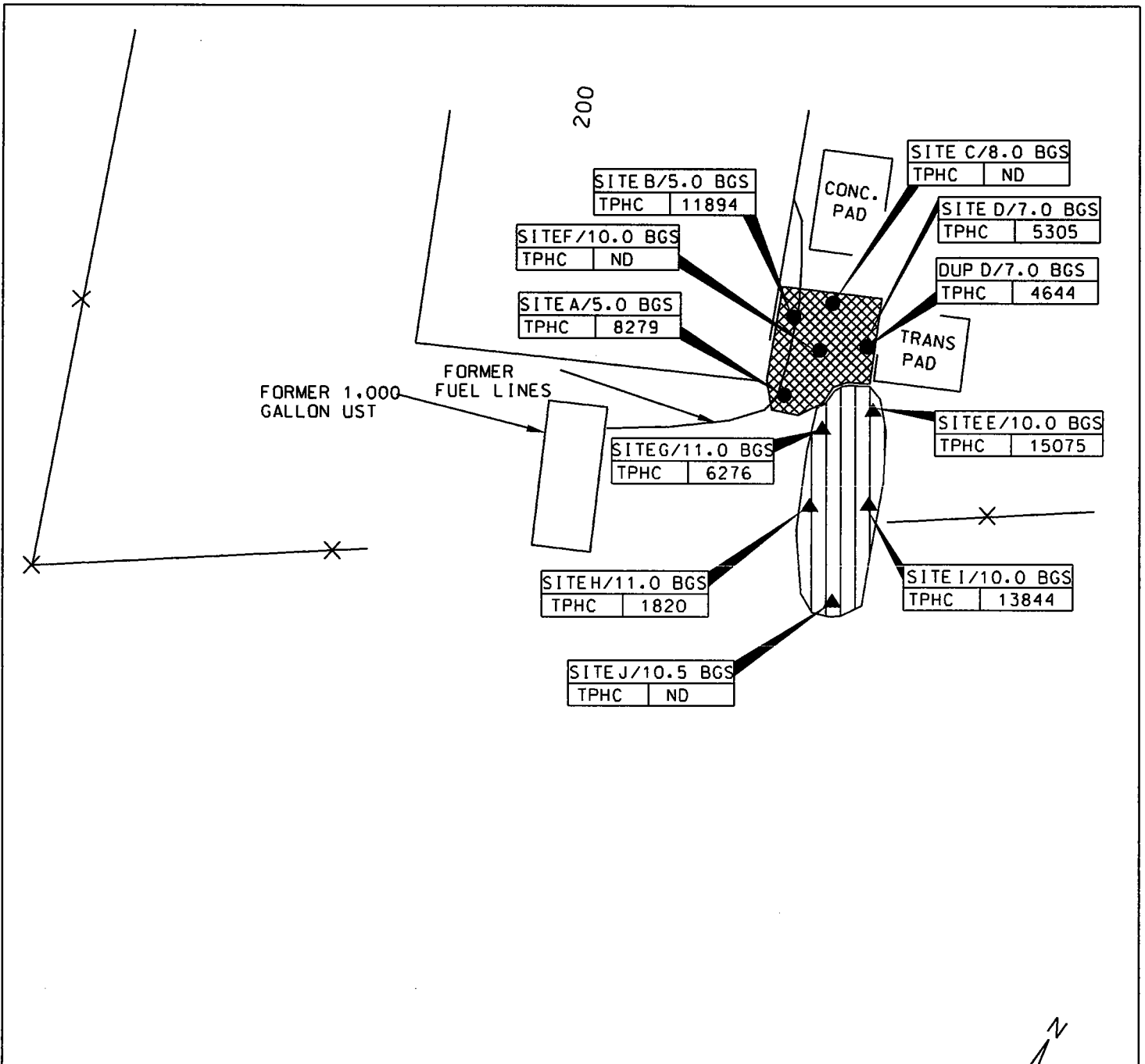
 **SMC ENVIRONMENTAL SERVICES GROUP**  
 Engineers, Managers, Scientists & Planners  
 VALLEY FORGE, PA.

SCALE: 1"=10'      DATE: MARCH 1998

2000 2429 FIG4

- NOTES:**
1. ALL RESULTS IN MG/KG.
  2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
  3. BGS = BELOW GROUND SURFACE





**LEGEND**

● SOIL SAMPLE LOCATION  
(MAY 14, 1996)

▨ LIMIT OF EXCAVATION  
(MAY 14, 1996)

▲ SOIL SAMPLE LOCATION  
(MAY 15, 1996)

▤ LIMIT OF EXCAVATION  
(MAY 15, 1996)

- NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE

**FIGURE 4E**  
 SOIL SAMPLING LOCATION MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ



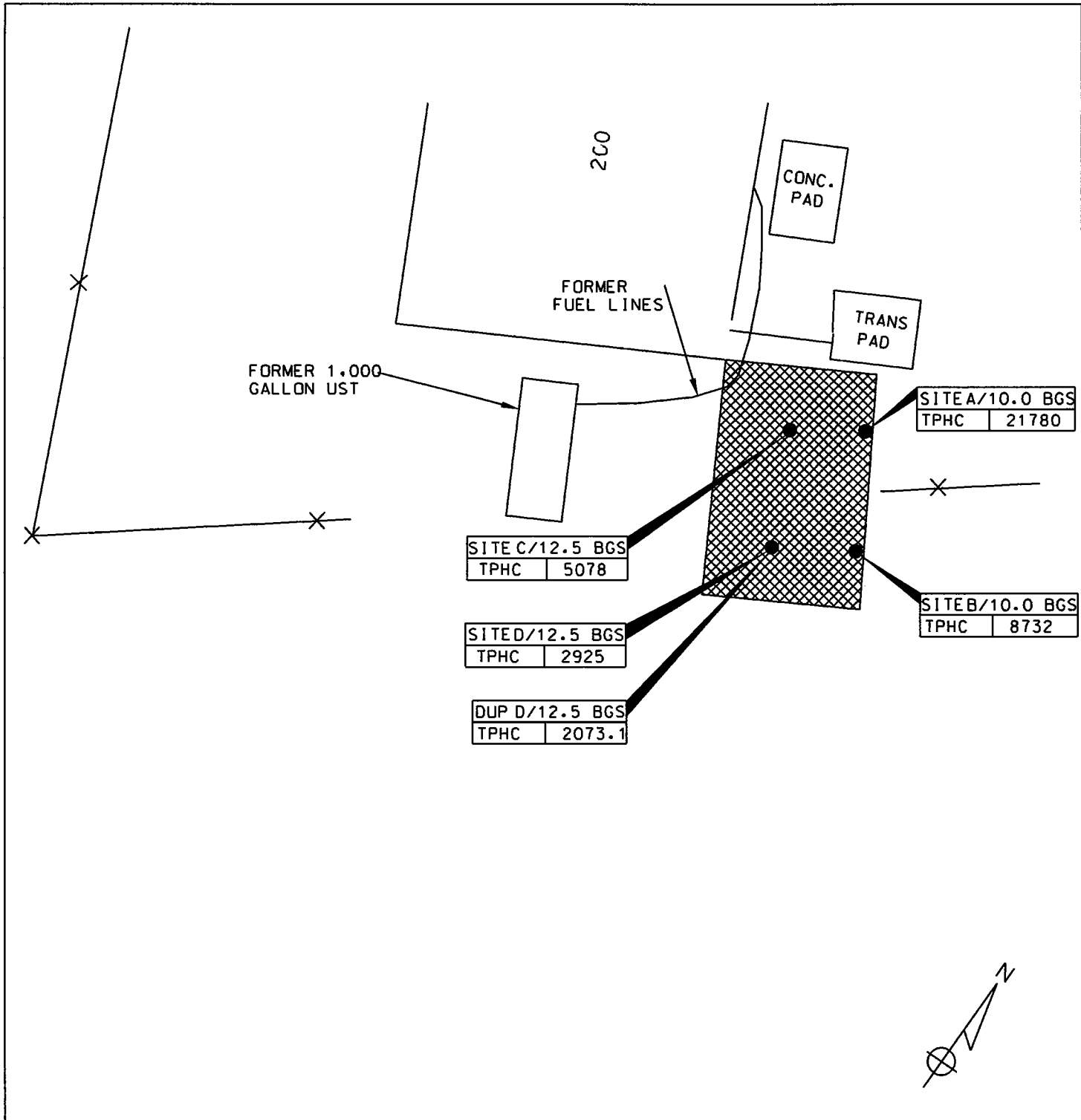
**SMC ENVIRONMENTAL SERVICES GROUP**

Engineers, Managers, Scientists & Planners  
 VALLEY FORGE, PA.

SCALE: 1"=10'

DATE: MARCH 1998

200E 2429 FIG4



**LEGEND**

● SOIL SAMPLE LOCATION  
(MAY 30, 1996)

▨ LIMIT OF EXCAVATION  
(MAY 30, 1996)

- NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE

**FIGURE 4F**  
 SOIL SAMPLING LOCATION MAP  
 BUILDING 200  
 FORT MONMOUTH ARMY BASE  
 MONMOUTH COUNTY, NJ



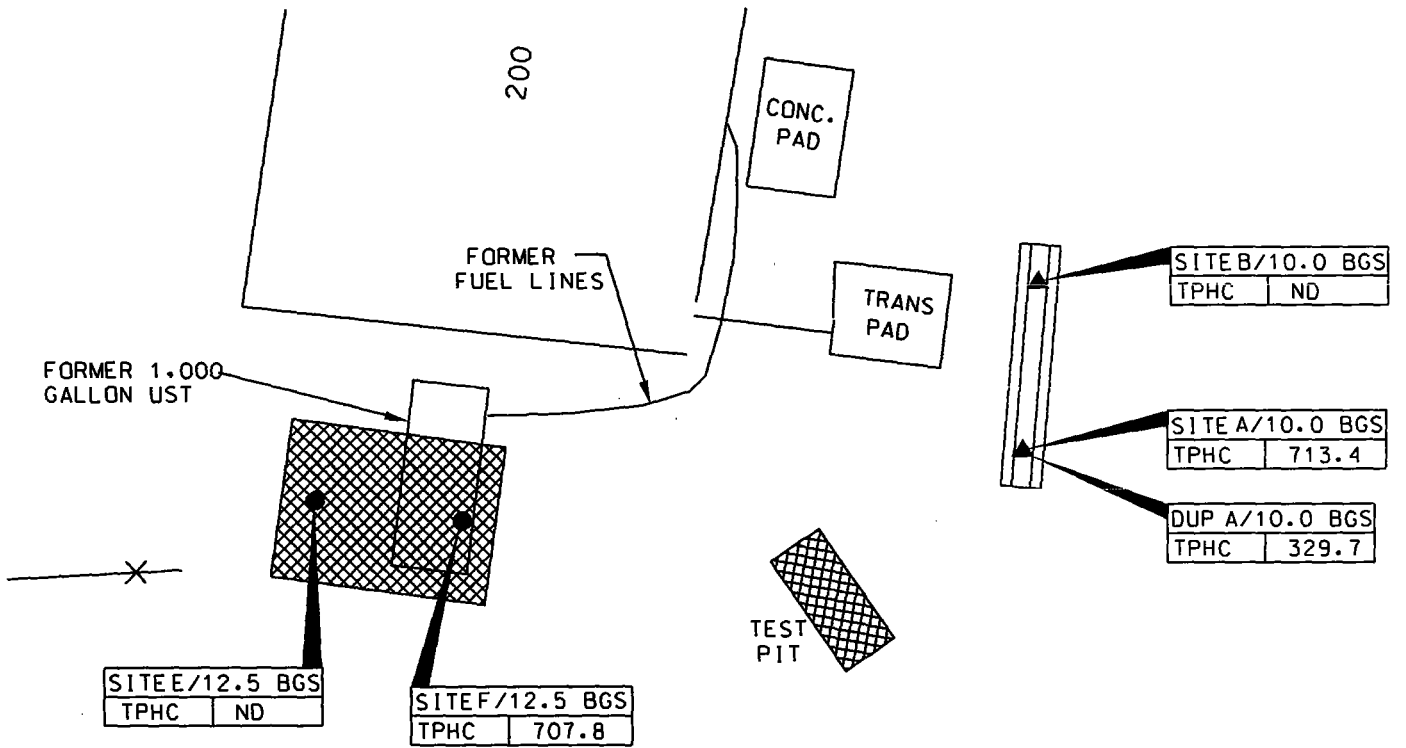
**SMC ENVIRONMENTAL  
 SERVICES GROUP**

Engineers, Managers, Scientists & Planners  
 VALLEY FORGE, PA.

SCALE: 1"=10'

DATE: MARCH 1998

200F 2429 FIG4



**LEGEND**

- SOIL SAMPLE LOCATION (MAY 31, 1996)
- ▣ LIMIT OF EXCAVATION (MAY 31, 1996)
- ▲ SOIL SAMPLE LOCATION (JUNE 1, 1996)
- ▤ LIMIT OF EXCAVATION (JUNE 1, 1996)

NOTES: 1. ALL RESULTS IN MG/KG.  
 2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA  
 3. BGS = BELOW GROUND SURFACE



|  |                  |
|--|------------------|
| <b>FIGURE 4G</b><br>SOIL SAMPLING LOCATION MAP<br>BUILDING 200<br>FORT MONMOUTH ARMY BASE<br>MONMOUTH COUNTY, NJ |                  |
| <b>SMC ENVIRONMENTAL SERVICES GROUP</b><br>Engineers, Managers, Scientists & Planners<br>VALLEY FORGE, PA.       |                  |
| SCALE: 1"=10'  | DATE: MARCH 1998 |

200G 2429 FIG4

**APPENDIX A**

**NJDEP UST CLOSURE REPORT CERTIFICATION**

Site Remediation Program

UST Site/Remedial Investigation Report Certification Form

A. Facility Name : U.S. Army Fort Monmouth New Jersey
Facility Street Address : Directorate of Public Works Building 173
Municipality: Oceanport County: Monmouth

Block: Lot(s): Telephone Number : 732-532-6224

B. Owner (RP)'s Name:
Street Address: City:
State: Zip: Telephone Number :

C. (Check as appropriate)

- Site Investigation Report (SIR) \$500 Fee
Remedial Investigation Report (RIR) \$1000 Fee

D. (Complete all that apply)

- Assigned Case Manager: Ian Curtis, Federal Case Manager
UST Registration Number : 0081533-2
Incident Report Number : 96-05-02-0853-33
Tank Closure Number:

E. Certification by the Subsurface Evaluator:

The attached report conforms to the specific reporting requirements of N.J.A.C. 7:26E ..... Yes No

Name: Dinker Desai Signature: UST Cert. No.:

Firm: U.S. Army Fort Monmouth Firm's UST Cert. Number: N/A - U.S. Army

Firm Address: Directorate of Public Works Buildings 173 City: Fort Monmouth

State: NJ Zip: 07703 Telephone Number : 732-532-6224

(NOTE: Certification numbers required only if work was conducted on USTs regulated per N.J.S.A. 58:10A-21 et seq.)

F. Certification by the Responsible Party(ies) of the Facility:

The following certification shall be signed [according to the requirements of N.J.A.C. 7:14B-1.7(b)] as follows:

- 1. For a Corporation by a person authorized by a resolution of the board of directors to sign the document.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, federal or other public agency by either a principal executive officer or ranking elected Official.

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

Name (Print or Type): James Ott Title: Directorate of Public Works

Signature: [Handwritten Signature]

Company Name: U.S. Army Fort Monmouth Date: 5/18/02

**APPENDIX B**

**WASTE MANIFEST**

**APPENDIX**  
**NOT AVAILABLE**

**APPENDIX C**

**UST DISPOSAL CERTIFICATE**



**APPENDIX**  
**NOT AVAILABLE**

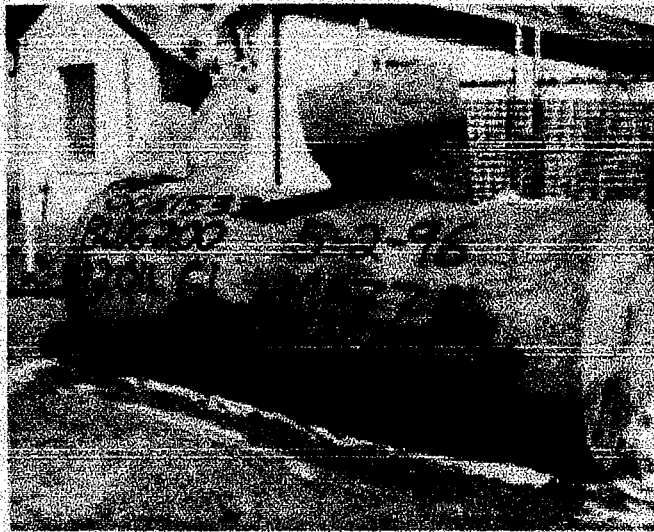
**APPENDIX D**  
**ANALYTICAL DATA PACKAGE**

**APPENDIX**  
**NOT AVAILABLE**

**APPENDIX E**  
**PHOTOGRAPHS**



B 200 57-14



57-16 B 200

**MAY 2, 1996**

# **PHOTOGRAPHIC LOG**

**UST NO. 81533-02**

**Building 200  
Main Post-West  
Fort Monmouth**

**VERSAR**  
Engineers, Managers, Scientists & Planners  
Bristol, PA



*B.D.G. 200*

*5-9-96*



*B. 200*

*5-10-96*

**MAY 2, 1996**

# **PHOTOGRAPHIC LOG**

**UST NO. 81533-2**

**Building 200  
Main Post-West  
Fort Monmouth**

**VERSAR**  
Engineers, Managers, Scientists & Planners  
Bristol, PA