FINAL

FORSCOM

CORRECTIVE ACTION PLAN

Part B

3d Inf Div (Mech)

Underground Storage Tank 108
Facility Identification Number 9-025104
Building 1346
Hunter Army Airfield, Georgia

Prepared for

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT

Contract No. DACA21-95-D-0022
Delivery Order 0038

October 1999

99-096P(PPT-8Fiery)/101999

SAIC®

DOCUMENT 6.4

FINAL

CORRECTIVE ACTION PLAN
PART B
UNDERGROUND STORAGE TANK 108
FACILITY IDENTIFICATION NUMBER: 9-025104
BUILDING 1346
HUNTER ARMY AIRFIELD, GEORGIA

Prepared for:
U.S. Army Corps of Engineers
Savannah District
Under Contract Number DACA21-95-D-0022
Delivery Order Number 0038

Prepared by:
SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831

October 1999

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

contributed to the preparation of this document and should not be considered an eligible contractor for its review.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

ACL	alternate concentration limit
ARAR	applicable or relevant and appropriate requirement
ASTM	American Society for Testing and Materials
BGS	below ground surface
BTEX	benzene, ethylbenzene, toluene, and xylenes
CAP	Corrective Action Plan
COPC	chemical of potential concern
DAF	dilution attenuation factor
DPW	Directorate of Public Works
DRO	diesel-range organic
EPA	U.S. Environmental Protection Agency
FS	Fort Stewart
GA EPD	Georgia Environmental Protection Division
gpm	gallons per minute
GRO	gasoline-range organic
GUST	Georgia Underground Storage Tank Management Program
HAAF	Hunter Army Airfield
ISC	Initial Site Characterization
IWQS	In-stream Water Quality Standard
MCL	maximum contaminant level
NCO	noncommissioned officer
PAH	polynuclear aromatic hydrocarbon
PVC	polyvinyl chloride
QC	quality control
SAIC	Science Applications International Corporation
SI	Site Investigation
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
USCS	Unified Soil Classification System
UST	underground storage tank
VOC	volatile organic compound

THIS PAGE INTENTIONALLY LEFT BLANK

I. CORRECTIVE ACTION PLAN CERTIFICATION - PART B

(Form and certification follow this page.)

THIS PAGE INTENTIONALLY LEFT BLANK

Georgia Department of Natural Resources
Environmental Protection Division
Land Protection Branch
Underground Storage Tank Management Program
4244 International Parkway, Suite 104
Atlanta, Georgia 30354
Phone (404) 362-2687
FAX (404) 362-2654

CORRECTIVE ACTION PLAN
PART B

Facility Name: UST 108, Building 1346

Street Address: Tubb Street, Hunter Army Airfield

City: Savannah **County:** Chatham

Facility ID #: 9-025104

Submitted by UST Owner/Operator:				**Prepared by:**			
Name:	Thomas C. Fry/Environmental Branch			Name:	C. Allison Bailey		
Company:	U.S. Army/HQ 3d Inf. Div. (Mech)			Company:	Science Applications International Corp.		
Address:	DPW ERD ENV. Br. (Fry)			Address:	P.O. Box 2502		
	1557 Frank Cochran Drive						
City:	Fort Stewart	State:	GA	City:	Oak Ridge	State:	TN
Zip Code:	31314-4928			Zip Code:	37831		

I. PLAN CERTIFICATION:

A. UST Owner/Operator:

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, and complete, and the plan satisfies all criteria and requirements of Rule 391-3-15-.09 of the Georgia Rules for Underground Storage Tank Management.

Name: Thomas C. Fry

Signature: Thomas C. Fry Date: 10/27/99

B. Professional Engineer or Professional Geologist:

Name: William K. Jago

Signature: W. Kenneth Jago

Date: 10-15-99

Georgia Stamp or Seal

Check all boxes below that apply. Attach supporting documentation, i.e., narrative, figures, tables, maps, boring/well logs, etc., for all items checked. Supporting documentation should be three-hole punched and prepared in conformity with the guidance document "Underground Storage Tank (UST) Release: Corrective Action Plan – Part B (CAP-B) Content," GUST-7B.

II. SITE INVESTIGATION REPORT:

A. Horizontal and Vertical Extent of Contamination:

- ☒ Soil (Section II.A.1)
- ☒ Groundwater (Section II.A.2)
- ☒ Free product
- ☒ Surface water

B. Local and Site Hydrogeology:

- ☒ Documentation of local groundwater conditions (Section II.B.1)
- ☒ Stratigraphic boring logs (Section II.B.2)
- ☒ Stratigraphic cross-sections (Section II.B.3)
- ☒ Referenced or documented calculations of relevant aquifer parameters (Section II.B.4)
- ☒ Direction of groundwater flow (Section II.B.5):
  - ☒ Table of monitoring well data (Table II-5)
  - ☒ Potentiometric map (Figure II-14)
  - ☒ Flow net superimposed on a Installation map (Figure II-15)

III. REMEDIAL ACTION PLAN:

A. Corrective Action Completed or In Progress:

- ☒ Recovery/removal of free product (nonaqueous-phase hydrocarbons)
- ☐ Remediation/treatment of contaminated backfill material and native soils
- ☐ Other (specify)_____

B. Objective of Corrective Action:

- ☐ Remove free product that exceeds one-eighth inch
- ☐ Remediate groundwater contamination that exceeds:
  - ☐ Maximum contaminant levels (MCLs)

    OR
  - ☐ In-stream water quality standards

B. Objective of Corrective Action (continued):

☐ Remediate soil contamination that exceeds:

☐ Threshold values listed in Table A

OR

☐ Threshold values listed in Table B

OR

☐ Alternate Threshold Levels (ATLs) (App. VI of the CAP-Part A Report, March 1999)

☐ Provide risk-based corrective action (Section III.B.4)

☐ Remediate soil and/or groundwater contamination that exceeds alternate concentration limits (ACLs) and monitor residual contaminants

OR

☐ Monitor soil and/or groundwater contamination that exceeds levels in Rule -.09 (3) but is less than ACLs

☒ Not applicable

C. Design and Operation of Corrective Action Systems:

☐ Soil ☐ Groundwater ☐ Free product ☐ Surface water ☒ Not applicable

D. Implementation (Section III.D):

Includes, as a minimum, the following:

- Milestone schedule for site remediation
- Inspection and preventive maintenance schedule for all specialized remediation equipment
- Monitoring/sampling and reporting plan for measuring interim progress and project completion
- Plan to decommission equipment/wells and close site

IV. PUBLIC NOTICE

☐ Certified letters to adjacent, and potentially affected, property owners and local officials

☒ Legal notice in newspaper, as approved by EPD (Section III.E)

☐ Other EPD-approved method (specify) _____

V. **CLAIM FOR REIMBURSEMENT** (For GUST Trust Fund sites only) :

- ☐ GUST Trust Fund Application (GUST-36) must be attached, if applicable
- ☐ Cost proposal
  - ☐ Non-reimbursable costs

    OR
  - ☐ Reimbursable costs
    - ☐ Total project costs
      - ☐ Costs incurred to date, per GUST-92
      - ☐ Estimated costs to complete corrective action, per GUST-92
    - ☐ Invoices and proofs of payment for costs incurred to date
- ☐ Proposed schedule for reimbursement
  - ☐ Lump sum payment upon completion of corrective action

    OR
  - ☐ Interim payments with final payment upon completion
- ☒ Not applicable

II. SITE INVESTIGATION REPORT

This document represents the Site Investigation (SI) Report for the former underground storage tank (UST) 108, Facility ID: 9-025104, Building 1346, at Hunter Army Airfield (HAAF), Georgia. The UST 108 site is located in the 260th Motorpool on Tubb Street, as illustrated in Figure II-1. The UST 108 site is located within an average or higher groundwater pollution susceptibility area and is greater than 500 feet from a withdrawal point. According to the operational information provided by the HAAF Directorate of Public Works (DPW), UST 108 had a capacity of 500 gallons and was used for the storage of used oil. The tank was constructed of bare steel, and the associated piping was constructed of galvanized steel. UST 108 was installed on January 1, 1987, and was last used on September 12, 1996. The tank was removed and the associated piping abandoned in place on September 19, 1996.

An Initial Site Characterization (ISC) was performed in September 1996 by Anderson Columbia Environmental, Inc. (Anderson Columbia). During UST removal and excavation activities, benzene, toluene, ethylbenzene, and xylenes (BTEX) were not present in soil at concentrations exceeding the applicable Georgia Underground Storage Tank (GUST) Management Program soil threshold levels (Anderson Columbia 1996). However, elevated total petroleum hydrocarbon (TPH) concentrations were detected in the soil sample collected from the tank pit. Groundwater was not sampled during the UST closure activities.

A Corrective Action Plan (CAP)-Part A SI was conducted by Science Applications International Corporation (SAIC) in April 1998. The CAP-Part A SI consisted of the installation of six soil borings for soil and groundwater sampling and one vertical profile boring. The CAP-Part A Report (SAIC 1999a) describes the results of the ISC and was submitted to the Georgia Environmental Protection Division (GA EPD) in March 1999 and was approved by the GA EPD in a correspondence dated June 14, 1999 (Logan to Perez). As outlined in the CAP-Part A report, a CAP-Part B SI was determined to be necessary to:

- verify the absence of dissolved phase contamination in the groundwater,
- verify that all measurable free product had been removed from the site following the CAP-Part A investigation, and
- assess the potential impact of petroleum contaminants to surface water and sediment in the drainage ditch located southeast (downgradient) of the site.

The CAP-Part B SI consisted of the installation of three soil borings/groundwater monitoring wells for soil and groundwater sampling and the collection of two surface water and two sediment samples from a drainage ditch located downgradient of the site. A more thorough description of the CAP-Part B SI technical approach was presented in the Sampling and Analysis Plan (SAIC 1998) and associated addendum (SAIC 1999b).

This report presents the findings of the CAP-Part B SI for UST 108. The investigation was performed by SAIC for the Fort Stewart (FS) DPW, Environmental Branch, through the U.S. Army Corps of Engineers (USACE), Savannah District, in April and May 1999 under contract DACA21-95-D-0022, delivery order 0038.

II.A. HORIZONTAL AND VERTICAL EXTENT OF CONTAMINATION

The horizontal and vertical extent of petroleum contamination in soil and groundwater has been delineated by activities performed during the ISC, CAP-Part A SI and CAP-Part B SI. In addition, the passive removal of all free product was accomplished during the interim between the CAP-Part A and Part B investigations. The ISC consisted of the tank removal in September 1996 and collection of one soil sample from the tank pit. This sample was analyzed for BTEX, polynuclear aromatic hydrocarbons (PAHs), and TPH. The CAP-Part A SI was performed in accordance with the technical approach described in the *Sampling and Analysis Plan for the Corrective Action Plan-Part A Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia* (SAIC 1998). The CAP-Part A SI consisted of the following investigative activities:

- installation of six soil borings with direct-push technology (Geoprobe®);
- collection of soil samples for BTEX, PAH, total petroleum hydrocarbon–diesel-range organics (TPH-DRO), total petroleum hydrocarbon–gasoline-range organics (TPH-GRO), volatile organic compound (VOC) headspace, and geotechnical analyses;
- collection of groundwater samples for BTEX and PAH analyses; water samples were collected using the Geoprobe® from the six shallow boreholes and from a vertical profile [total depth 38.0 feet below ground surface (BGS)];
- installation of six temporary piezometers for site water level and free product measurements;
- passive removal of free product; and
- conducting a water resource survey.

The CAP-Part B SI was performed in accordance with the technical approaches described in the *Sampling and Analysis Plan for the Corrective Action Plan-Part A Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia* (SAIC 1998) and the *Addendum to Sampling and Analysis Plan* (SAIC 1999b). The CAP-Part B SI field activities included:

- drilling three borings to collect soil samples for BTEX, PAH, TPH (418.1), TPH-DRO, TPH-GRO, VOC headspace, and geotechnical analyses;
- installing three monitoring wells that were co-located with the soil boring locations to collect groundwater samples for BTEX, PAH, and water quality analyses;
- collecting a comprehensive round of site water level and free product measurements; and
- collecting two surface water and sediment samples from the unnamed drainage ditch located 20 feet downgradient of the site for BTEX, PAH, TPH (418.1), TPH-DRO, and TPH-GRO analyses.

The CAP-Part B SI analytical laboratory results are presented in Appendix A of this document.

II.A.1. Delineation of Soil Contamination

Petroleum-related contaminants detected in soil at the UST 108 site during the ISC, CAP-Part A SI and CAP-Part B SI included: toluene, total xylenes, 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, TPH (418.1), TPH-GRO, and TPH-DRO. One or more of these constituents were present in 11 out of 16 soil samples collected during the CAP-Part A and Part B investigations (see Tables II-1 and II-2). None of the detected compounds exceeded the applicable GUST soil threshold levels (i.e., Table A, column 2).

II.A.1.a. Contaminant concentrations

II.A.1.a.1. Initial Site Characterization

During the ISC, one soil sample was collected from the bottom of the tank pit excavation at a depth of approximately 10 feet BGS. The analytical data for sample 8102-TK108-S1 indicated that elevated concentrations of TPH (418.1) and 2-methyl-naphthalene were present in the soil. There are no applicable GUST soil threshold levels for TPH (418.1) or 2-methyl-naphthalene. None of the BTEX compounds was detected above its respective detection limit.

II.A.1.a.2. Part A Site Investigation

During the CAP-Part A SI, 10 soil samples were collected from 6 direct-push boreholes at the UST 108 site (Figure II-2). Borehole depths ranged from 6.0 to 13.0 feet BGS. Sample locations are presented in Figure II-3 in plan view and cross-section views. The analytical results are presented in Table II-1 and on Figure II-4. Field screening results (Section II.A.1.b), and proximity of samples with respect to the water table, were the criteria used to collect soil samples for geochemical analysis.

Six of the 10 soil samples collected had detectable levels of either toluene, xylenes, or TPH-DRO. Toluene was detected in samples HD4101 and HD4104 at concentrations of 0.0225 mg/kg and 0.0152 mg/kg, respectively. Total xylenes were detected in samples HD6111 and HD6104 at concentrations of 0.0024J mg/kg and 0.0071J mg/kg, respectively. All contaminant concentrations are well below applicable GUST soil threshold levels and risk-based screening levels (see Section III of this document). Detection limits for BTEX constituents ranged from 0.0022 mg/kg to 0.0077 mg/kg.

TPH-DRO was detected in samples HD2101 and HD3101 at concentrations of 3.5 mg/kg and 3.36 mg/kg, respectively. There is no applicable GUST soil threshold level for TPH-DRO. Detection limits for TPH-DRO ranged from 0.59 mg/kg to 2.5 mg/kg.

II.A.1.a.3. Part B Site Investigation

During the CAP-Part B SI, six soil samples were collected from three boreholes at the UST 108 site (Figure II-2). Borehole depths ranged from 14.2 to 15.3 feet BGS. All soil borings (BD1 through BD3) were converted to monitoring wells (MW-D1 through MW-D3) (see Appendix B). Locations of soil borings and monitoring wells were chosen based on CAP-Part A SI analytical results and groundwater flow direction as presented in the CAP-Part A Report (SAIC 1999a). All CAP-Part B SI soil samples were collected from above the saturated zone. Sample locations are presented in Figure II-3 in plan view and cross-section views. Analytical results are presented in Table II-1 and on Figure II-4. Field screening results (Section II.A.1.b) and proximity of samples with respect to the water table were the criteria used to select soil samples for chemical analysis.

None of the six soil samples collected contained detectable levels of BTEX compounds. Only one of the six soil samples collected during the CAP-Part B SI contained detectable levels of PAH constituents. Several PAH compounds including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene were detected in sample BD1101 at concentrations ranging from 0.0274J mg/kg to 0.160J mg/kg. There are no applicable GUST soil threshold levels for the detected PAHs (i.e., Table A, column 2). All PAH concentrations were well below risk-based screening levels. Detection limits for BTEX constituents ranged from 0.0020 mg/kg to 0.0035 mg/kg. Detection limits for PAH compounds ranged from 0.362 mg/kg to 0.422 mg/kg.

TPH-DRO was detected in soil sample BD1101 at a concentration of 6.6 mg/kg. TPH-GRO was detected in samples BD1101, BD2101, BD2103, BD2113, and BD3102 at concentrations ranging from 0.0402J mg/kg to 0.0737J mg/kg. TPH (418.1) was detected in sample BD1101 at a concentration of 194 mg/kg. Detection limits for TPH-DRO, TPH-GRO, and TPH ranged from 0.0592 mg/kg to 21.6 mg/kg for soil samples collected during the CAP-Part B SI.

II.A.1.b. Field screening results

Field screening through VOC headspace was performed on all soil samples collected from above the saturated zone during the CAP-Part A and Part B site investigations. For each 4-foot-length soil macrocore sample taken during direct-push activities, two 2.0-foot grab samples were collected in glass jars and covered with aluminum foil. These samples corresponded to potential analytical sample aliquots collected from the same interval. After allowing at least 15 minutes for volatilization and temperature equilibration, VOC headspace concentrations were measured with a PhotoVac 2020 photoionization detector. Field screening results for the CAP-Part A and CAP-Part B site investigations are presented in Table II-3.

II.A.2. Delineation of Groundwater Contamination

Petroleum-related contaminants detected in groundwater at the UST 108 site during the CAP-Part A SI and CAP-Part B SI included toluene, ethylbenzene, and total xylenes. None of the detected groundwater contaminant concentrations exceeded federal maximum contaminant levels (MCLs) or risk-based screening levels.

II.A.2.a. Horizontal extent of groundwater contamination

II.A.2.a.1. Initial Site Characterization

Groundwater samples were not collected during the ISC.

II.A.2.a.2. CAP-Part A Site Investigation

During the CAP-Part A SI, six groundwater samples were collected for chemical analysis from six direct-push groundwater sampling points to determine the horizontal extent of contamination at the site (Table II-4). The direct-push groundwater sampling boreholes D-1 through D-6 were advanced down to approximately 5 feet below the water table where the water samples were collected. Piezometers were then installed at these points for water level and free product measurements. The technical approach for the collection of CAP-Part A groundwater samples is presented in Attachment A of the *Corrective Action Plan-Part A Report* (SAIC 1999a).

Toluene was detected in sample HD2200 (boring D-2) at a concentration of 7.5J µg/L as presented in plan view and cross-section views on Figure II-5. This concentration does not exceed the federal MCL of 1000 µg/L, the risk-based screening level of 1300 µg/L, or the state In-stream Water Quality Standard (IWQS) of 200,000 µg/L. The analytical detection limit for toluene was 2 µg/L.

Ethylbenzene was detected in sample HD2200 at a concentration of 258J µg/L as presented in plan view and cross-section views on Figure II-6. This concentration is below the federal MCL of 700 µg/L, the state IWQS of 28,718 µg/L, and the risk-based screening level of 750 µg/L. The analytical detection limit for ethylbenzene was 2 µg/L.

Total xylenes were detected in samples HD1200 and HD2200 at concentrations of 4.4J µg/L and 143J µg/L, respectively, as presented in plan view and cross-section views on Figure II-7. These concentrations are below the federal MCL of 10,000 µg/L and the risk-based screening level of 12,000 µg/L. This compound does not have a state IWQS. The analytical detection limit for total xylenes was 6 µg/L.

Free product was detected in piezometer D-1 on April 3, 1998. A passive removal system was subsequently installed which remained in place until November 18, 1998. Free product has not been detected at the site since July 21, 1998. A complete discussion of the free product is provided in Section II.A.3.

II.A.2.a.3. CAP-Part B Site Investigation

To verify that all measurable free product was removed from the site and to evaluate and verify the absence of dissolved phase contamination in the groundwater, a CAP-Part B SI was conducted. During the CAP-Part B SI, three groundwater samples were collected from three monitoring wells (Table II-5). Monitoring well MW-D1 was located directly adjacent to the former tank pit, monitoring well MW-D2 was located directly downgradient of the site, and monitoring well MW-D3 was located downgradient of the wash racks in the vicinity of the former tank piping system. The monitoring well locations are shown on Figure II-2 and were approved by the GA EPD in a correspondence dated June 14, 1999 (Logan to Perez). The monitoring well construction details are provided in Section II.B.5.a and the construction diagrams presented in Appendix C.

Toluene was detected in sample BD1200 (MW-D1) at a concentration of 0.9J µg/L as presented in plan view and cross-section views on Figure II-8. This concentration does not exceed the federal MCL of 1000 µg/L, the risk-based screening level of 1300 µg/L, or the state IWQS of 200,000 µg/L. The analytical detection limit for toluene was 2 µg/L.

Ethylbenzene was detected in sample BD1200 (MW-D1) at a concentration of 1.8J µg/L as presented in plan view and cross-section views on Figure II-9. These concentrations are below the federal MCL of 700 µg/L, the state IWQS of 28,718 µg/L, and the risk-based screening level of 750 µg/L. The analytical detection limit for ethylbenzene was 2 µg/L for all samples.

II.A.2.a.4. Conclusions of the Horizontal Extent of Site Groundwater Contamination

Figures II-5 through II-9 demonstrate that the horizontal extent of petroleum contaminants in groundwater has been delineated to the respective regulatory levels and appropriate analytical detection limits. The horizontal extent of these constituents has been estimated based on nearby concentrations and the distribution of similar contaminants. Petroleum contaminants identified in the groundwater at the UST

108 site include BTEX constituents normally associated with waste oil releases. The UST 108 site is a candidate for no further action because the source of the contamination has been removed, all measurable quantities of free product have been removed and remained nonexistent for over a 1-year period, and there is no groundwater contamination above MCLs at the site.

II.A.2.b. Vertical extent of groundwater contamination

The vertical extent of groundwater contamination was not investigated during the ISC or CAP-Part B SI. During the CAP-Part A SI, the vertical extent of groundwater contamination was delineated through groundwater sampling in vertical profile D-7 using direct-push technology. The technical approach for vertical profile installation is provided in the *Corrective Action Plan-Part A Report* (SAIC 1999a).

The vertical profile boring was advanced to 38 feet BGS. Groundwater samples were collected at intervals of 14.0 to 18.0 feet BGS, 24.0 to 28.0 feet BGS, and 34.0 to 38.0 feet BGS.

Toluene was detected in sample HD7303, collected at a depth of 34 to 38 feet BGS, at a concentration of 2.4 µg/L (Figure II-5). The concentration does not exceed the federal MCL of 1000 µg/L, the risk-based screening level of 1300 µg/L, or the state IWQS of 200,000 µg/L. The analytical detection limit for toluene was 2 µg/L. No other constituent in any of the three samples exceeded detection limits.

The Hawthorn confining unit was not encountered during the sampling of vertical profile D-7. Based on drill logs from other CAP-Part A sites at HAAF, the top of the Hawthorn Unit is believed to exist approximately 20 feet below the bottom of D-7 (i.e., at approximately 55 to 60 feet BGS). Due to the fact that none of the groundwater samples collected from the vertical profile boring indicated the presence of BTEX or PAH constituents above their applicable federal MCLs, the vertical extent of groundwater contamination has been delineated.

II.A.3. Delineation of Free Product Plume

Petroleum free product was identified at the UST 108 site during the CAP-Part A SI, but not during the ISC or the CAP-Part B investigations (Table II-6). On April 3, 1998, approximately 1/8 inch (0.2 foot) of free product was detected in piezometer D-1 (Figure II-3). Free product was not detected in any of the other borings/piezometers installed at this site during the CAP-Part A SI.

Free product was detected by placing a sample of groundwater extracted from the piezometer into a 50-mL glass vial and allowing the sample to equilibrate for 24 hours. Upon discovery of the free product, a passive removal system consisting of a 5.0-foot-long, threaded steel rod wrapped with absorbent material (i.e., absorbent sock) fastened with chemically inert plastic ties was installed in piezometer D-1. To maximize free product absorption, the material was installed across the water table. The passive removal system was in operation at the site from April 4 through November 18, 1998. On June 25, 1998, a water-product interface meter was used for the detection of free product thickness. However, none was detected. On November 18, 1998, the absorbent sock was removed to allow the piezometer to equilibrate. Measurements made with a water-product interface meter on November 30 indicated free product was no longer present at this site. From April 4 through June 25, 1998, approximately 0.22 gallon of free product was removed from piezometer D-1.

During the CAP-Part B SI, three monitoring wells were installed to verify that all measurable free product had been removed from the site. Monitoring wells D-1, installed adjacent to piezometer D-1, D-2, and D-3 were installed in April 1999. Temporary piezometer D-1 was removed after the permanent monitoring well (MW-D1) was installed. Measurements were made with a water-product interface meter

in all three wells after installation, during groundwater sampling activities conducted in May 1999, and during a site visit in July 1999. Free product was never detected or measured in any of the three monitoring wells. A review of the dissolved concentrations for the constituents detected in the groundwater samples also provides evidence that free product is no longer present at the site.

II.A.4. Delineation of Surface Water and Sediment Contamination

Surface water and sediment samples were collected from two locations in a ditch located southeast (downgradient) of the former UST 108 site (Figure II-10; Tables II-2 and II-5). Sample SSD-02 was collected in the drainage ditch directly downgradient (approximately 20 feet southeast) of the former UST 108, and sample SSD-01 was collected approximately 30 feet downstream of SSD-02.

Toluene was detected in both sediment samples, BD1500 and BD2500, at concentrations of 0.0047 mg/kg and 0.00076J mg/kg, respectively (Figure II-10 and Table II-2). These concentrations are well below the GUST applicable soil threshold level (i.e., Table A, column 2) of 6 mg/kg.

In addition, concentrations of TPH-DRO, TPH-GRO, and TPH (418.1) were detected in the sediment samples. Sample BD1500 (SSD-01) had detected concentrations of TPH-DRO, TPH-GRO, and TPH (418.1) of 5.9 mg/kg, 0.358 mg/kg, and 124 mg/kg, respectively. Sample BD2500 (SSD-02) had detected concentrations of TPH-DRO, TPH-GRO, and TPH (418.1) of 87.8J mg/kg, 0.398 mg/kg, and 1410 mg/kg, respectively. There are no applicable GUST soil threshold levels for these compounds.

Total xylenes were detected in surface water sample BD2600 (SSD-02) at a concentration of 0.53J µg/L (Figure II-10; Table II-5). This concentration does not exceed the federal MCL of 10,000 µg/L or the risk-based screening level of 12,000 µg/L. This compound does not have a state IWQS. No other constituents were detected above the laboratory reporting limit for either sediment or surface water samples.

II.B. REGIONAL, LOCAL, AND SITE HYDROGEOLOGY

Discussion of the regional, local, and site hydrogeology is based on field observations and other investigative activities, including a water resource survey, performed during the CAP-Part A and CAP-Part B investigations of the UST 108 site.

II.B.1. Documentation of Local Groundwater Conditions

II.B.1.a. Groundwater usage

According to the FS DPW, nine water supply wells are located within the confines of the HAAF area (Figures II-11 and II-12). These wells have the potential to provide up to 3890 gallons per minute (gpm) of water to occupants of the HAAF installation. The FS DPW was unable to provide documentation listing the companies responsible for well installation and drillers' logs showing as-built information and subsurface geologic data. Information concerning such documentation was requested from several water well drilling companies in the Chatham County area; however, data were procured with very limited success. The FS DPW provided well locations, pump rates, treatments, casing depths, and total depths for eight of the nine wells located at HAAF. Because of the lack of data, documentation of subsurface geology based on HAAF drill logs remains extremely limited. Therefore, other references containing deep-well information were used to document the subsurface geology and aquifer characteristics underlying HAAF and the vicinity.

Wells 1 and 2, both public water supply wells located in the cantonment area of HAAF, constitute the main water supply system at the HAAF installation (Figure II-12). Well 1, located at Building 711 on the corner of Moore Road and Douglas Street, is a 12-inch-diameter well with a 100-hp turbine pump serving a 100,000-gallon elevated storage tank (Tank 1) through 10-inch lines. Water from Well 1 is injected with hydrofluosilic acid and chlorine gas solution at the well house. Well 2, located at Building 1205 on the corner of Neal Street and Strachan Road, is a 12-inch-diameter well with a 100-hp turbine pump serving a 200,000-gallon elevated tank (Tank 2) through 10-inch lines. Water from Well 2 is also injected with hydrofluosilic acid and chlorine gas solution at the well house. Wells 1 and 2 provide water to a 500,000-gallon elevated storage tank (Tank 3) located on Middleground Road behind noncommissioned officer (NCO) family housing. This tank provides potable water to 694 service connections, which are used by an average of at least 5000 individuals year-round.

Wells 3, 4A, and 7 are public supply wells located outside the cantonment area of HAAF. Well 3, located at Building 8455, is a 4.0-inch-diameter well with a 1.0-hp electric submersible pump serving a 1000-gallon hydropneumatic storage tank through 1.5-inch galvanized steel lines. Water from Well 3 is treated with calcium hypochlorite solution and is consumed by approximately 25 people during daytime hours, year-round. Well 4A, located at Building 8581 at the 117th Air National Guard Facility, is a 4.0-inch-diameter well. Pumpage is accomplished with a 0.75-hp turbine pump with 80-gpm capacity. Well 4A provides water for approximately 50 people per day year-round. Well 7 is located at Building 8703 on the Forest River, west of Rio Road. Well 7 is a 4.0-inch-diameter well with a 3.0-hp submersible pump serving a 5000-gallon hydropneumatic tank through 2.0-inch galvanized steel lines. Well 7 serves approximately 500 people on a part-time basis. Sanitary protection for Wells 3, 4A, and 7 is provided by a pump motor block, concrete slab, sealed well head, and screened casing vent.

Based on the Georgia Environmental Protection Division (GA EPD) criteria of serving potable water to less than 25 occupants per day and having less than 15 service connections, Wells 5, 8, and 9 are classified as non-public supply wells (Figures II-11 and II-12).

Well 10 is a non-potable water source (Figures II-11 and II-12). Water from Well 10 is used for the cleaning of military equipment at a wash-rack facility. Additional information, including capacity, borehole depth, and casing depth, is not available.

The locations of supply wells found outside the boundary of HAAF are shown on Figure II-11. These wells include 1, 42, 13, 25, 15, 27, 14, 23, 6, and 9. The City of Savannah Bureau of Water Operations was unable to provide drill logs or as-built well information. The UST 108 site is located approximately 3000 feet southeast of HAAF Well 2, which is located at Building 1205 on Strachan Drive (Figures II-11 and II-12). Therefore, the UST 108 site is classified as being greater than 500 feet to a withdrawal point. Well 2 is part of the main public water supply system at HAAF. This system supplies water to approximately 7500 persons through 525 service connections.

II.B.1.b. Aquifer description

The hydrogeology in the vicinity of HAAF is mostly influenced by two aquifer systems. These are referred to as the Principal (Floridan) Aquifer and the Surficial Aquifer (Miller 1990). The Principal Aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer, approximately 800 feet in total thickness, is composed primarily of Tertiary-age limestone including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. Groundwater from the Floridan is used primarily for drinking water (Arora 1984). According to Miller (1990), one of the largest cones of depression produced in the Floridan Aquifer exists directly beneath Savannah, Georgia. According to

1980 estimates, more than 500 million gallons of water per day were withdrawn from the Floridan Aquifer for public and industrial use in southeast Georgia, more than any other region (Miller 1990).

The confining layer for the Floridan Aquifer is the phosphatic clay of the Hawthorn Group. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Surficial Aquifer overlies the Hawthorn confining unit.

The Surficial Aquifer consists of widely varying amounts of sand and clay, ranging from 55 to 150 feet in thickness, and is composed primarily of the Satilla and Cypresshead Formations in the Savannah vicinity (Arora 1984). This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet below ground level (Miller 1990). Groundwater in the Surficial Aquifer system is under unconfined, or water table, conditions. However, locally, thin clay beds create confined or semi-confined conditions.

Groundwater encountered at HAAF UST investigation sites is part of the Surficial Aquifer system. Based on the fact that all public and non-public water supply wells draw water from the Principal (Floridan) Aquifer, and that the Hawthorn confining unit separates the Principal Aquifer from the Surficial Aquifer, it is concluded that there is no hydraulic interconnection between HAAF UST sites (and associated plumes) and water supply withdrawal points.

II.B.1.c. Surface water

Surface water bodies at HAAF include Hallstrom Lake, Lamar Canal, Buckhalter Canal, Springfield Canal, Pond 29 located northwest of Buildings 336 and 232, and an unnamed pond located along the southeast boundary of the HAAF installation (Figure II-12). Several unnamed drainage canals and ditches exist throughout HAAF. Most of these canals drain southwest into the Little Ogeechee River, which is part of the Lower Ogeechee watershed. The remaining drainage canals located on the east side of the HAAF installation flow east and eventually drain into the Vernon River, which is located southeast of the HAAF installation.

Surface water bodies at HAAF and adjacent areas are not used as public water supplies. The ponds and lakes, as well as Lamar Canal, are perennial, whereas most of the drainage canals and ditches are intermittent. Most of the drainage canals are at least partially enclosed in culverts.

A southwest-flowing drainage ditch is located approximately 20 feet southeast (downgradient) of the UST 108 site. This drainage ditch was determined to be the nearest potential receptor for possible contamination migrating from the site. Water that drains into this ditch ultimately flows into the Vernon River, located southeast of HAAF. At the site, a water line is located approximately 30 feet downgradient of the former tank pit at a depth of approximately 6.6 feet BGS, which is below the water table. Upgradient of the site and to the northeast of the former tank pit, there is a washrack and abandoned waste oil drain associated with the former UST 108. In addition, a sanitary sewer is located approximately 105 feet upgradient (northwest) of the site, and a storm drain is located approximately 60 feet southwest of the site (Figure II-2).

II.B.2. Stratigraphic Boring Logs

The local stratigraphy of HAAF and the vicinity is presented in Section II.B.2.a, and the site stratigraphy from the CAP-Part A and CAP-Part B SIs is presented in Section II.B.2.b.

II.B.2.a. Local stratigraphy

HAAF is located within the Barrier Island Sequence District of the Coastal Plain Physiographic Province of the Southeast United States (Clark and Zisa 1976). The Barrier Island Sequence District in Chatham and Bryan Counties is characterized by the existence of several marine terraces (step-like topographic surfaces that decrease in elevation toward the coast). These marine terraces, and their associated deposits, are the results of sea level fluctuations that occurred during the Pleistocene Epoch. The surficial (Quaternary) deposits in Chatham and Bryan Counties, in decreasing elevation and age, are part of the Okefenokee, Wicomico, Penholoway, Pamlico, and Silver Bluff terrace complexes (Wilkes et al. 1974; GA DNR 1976; Huddlestun 1988).

HAAF, as well as most of Chatham County, is underlain by the Pleistocene Pamlico Terrace. The Pleistocene Satilla Formation (formerly known as the Pamlico Formation) consists of deposits of the Pamlico Terrace complex and other terrace complexes in the region (Huddlestun 1988). The Satilla Formation is a lithologically heterogeneous unit that consists of variably bedded to non-bedded sand and variably bedded silty to sandy clay. During the Pleistocene, these sand and clay deposits were formed in offshore and inner continental shelf, barrier island, and marsh/lagoonal-type environments (Huddlestun 1988). According to the Geologic Map of Georgia (GA DNR 1976), clay beds of marsh origin, which were deposited on the northwest side of the former Pamlico Barrier Island complex, exist throughout HAAF. Very fine- to coarse-grained sand deposits of barrier island origin are also common.

II.B.2.b. Site stratigraphy

As determined from soil borings drilled during the CAP-Part A and CAP-Part B SIs, unconsolidated sediment types underlying the site include: (1) poorly graded, silty organic rich sand; (2) silty lean clay; (3) poorly sorted sand; and (4) well sorted, clean quartz sand. These are believed to be part of the Satilla Formation.

II.B.3. Stratigraphic Cross-Sections

Stratigraphic cross-sections have been developed based on the Part A SI and Part B SI soil boring logs. Cross-sections A-A' (southwest/northeast) and B-B' (northwest/southeast) as presented in Figure II-3, show the site geology as determined by drilling and sampling activities.

II.B.4. Geotechnical Analysis

During the CAP-Part A SI, one undisturbed geotechnical sample was collected from 4.0 to 6.0 feet BGS using a 2-inch-diameter, 2-foot-length Shelby tube at location D-8. This sample was collected to determine the physical characteristics of the underlying strata for potential fate and transport modeling. The geotechnical properties measured for this sample included grain size distribution, moisture content, specific gravity, porosity, permeability, and total organic carbon. In addition, based on grain-size distribution determination, the Unified Soil Classification System (USCS) was used to assign a soil class name to the sample extracted from D-8.

During the CAP-Part B SI, three disturbed geotechnical samples were collected from boreholes BD1 through BD3, and one undisturbed geotechnical sample was collected from boring BD4. The geotechnical properties measured for the sample collected at location BD4 are the same as those measured for D-8. The properties measured for samples collected from BD1 through BD3 include grain size distribution, moisture content, specific gravity, porosity, bulk density, permeability, and Atterburg Limits.

Geotechnical results for the CAP-Part A and CAP-Part B SIs at the UST 108 site are presented in Table II-7 and Appendix D.

II.B.5. Direction of Groundwater Flow

II.B.5.a. Well construction details

Following contact with fully saturated material in a soil boring, a water level measurement was taken to determine the remaining depth to be drilled. This measurement was necessary to ensure the placement of at least 7.0 feet of well screen below the water table. Due to the shallow depth of the water table, less than 4.0 feet BGS, the screen length, filter pack thickness, and bentonite seal thickness were modified in the field.

Monitoring well casing consisted of 2-inch inside diameter, Schedule 40, flush-thread polyvinyl chloride risers and screens in 5- and 10-foot sections. The well screen slot size was 0.010 inch. Table II-8 summarizes construction details for CAP-Part A SI direct-push sampling points and Part B SI monitoring wells. Well construction diagrams are presented in Appendix C. Following installation of the well casing, #00, 30–50 mesh filter pack sand was poured while augers were gradually removed to ensure a complete and even distribution of the filter pack. The filter pack extended to a measured level at least 1.0 foot above the top of screen. The bentonite seal extended to a measured level of at least 1.5 feet above the top of the filter pack.

Above the well seal, the remaining annular space was completed with a 1.0-foot-long flush-mount sheet steel protective casing that was grouted in place. Well casings were capped with expandable locking caps. Protective casings were covered with bolted, cast-iron manhole covers. Inscribed monitoring well identification plates were permanently affixed to the inside of each manhole cover.

II.B.5.b. Potentiometric mapping

Water level measurements were collected 24 hours after piezometer installation in April 1998 during the CAP-Part A SI, and in May 1999 during the CAP-Part B SI groundwater sampling activities. Data obtained from these measurements are presented in Table II-9. During the CAP-Part A SI in April 1998, groundwater flow direction was to the southeast with a gradient of 0.08 foot/foot (Figure II-13). Based on this direction and gradient, and the nature of contamination, CAP-Part B monitoring well locations were chosen. CAP-Part B SI data were used to construct a groundwater potentiometric surface map for May 1999 (Figure II-14). Based on CAP-Part B SI potentiometric data, groundwater flow under the UST 108 site was also determined to be to the southeast with an average gradient of 0.063 foot/foot.

II.B.5.c. Equipotential flow net

An equipotential flow net based on May 1999 water level measurements and the contoured potentiometric surface is presented in Figure II-15.

III. REMEDIAL ACTION PLAN

III.A. CORRECTIVE ACTION COMPLETED OR IN PROGRESS

III.A.1. Recovery/Removal of Free Product

Evidence of free product was identified at the UST 108 site during the CAP-Part A SI in piezometer D-1. A passive removal system (i.e., absorbent sock) was installed across the water table of piezometer D-1 on April 3, 1998. The passive removal system was in operation at the site from April 4 through November 18, 1998. From April 4 through June 25, 1998, approximately 0.22 gallon of free product was removed from piezometer D-1 (Table II-6). Free product was not detected at the site after June 25, 1998. On November 18, 1998, the absorbent sock was removed, allowing the piezometer to equilibrate. Measurements made with a water-product interface meter on November 30 indicated free product was no longer present at the site. A Free Product Notification Form (GUST-1) was submitted with the CAP-Part A Report on March 31, 1999 (Perez to McAllister). Free product was not detected during the CAP-Part B SI. In addition, dissolved concentrations of BTEX in the CAP-Part B SI groundwater do not indicate the presence of free product. Therefore, continuing free product removal efforts are not required for this site.

III.A.2. Remediation/Treatment of Contaminated Backfill Material and Native Soils

Former UST 108 was a 500-gallon waste oil tank installed on January 1, 1987, and was last used on September 12, 1996. The tank was removed on September 19, 1996. After removal of the tank, the ancillary piping was purged and closed in place by filling with grout. The UST and tank pit soil were excavated and removed from the site. Notification letters, a Closure Activity Form (GUST-29), a revised Notification Data for UST Form (GUST-42), a Free Product Notification Form (GUST-1), and a CAP-Part A report were submitted to GA EPD in association with the UST removal activity. Elevated concentrations of TPH (418.1) were detected in the tank pit soils during UST removal and excavation activities. No further excavation of potentially contaminated backfill or native soils has occurred at the UST 108 site.

III.B. OBJECTIVES OF CORRECTIVE ACTION

III.B.1. Remove Free Product that Exceeds One-Eighth Inch

Evidence of free product was identified at the UST 108 site during the CAP-Part A SI. The removal of free product using a passive removal technique (i.e., absorbent sock) was used to extract approximately 0.22 gallon of product. Free product was not detected during the CAP-Part B SI. Therefore, further recovery or removal of free product is not necessary.

III.B.2. Remediate Groundwater Contamination

CAP-Part A and Part B results document that all groundwater and surface water contaminant concentrations are below federal MCLs, state IWQSs, and/or risk-based screening levels. Active remediation of groundwater is not recommended for this site.

III.B.3. Remediate Soil Contamination

The results from the CAP-Part A and Part B investigations document that all contaminant concentrations are below GUST soil threshold levels (i.e., Table A, column 2). The contaminant concentrations are below risk-based screening levels that are protective of soil exposure during industrial land use. Therefore, active remediation of soil is not recommended.

III.B.4. Provide Risk-based Corrective Action

A risk-based approach was used to determine the need for further action at the UST 108 site. Due to the nature of the contamination (petroleum hydrocarbon contamination of groundwater), the risk-based approach was limited to human health concerns. Ecological risk concerns are negligible because the analytical data for the sediment and surface water samples collected from the ditch located downgradient of the site indicate that none of the BTEX or PAH constituents exceed applicable regulatory limits.

The methods for assessing human health concerns for the site were derived from GUST CAP-Part B guidance (GA EPD 1995) and recent GA EPD guidance (GA EPD 1996). These were supplemented by the additional guidance documents on risk assessment methods referenced in this section. In general, the risk-based corrective action approach is performed in two steps:

1. Results are screened against readily available regulatory levels and risk-based screening levels to identify chemicals of potential concern (COPCs).

2. Site-specific alternate concentration limits (ACLs) are developed for COPCs using the results of the fate and transport modeling and identified receptor locations.

The following sections present the conceptual model of the exposure setting and potential receptors as well as the general methodology employed to perform the screening for COPCs and the development of ACLs.

III.B.4.a. Potential receptor survey

The exposure assessment identifies any potentially complete pathways between the contaminant source and potential receptors. This involves identifying potential current and future receptors, release mechanisms through which contamination might come into contact with the receptors, and routes of exposure through which receptors might be exposed. Figure III-1 presents potentially complete and incomplete pathways for contaminant sources at the UST 108 site.

The UST 108 site is located within an active military installation and within an access-controlled fence of a secured motorpool. The land use at the site is currently military industrial. An Installation housing area is located approximately 1100 feet to the northwest. A drainage ditch is located approximately 20 feet southeast (downgradient) of the site.

No connection between site contamination and current off-site receptors has been identified. Site contamination may migrate to the Surficial Aquifer. The Hawthorn Group, which is approximately 90 feet of clay, separates the Surficial Aquifer from the deep drinking water aquifer, the Floridan Aquifer. There appears to be no vertical migration from the Surficial Aquifer to the Floridan Aquifer. None of the HAAF's current water supply wells is located downgradient of the UST 108 site. The Hawthorn Group, a thick and highly effective confining unit, separates the water supply wells from the Surficial Aquifer.

Current on-site receptors have not been identified for the site. Potential future on-site receptors might include industrial workers and military residents. Potential future on-site industrial receptors may come in direct contact with site soil contamination during construction or excavation activities.

III.B.4.b. Screening for chemicals of potential concern

III.B.4.b.1. Screening Methodology

The purpose of a risk evaluation screening is to identify the COPCs and areas of concern at a site, and possibly to identify sites for which no further action is needed. The first step in the risk process uses screening levels that are readily obtainable and that, due to their conservative nature, can be used with a high degree of confidence to indicate sites for which no further action is required.

An American Society for Testing and Materials (ASTM 1995) Tier 1–type risk evaluation process will be applied to the data collected for the UST 108 site to identify any COPCs and media for which no further action is needed. The risk evaluation screen involves the steps listed below:

- identify potential migration and exposure pathways associated with the site, and identify potential exposure scenarios that should be used to select screening levels;
- identify risk-based screening levels and regulatory-based screening levels for each contaminant;
- compare site-related concentrations to screening levels to determine if any COPCs exist at the site; and
- compare detection limits to screening levels to identify potential false-negative screening results.

The screening levels for the UST 108 site data have been taken from the following sources based on GA EPD guidance (GA EPD 1996):

- federal MCLs [U.S. Environmental Protection Agency (EPA) 1989];
- GUST Soil Threshold Levels (i.e., Table A, column 2);
- soil screening levels developed by the EPA (1996); and
- soil and groundwater risk-based concentrations developed by EPA Region 3 (EPA 1999).

These values reflect screening levels based on a combination of regulatory screening levels (i.e., MCLs and GUST soil threshold levels), and calculated risk-based values (i.e., EPA Region 3 risk-based concentrations).

Screening levels inherently incorporate assumptions about land use. In identifying COPCs, it is generally accepted that screening levels will reflect any potential future land uses and, thus, they usually reflect a conservative residential use scenario (EPA 1991; EPA 1996; ASTM 1995). Based on GA EPD guidance, risk-based screening levels reflect residential land use for groundwater and industrial land use for deep soils (GA EPD 1996).

Default residential exposure scenarios for groundwater assume that use of the land could someday be residential and that the following exposures could occur:

- ingestion of groundwater, and
- inhalation of volatiles during showering.

The default industrial exposure assumptions for deep soils assume that the following exposures could occur:

- incidental ingestion of soil, and
- inhalation of volatiles and dust.

EPA's *Soil Screening Guidance* (EPA 1996) provides two options for selecting soil values that address protection of groundwater. One value assumes no contaminant dilution or attenuation would occur between the soil and groundwater; a second value assumes a 20-fold dilution attenuation factor (DAF). A DAF of 20 was used to develop soil screening values protective of groundwater at the UST 108 site.

If applicable or relevant and appropriate requirement (ARAR)- or risk-based values are not available, it generally means that (1) the chemical is not considered to be toxic except perhaps at extremely high concentrations (e.g., aluminum, sodium); (2) the dose-response data do not indicate a toxic effect; or (3) EPA is currently reviewing toxicity information, and no reference dose or cancer slope factor is currently available.

III.B.4.b.2. Screening Results

The risk screening process is a systematic screening of sample results to determine site-related COCs. Constituent concentrations below risk- or regulatory-based screening levels are not considered COCs and are not evaluated further. Tables III-1 and III-2 present the results of the risk-based screening for the CAP-Part A SI soil data and the CAP-Part B SI soil data, respectively. Tables III-3 and III-4 present the results of the risk-based screening for the CAP-Part A SI groundwater data and the CAP-Part B SI groundwater data, respectively.

No constituents were detected above the GUST applicable soil threshold level or the risk-based screening level in UST 108 soils during the CAP-Part A or the Part B SIs. In addition, none of the detection limits was above the risk- or regulatory-based screening levels for the CAP-Part A and Part B soil data. Therefore, no COPCs for soils were selected for the site.

No constituents were detected above the federal MCL, state IWQS, or the risk-based screening levels in UST 108 groundwater during the CAP-Part A SI or the Part B SI. Therefore, no constituents were selected as COPCs for the groundwater.

Laboratory reporting limits for benzene and several PAHs exceeded risk-based screening levels for the CAP-Part A and Part B groundwater data. In addition, the detection limits for benzo(a)pyrene also exceeded the federal MCL of 0.2 µg/L. For these constituents, risk-based criteria represent values below analytically achievable method detection limits.

One sample (HD2200) collected during the CAP-Part A SI from location D-2 had an elevated detection limit above the risk-based screening levels and the MCL for benzo(a)pyrene. The PAH extract required dilution due to the concentrations of ethylbenzene and xylenes extracted in the sample. The sample dilution elevated the detection and reporting limits. Concentrations below the reporting limit but above

the method detection limits are flagged as estimated (J). In this case, however, sample HD2200 was flagged as not detected (U), indicating that the concentrations for the PAH compounds are below the detection limits. The elevated laboratory reporting limits and detection limits have been factored into the risk screening. Therefore, no constituents were selected as COPCs for the groundwater based on reporting/detection limit screening.

III.B.4.c. Site-specific levels

Detections exceeding the conservative generic screening levels are considered COPCs. ACLs are developed, when appropriate, for the COPCs using site-specific information. ACLs are then developed from available regulatory screening levels. When regulatory screening levels are not available, then ACLs are developed based on risk-based levels. Because no constituents exceeded risk-screening criteria, no risk-based ACLs were developed for UST 108.

III.B.4.c.1. Alternate Threshold Levels

Both the CAP-Part A and CAP-Part B soil data were screened against risk- and regulatory-based screening levels. No soil COPCs were identified for UST 108. Therefore, no alternate threshold levels were developed.

III.B.4.c.2. Alternate Concentration Limits

Both the CAP-Part A and CAP-Part B groundwater data were screened against risk- and regulatory-based screening levels. No groundwater COPCs were identified for UST 108. Therefore, no ACLs were developed.

III.B.4.c.3. Fate and transport model

Fate and transport modeling was not conducted for the site because contaminant concentration levels are below applicable GUST soil threshold levels, federal MCLs, state IWQSs, and risk-based screening levels.

III.B.4.d. Conclusions and recommendations

The conclusions below are based on a review of the CAP-Part A and Part B SI results using a risk-based approach:

- Free product was not detected at the site during the CAP-Part B SI.
- Risk-based screening results show that no contaminants exceeded initial risk-based screening levels for groundwater and soil.
- The horizontal and vertical extent of soil contamination below applicable GUST threshold levels was delineated during the CAP-Part A and Part B SIs.
- The horizontal and vertical extent of groundwater contamination below federal MCLs was delineated during the CAP-Part A and Part B SIs.
- Contaminant concentrations in surface water and sediment in the ditch located downgradient of the site do not exceed applicable state or federal standards.

Based on the results of the CAP-Part B SI, no further action is recommended for this site. The three existing monitoring wells should be abandoned. Detailed closure recommendations are provided in Section III.D.

III.C. DESIGN AND OPERATION OF CORRECTIVE ACTION SYSTEMS

III.C.1. System Effectiveness/Basis for Selection

No further action has been recommended for the UST 108 site; therefore, a corrective action system is not required.

III.D. IMPLEMENTATION

III.D.1. Periodic Monitoring/Milestone Schedule

Periodic monitoring of groundwater is not required.

III.D.2. Progress Reporting

Progress reporting will not be required since periodic monitoring will not be conducted.

III.D.3. Certificate of Completion Report

The petition for permanent closure is being requested through the submittal of this CAP-Part B Report. After the GA EPD provides final approval of this report, the monitoring wells at the UST 108, Building 1346 site will be decommissioned. Decommissioning of monitoring wells will be completed in accordance with the USACE design manual for monitoring wells. Decommissioning will comply with all applicable state and federal standards.

III.D.4. Inspection Schedule and Preventative Maintenance Program

The existing monitoring wells will be abandoned in accordance with USACE standards for decommissioning monitoring wells and applicable state and federal standards.

III.D.5. Periodic Monitoring

Periodic monitoring will not be performed.

III.D.6. Effectiveness of Corrective Action

No corrective action is being taken at this site.

III.D.7. Confirmatory Soil Sampling Plan

No corrective action is planned for this site; therefore, confirmatory sampling will not be conducted.

III.D.8. Stockpiled Bulk Soil Sampling

No corrective action is planned for this site; therefore, stockpiled bulk soil sampling will not be conducted.

III.D.9. Monitoring-only Termination Conditions

A monitoring system is not recommended for the site; therefore, there are no terminating conditions.

III.D.10. Post-completion Site Restoration Activities

After abandonment of the CAP-Part B monitoring wells has been granted, equipment and site project-related debris will be removed from the site.

III.E. PUBLIC NOTIFICATION

The UST 108 site is located entirely within the confines of HAAF, which is part of the Fort Stewart Military Reservation, a federally owned facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works has complied with the public notice requirements defined by GA EPD guidance by publishing an announcement in the *Savannah Morning News* on September 26 and October 3, 1999. A copy of the newspaper announcement used for public notification is presented in Appendix E of this report.

IV. CLAIM FOR REIMBURSEMENT

The HAAF is a federally owned facility and has funded the investigation for the UST 108 site, Facility ID: 9-025104, using Environmental Restoration Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

THIS PAGE INTENTIONALLY LEFT BLANK

V. REFERENCES

Abou-Rizk, J. A., M. E. Leavitt, and D. A. Graves 1995. "In Situ Aquifer Bioremediation of Organics Including Cyanide and Carbon Disulfide" in In Situ and On-Site Bioreclamation, R. Hinchee, ed., Battelle Press, Columbus, Ohio.

AFCEE (Air Force Center for Environmental Excellence) 1994. Air Force Center for Environmental Excellence Remediation Matrix – Hierarchy of Preferred Alternatives – Dissolved Fuel in Groundwater (BTEX).

Anderson Columbia Environmental, Inc. 1996. Closure Reports for Underground Storage Tanks, Hunter Army Airfield, Savannah, Georgia, December.

Arora, Ram 1984. Hydrologic Evaluation for Underground Injection Control in the Coastal Plain of Georgia, Department of Natural Resources, Environmental Protection Division, Georgia Geological Survey.

ASTM (American Society for Testing and Materials) 1995. Standard Guide for Risk-based Corrective Action Applied at Petroleum Release Sites, ASTM E 1739-95, approved September 10, 1995.

Clark, W. Z., Jr. and Zisa, A. C. 1976. Physiographic Map of Georgia, Department of Natural Resources, Environmental Protection Division, Georgia Geologic Survey.

Clark, I. S., Hacke, C. M., and Peck, M. F. 1990. Geology and Groundwater Resources of the Coastal Area of Georgia, Department of Natural Resources, Environmental Protection Division, Georgia Geological Survey.

EPA (U.S. Environmental Protection Agency) 1999. Risk-based Concentration Table, EPA Region 3, Office of RCRA Technical and Program Support Branch, April.

EPA 1996. Soil Screening Guidance, EPA/540/R-94/101, Office of Solid Waste and Emergency Response, available from U.S. Government Printing Office, Washington, D.C.

EPA 1994. Supplemental Guidance to RAGS: Region IV Bulletin: Development of Health- based Preliminary Remediation Goals, Remedial Options and Remediation Levels, U.S. EPA Region IV, Waste Management Division.

EPA 1991. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Standard Default Exposure Factors (Interim Final), OSWER Directive 9285.6-03, Office of Emergency and Remedial Response, Washington, D.C.

EPA 1989. "Environmental Protection Agency National Primary Drinking Water Regulations," 40 CAR 141, as amended by 54 FR 27526, 27562, June 29, 1989, and 54 FR 30001, July 17, 1989, the Bureau of National Affairs, Inc., Washington, D.C.

Furlow, J. W. 1969. Stratigraphy, Paleontology, and Economic Geology of the Eastern Chatham County Phosphate, Department of National Resources, Environmental Protection Division, Georgia Geological Survey.

GA EPD (Georgia Environmental Protection Division) 1996. Guidance for Selecting Media Remediation Levels at RCRA Solid Waste Management Units, Georgia Environmental Division, Atlanta, Georgia, November.

GA EPD 1995. Guidance Document for the Preparation of an Underground Storage Tank Corrective Action Plan, Part B, February.

GA EPD 1992. Groundwater Pollution Susceptibility Map of Georgia.

Miller, James A. 1990. Groundwater Atlas of the United States, U.S. Department of the Interior, U.S. Geological Survey, Hydrologic Inventory Atlas 730G.

Mills, W. B., Porcella, D. B., Ungs, M. J., Gherini, S. A., Summers, K. V., Rupp, G. L., and Bowie, G. L. 1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants: Parts 1, 2, and 3, EPA/600/6-85/002, EPA Environmental Research Laboratory, Office of Research and Development, Athens, Georgia.

SAIC (Science Applications International Corporation) 1999a. Corrective Action Plan-Part A Report for Facility ID: #9-025104, Underground Storage Tank 108 at Building 1346, Fort Stewart, Georgia, March.

SAIC 1999b. Addendum to Sampling and Analysis Plan for Preliminary Groundwater and Corrective Action Plan Part A/Part B Investigations at Former Underground Storage Tank Sites, Fort Stewart, Georgia, August.

SAIC 1998. Work Plan for Preliminary Groundwater and Corrective Action Plan-Part A Investigations at Former Underground Storage Tank Sites, Fort Stewart, Georgia, August.

TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE II-1. ANALYTICAL RESULTS OF CAP-PART A SOIL SAMPLES COLLECTED AT THE UST 108 SITE, FACILITY ID: 9-025104[1]

Location		D-1	D-2	D-3	D-4	D-4	D-5	D-5
Sample ID		HD1101	HD2101	HD3101	HD4101	HD4104	HD5101	HD5104
Sample Interval (ft BGS)		0.0 to 2.0	0.0 to 2.0	0.0 to 2.0	0.0 to 2.0	6.0 to 8.0	0.0 to 2.0	6.0 to 8.0
Media		Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Type		Grab	Grab	Grab	Grab	Grab	Grab	Grab
Date Collected	Applicable	04/01/98	04/01/98	04/01/98	04/17/98	04/17/98	04/17/98	04/17/98
Unit	Standards[2]	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs								
Benzene	0.008	0.0022 U	0.0026 U	0.0023 U	0.0024 U	0.0025 U	0.0024 U	0.0025 U
Toluene	6.00	0.0022 U	0.0026 U	0.0023 U	0.0225 =	0.0152 =	0.0024 U	0.0025 U
Ethylbenzene	10.00	0.0022 U	0.0026 U	0.0023 U	0.0024 U	0.0025 U	0.0024 U	0.0025 U
Xylenes, Total	700.00	0.0065 U	0.0077 U	0.0069 U	0.0073 U	0.0075 U	0.0071 U	0.0074 U
PAHs								
2-Chloronaphthalene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Acenaphthene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Acenaphthylene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Anthracene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Benzo(a)anthracene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Benzo(a)pyrene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Benzo(b)fluoranthene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Benzo(g,h,i)perylene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Benzo(k)fluoranthene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Chrysene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Dibenzo(a,h)anthracene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Fluoranthene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Fluorene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Indeno(1,2,3-cd)pyrene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Naphthalene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Phenanthrene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
Pyrene	N/A[3]	0.346 U	0.395 U	0.379 U	0.401 U	0.411 U	0.394 U	0.409 U
TPH								
TPH-DRO	NRC	2 U	3.5 =	3.36 =	0.59 U	0.67 U	0.67 U	0.83 U
TPH-GRO	NRC	0.526 UJ	0.602 UJ	0.575 UJ	0.610 U	0.625 UJ	0.595 U	0.617 UJ

NOTE: [1]**All field work and analytical sampling were performed prior to the release of the new Georgia Environmental Protection Division (GA EPD) Corrective Action Plan (CAP)-Part A Guidance (i.e., May 1998); therefore, the new analytical methods specified were not used.**

[2]GA EPD Applicable Soil Threshold Levels (i.e., Table A, column 2).

[3]Not applicable; the health-based threshold level exceeds the expected soil concentration under free-product conditions.

BGS - Below ground surface.
NRC - No regulatory criteria.
PAHs - Polynuclear aromatic hydrocarbons.
TPH - Total petroleum hydrocarbons.
TPH-DRO - Total petroleum hydrocarbon–diesel-range organics.
TPH-GRO - Total petroleum hydrocarbon–gasoline-range organics.
UST - Underground storage tank.
VOCs - Volatile organic compounds.

Laboratory Qualifier
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.
UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.
= - Indicates the compound was detected at the concentration reported.

TABLE II-1. (continued)

Location		D-6	D-6	D-6
Sample ID		HD6101	HD6111	HD6104
Sample Interval (ft BGS)		0.0 to 2.0	0.0 to 2.0	6.0 to 8.0
Media		Soil	Soil	Soil
Sample Type		Grab	Duplicate	Grab
Date Collected	Applicable	04/20/98	04/20/98	04/20/98
Unit	Standards[2]	mg/kg	mg/kg	mg/kg
VOCs				
Benzene	0.008	0.0022 U	0.0023 U	0.0025 U
Toluene	6.00	0.0022 U	0.0023 U	0.0025 U
Ethylbenzene	10.00	0.0022 U	0.0023 U	0.0025 U
Xylenes, Total	700.00	0.0067 U	0.0024 J	0.0071 J
PAHs				
2-Chloronaphthalene	N/A[3]	0.371 U	0.375 U	0.409 U
Acenaphthene	N/A[3]	0.371 U	0.375 U	0.409 U
Acenaphthylene	N/A[3]	0.371 U	0.375 U	0.409 U
Anthracene	N/A[3]	0.371 U	0.375 U	0.409 U
Benzo(a)anthracene	N/A[3]	0.371 U	0.375 U	0.409 U
Benzo(a)pyrene	N/A[3]	0.371 U	0.375 U	0.409 U
Benzo(b)fluoranthene	N/A[3]	0.371 U	0.375 U	0.409 U
Benzo(g,h,i)perylene	N/A[3]	0.371 U	0.375 U	0.409 U
Benzo(k)fluoranthene	N/A[3]	0.371 U	0.375 U	0.409 U
Chrysene	N/A[3]	0.371 U	0.375 U	0.409 U
Dibenzo(a,h)anthracene	N/A[3]	0.371 U	0.375 U	0.409 U
Fluoranthene	N/A[3]	0.371 U	0.375 U	0.409 U
Fluorene	N/A[3]	0.371 U	0.375 U	0.409 U
Indeno(1,2,3-cd)pyrene	N/A[3]	0.371 U	0.375 U	0.409 U
Naphthalene	N/A[3]	0.371 U	0.375 U	0.409 U
Phenanthrene	N/A[3]	0.371 U	0.375 U	0.409 U
Pyrene	N/A[3]	0.371 U	0.375 U	0.409 U
TPH				
TPH-DRO	NRC	1.22 U	2.59 U	1.27 U
TPH-GRO	NRC	0.562 U	0.568 U	0.617 UJ

NOTE: [1]**All field work and analytical sampling were performed prior to the release of the new Georgia Environmental Protection Division (GA EPD) Corrective Action Plan (CAP)-Part A Guidance (i.e., May 1998); therefore, the new analytical methods specified were not used.**

[2]GA EPD Applicable Soil Threshold Levels (i.e., Table A, column 2).

[3]Not applicable; the health-based threshold level is exceeded only if free product exists.

BGS - Below ground surface.
NRC - No regulatory criteria.
PAHs - Polynuclear aromatic hydrocarbons.
TPH - Total petroleum hydrocarbons.
TPH-DRO - Total petroleum hydrocarbon–diesel-range organics.
TPH-GRO - Total petroleum hydrocarbon–gasoline-range organics.
VOCs - Volatile organic compounds.

Laboratory Qualifier
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.
UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.
= - Indicates the compound was detected at the concentration reported.

TABLE II-2. ANALYTICAL RESULTS OF CAP-PART B SOIL AND SEDIMENT SAMPLES COLLECTED AT THE UST 108 SITE, FACILITY ID: 9-025104

Location		BD1A[3]	BD2	BD2	BD2	BD3	BD3
Sample ID		BD1101	BD2101	BD2103	BD2113	BD3101	BD3103
Sample Interval (ft BGS)		0.0 to 2.0	0.0 to 2.0	4.0 to 6.0	4.0 to 6.0	0.0 to 2.0	4.0 to 6.0
Media		Soil	Soil	Soil	Soil	Soil	Soil
Sample Type		Grab	Grab	Grab	Duplicate	Grab	Grab
Date Collected	Applicable	04/14/99	04/15/99	04/15/99	04/15/99	04/15/99	04/15/99
Unit	Standards[1]	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOCs							
Benzene	0.008	0.0021 U	0.0021 U	0.0022 U	0.0023 U	0.002 U	0.0022 U
Toluene	6.00	0.0021 U	0.0021 U	0.0022 U	0.0023 U	0.002 U	0.0022 U
Ethylbenzene	10.00	0.0021 U	0.0021 U	0.0022 U	0.0023 U	0.002 U	0.0022 U
Xylenes, Total	700.00	0.0031 U	0.0031 U	0.0032 U	0.0035 U	0.003 U	0.0033 U
PAHs							
2-Chloronaphthalene	NRC	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Acenaphthene	N/A[2]	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Acenaphthylene	NRC	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Anthracene	N/A[2]	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Benzo(a)anthracene	N/A[2]	0.0415 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Benzo(a)pyrene	N/A[2]	0.0412 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Benzo(b)fluoranthene	N/A[2]	0.091 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Benzo(g,h,i)perylene	N/A[2]	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Benzo(k)fluoranthene	N/A[2]	0.039 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Chrysene	N/A[2]	0.0804 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Dibenzo(a,h)anthracene	N/A[2]	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Fluoranthene	N/A[2]	0.167 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Fluorene	N/A[2]	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Indeno(1,2,3-cd)pyrene	N/A[2]	0.0274 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Naphthalene	N/A[2]	0.362 U	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Phenanthrene	N/A[2]	0.075 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
Pyrene	N/A[2]	0.160 J	0.397 U	0.412 U	0.422 U	0.379 U	0.412 U
TPH							
TPH-DRO	NRC	6.6 =	0.83 U	0.1 U	0.56 U	0.9 U	2.1 U
TPH-GRO	NRC	0.0402 J	0.0737 J	0.0552 J	0.069 J	0.0592 U	0.0722 J
TPH	NRC	194 =	16 U	7.65 U	5.22 U	39.4 U	21.6 U

NOTE: [1]Georgia Environmental Protection Division (GA EPD) Applicable Soil Threshold Levels (i.e., Table A, column 2).
[2]Not applicable, the health-based threshold level exceeds the expected soil concentration under free product conditions.
[3]BD1A - Location for collection of soil sample for well MW-D1 (see Figure II-3 for explanation).
BGS - Below ground surface.
CAP - Corrective Action Plan.
NRC - No regulatory criteria.
PAHs - Polynuclear aromatic hydrocarbons.
TPH - Total petroleum hydrocarbons.
TPH-DRO - Total petroleum hydrocarbon–diesel-range organics.
TPH-GRO - Total petroleum hydrocarbon–gasoline-range organics.
UST - Underground storage tank.
VOCs - Volatile organic compounds.

Laboratory Qualifier
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.
UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.
= - Indicates the compound was detected at the concentration reported.

TABLE II-2. (continued)

Location		SSD-01	SSD-02
Sample ID		BD1500	BD2500
Sample Interval (ft BGS)		0.0 to 0.5	0.0 to 0.5
Media		Sediment	Sediment
Sample Type		Grab	Grab
Date Collected	Applicable	04/18/99	04/18/99
Unit	Standards[1]	mg/kg	mg/kg
VOCs			
Benzene	0.008	0.0031 U	0.0029 U
Toluene	6.00	0.0047 =	0.00076 J
Ethylbenzene	10.00	0.0031 U	0.0029 U
Xylenes, Total	700.00	0.0047 U	0.0044 U
PAHs			
2-Chloronaphthalene	NRC	2.08 U	1.83 U
Acenaphthene	N/A[2]	2.08 U	1.83 U
Acenaphthylene	NRC	2.08 U	1.83 U
Anthracene	N/A[2]	2.08 U	1.83 U
Benzo(a)anthracene	N/A[2]	2.08 U	1.83 U
Benzo(a)pyrene	N/A[2]	2.08 U	1.83 U
Benzo(b)fluoranthene	N/A[2]	2.08 U	1.83 U
Benzo(g,h,i)perylene	N/A[2]	2.08 U	1.83 U
Benzo(k)fluoranthene	N/A[2]	2.08 U	1.83 U
Chrysene	N/A[2]	2.08 U	1.83 U
Dibenzo(a,h)anthracene	N/A[2]	2.08 U	1.83 U
Fluoranthene	N/A[2]	2.08 U	1.83 U
Fluorene	N/A[2]	2.08 U	1.83 U
Indeno(1,2,3-cd)pyrene	N/A[2]	2.08 U	1.83 U
Naphthalene	N/A[2]	2.08 U	1.83 U
Phenanthrene	N/A[2]	2.08 U	1.83 U
Pyrene	N/A[2]	2.08 U	1.83 U
TPH			
TPH-DRO	NRC	5.9 =	87.8 J
TPH-GRO	NRC	0.358 =	0.398 =
TPH	NRC	124 =	1410 =

NOTE: [1]Georgia Environmental Protection Division (GA EPD) Applicable Soil Threshold Levels (i.e., Table A, column 2).
[2]Not applicable, the health-based threshold level exceeds the expected soil concentration under free product conditions.
BGS - Below ground surface.
CAP - Corrective Action Plan.
NRC - No regulatory criteria.
PAH - Polynuclear aromatic hydrocarbon.
TPH - Total petroleum hydrocarbons.
TPH-DRO - Total petroleum hydrocarbon–diesel-range organics.
TPH-GRO - Total petroleum hydrocarbon–gasoline-range organics.
UST - Underground storage tank.
VOCs - Volatile organic compounds.

Laboratory Qualifier
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.
UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.
= - Indicates the compound was detected at the concentration reported.

TABLE II-3. SOIL FIELD SCREENING DATA COLLECTED AT THE UST 108 SITE, FACILITY ID: 9-025104

Interval (ft BGS)	BD1 Headspace[1] (ppm)	BD1A Headspace[1] (ppm)	BD2 Headspace[1] (ppm)	BD3 Headspace[1] (ppm)	D-1 Headspace[1] (ppm)	D-2 Headspace[1] (ppm)
0.0 to 2.0	0.0	0.0	16.4	0.0	544	>2000[2]
2.0 to 4.0	0.0	0.0	8.7	7.0	NC	NC
4.0 to 6.0	0.0	0.0	NC	0.0	NC	NC
6.0 to 8.0	0.0	NC	0.0	0.0	NC	NC
8.0 to 10.0	0.0	NC	NC	NC	NC	NC
10.0 to 12.0	0.0	NA	NC	NC	NA	NA
12.0 to 14.0	NC	NA	NC	NC	NA	NA
14.0 to 16.0	NA	NA	NA	NC	NA	NA

Interval (ft BGS)	D-3 Headspace[1] (ppm)	D-4 Headspace[1] (ppm)	D-5 Headspace[1] (ppm)	D-6 Headspace[1] (ppm)
0.0 to 2.0	>2000[2]	>2000[2]	>2000[2]	>2000[2]
2.0 to 4.0	NC	1600	1750	>2000[2]
4.0 to 6.0	NC	390	716	>2000[2]
6.0 to 8.0	NC	180	350	>2000[2]
8.0 to 10.0	NC	NC	NC	NC
10.0 to 12.0	NA	NC	NC	NC
12.0 to 14.0	NA	NC	NA	NA
14.0 to 16.0	NA	NA	NA	NA

NOTE: [1]Headspace measured using PhotoVac photoionization detector (PID).
[2]Elevated headspace measurements of >2000 attributed to high humidity during CAP-Part A SI sampling activities.
BGS - Below ground surface.
NA - not applicable; interval below the total depth of boring.
NC - not collected; sample was not recovered or headspace measurement not recorded.
ppm - parts per million.
UST - Underground storage tank.

TABLE II-4. ANALYTICAL RESULTS OF CAP-PART A GROUNDWATER SAMPLES COLLECTED AT THE UST 108 SITE, FACILITY ID: 9-025104[1]

Location Sample ID Sample Interval (ft BGS) Media Sample Type Date Collected Unit	Applicable Standards[2]	D-1 HD1200 4.0 to 8.0 Groundwater Grab 04/01/98 µg/L	D-2[3] HD2200 4.0 to 8.0 Groundwater Grab 04/01/98 µg/L	D-3 HD3200 2.0 to 6.0 Groundwater Grab 04/17/98 µg/L	D-4 HD4200 9.0 to 13.0 Groundwater Grab 04/17/98 µg/L	D-5 HD5200 8.0 to 12.0 Groundwater Grab 04/17/98 µg/L	D-6 HD6200 8.0 to 12.0 Groundwater Grab 04/20/98 µg/L
VOCs							
Benzene	5	2 U	4 UJ	2 U	2 U	2 U	2 U
Toluene	1,000	2 U	7.5 J	2 U	2 U	2 U	2 U
Ethylbenzene	700	2 U	258 J	2 U	2 U	2 U	2 U
Xylenes, Total	10,000	4.4 J	143 J	6 U	6 U	6 U	6 U
PAHs							
2-Chloronaphthalene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Acenaphthene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Acenaphthylene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Anthracene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Benzo(a)anthracene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Benzo(a)pyrene	0.2	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Benzo(b)fluoranthene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Benzo(g,h,i)perylene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Benzo(k)fluoranthene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Chrysene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Dibenzo(a,h)anthracene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Fluoranthene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Fluorene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Indeno(1,2,3-cd)pyrene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Naphthalene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Phenanthrene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U
Pyrene	NRC	14.3 U	25,800 U	10.2 U	10.4 U	10.5 U	10.5 U

NOTE: [1]**All field work and analytical sampling were performed prior to the release of the new Georgia Environmental Protection Division (GA EPD) Corrective Action Plan (CAP)-Part A Guidance (i.e., May 1998); therefore, the new analytical methods specified were not used.**
[2]U.S. Environmental Protection Agency Safe Drinking Water Act maximum contaminant level (MCL).
[3]Elevated levels of ethylbenzene and xylenes were extracted with the PAH compounds during analysis. Therefore, the extract required dilution to obtain acceptable analysis for PAHs. This elevated the PAH detection limit.
BGS - Below ground surface.
NRC - No regulatory criteria.
PAHs - Polynuclear aromatic hydrocarbons.
VOCs - Volatile organic compounds.

Laboratory Qualifiers
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.
UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.
= - Indicates the compound was detected at the concentration reported.

TABLE II-4. (continued)

Location		D-6	D-7	D-7	D-7
Sample ID		HD6210	HD7301	HD7302	HD7303
Sample Interval (ft BGS)		8.0 to 12.0	14.0 to 18.0	24.0 to 28.0	34.0 to 38.0
Media		Groundwater	Groundwater	Groundwater	Groundwater
Sample Type		Duplicate	Grab	Grab	Grab
Date Collected	Applicable	04/20/98	04/19/98	04/19/98	04/19/98
Unit	Standards[2]	µg/L	µg/L	µg/L	µg/L
VOCs					
Benzene	5	2 U	2 UJ	2 UJ	2 U
Toluene	1,000	2 U	2 UJ	2 UJ	2.4 =
Ethylbenzene	700	2 U	2 U	2 U	2 U
Xylenes, Total	10,000	6 U	6 U	6 U	6 U
PAHs					
2-Chloronaphthalene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Acenaphthene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Acenaphthylene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Anthracene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Benzo(a)anthracene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Benzo(a)pyrene	0.2	10.3 U	10.5 U	10.1 U	10.1 U
Benzo(b)fluoranthene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Benzo(g,h,i)perylene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Benzo(k)fluoranthene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Chrysene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Dibenzo(a,h)anthracene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Fluoranthene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Fluorene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Indeno(1,2,3-cd)pyrene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Naphthalene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Phenanthrene	NRC	10.3 U	10.5 U	10.1 U	10.1 U
Pyrene	NRC	10.3 U	10.5 U	10.1 U	10.1 U

NOTE: [1]**All field work and analytical sampling were performed prior to the release of the new Georgia Environmental Protection Division (GA EPD) Corrective Action Plan (CAP)-Part A Guidance (i.e., May 1998); therefore, the new analytical methods specified were not used.**
[2]U.S. Environmental Protection Agency Safe Drinking Water Act maximum contaminant level (MCL).
BGS - Below ground surface.
NRC - No regulatory criteria.
PAHs - Polynuclear aromatic hydrocarbons.
VOCs - Volatile organic compounds.

Laboratory Qualifiers
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.
UJ - Indicates the compound was not detected at the reported concentration and the concentration was estimated.
= - Indicates the compound was detected at the concentration reported.

TABLE II-5. ANALYTICAL RESULTS OF CAP-PART B GROUNDWATER AND SURFACE WATER SAMPLES COLLECTED AT THE UST 108 SITE, FACILITY ID: 9-025104

Location Sample ID Media Sample Type Date Collected Unit	Applicable Standards[1]	MW-D1 BD1200 Groundwater Grab 05/11/99 µg/L	MW-D2 BD2200 Groundwater Grab 05/11/99 µg/L	MW-D3 BD3200 Groundwater Grab 05/10/99 µg/L	SSD-01 BD1600 Surface Water Grab 04/18/99 µg/L	SSD-02 BD2600 Surface Water Grab 04/18/99 µg/L
VOCs						
Benzene	5	2 U	2 U	2 U	2 U	2 U
Toluene	1,000	0.9 J	2 U	2 U	2 U	2 U
Ethylbenzene	700	1.8 J	2 U	2 U	2 U	2 U
Xylenes, Total	10,000	5.5 U	5 U	5 U	3 U	0.53 J
PAHs						
2-Chloronaphthalene	NRC	10.2 U	10 U	10 U	10 U	10 U
Acenaphthene	NRC	10.2 U	10 U	10 U	10 U	10 U
Acenaphthylene	NRC	10.2 U	10 U	10 U	10 U	10 U
Anthracene	NRC	10.2 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	NRC	10.2 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	0.2	10.2 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	NRC	10.2 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	NRC	10.2 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	NRC	10.2 U	10 U	10 U	10 U	10 U
Chrysene	NRC	10.2 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	NRC	10.2 U	10 U	10 U	10 U	10 U
Fluoranthene	NRC	10.2 U	10 U	10 U	10 U	10 U
Fluorene	NRC	10.2 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	NRC	10.2 U	10 U	10 U	10 U	10 U
Naphthalene	NRC	10.2 U	10 U	10 U	10 U	10 U
Phenanthrene	NRC	10.2 U	10 U	10 U	10 U	10 U
Pyrene	NRC	10.2 U	10 U	10 U	10 U	10 U

NOTE: [1]U.S. Environmental Protection Agency Safe Drinking Water Act maximum contaminant level (MCL).
CAP - Corrective Action Plan.
NRC - No regulatory criteria.
PAHs - Polynuclear aromatic hydrocarbons.
UST - Underground storage tank.
VOCs - Volatile organic compounds.

Laboratory Qualifiers
U - Indicates the compound was not detected at the concentration reported.
J - Indicates the value for the compound is an estimated value.

TABLE II-6. FREE PRODUCT MEASUREMENTS AT THE UST 108 SITE, FACILITY ID: 9-025104[1]

Date of Measurement	Piezometer/ Well	Groundwater Elev. (ft MSL)	Product Thickness (ft)	Corrected Water Elev. (ft MSL)	Product Removed (gal)[2]
04/03/98	D-1	17.46	0.2	17.46	0.00
04/04/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/05/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/06/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/07/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/09/98	D-1	17.78	N/A[3]	17.78	0.02
04/10/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/17/98	D-1	17.76	N/A[3]	17.76	0.02
04/20/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/21/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
04/23/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.02
06/25/98	D-1	15.43	N/A[3]	15.43	0.02
07/21/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.00
09/22/98	D-1	N/A[3]	N/A[3]	N/A[3]	0.00
11/18/98[4]	D-1	N/A[3]	N/A[3]	N/A[3]	0.00
11/30/98	D-1	16.33	N/A[5]	16.33	0.00
05/10/99	MW-D1	16.55	0	16.55	0.00
07/08/99	MW-D1	17.24	0	17.24	0.00
				TOTAL	0.22

NOTE: [1]Free product was only found in piezometer D-1 during the Corrective Action Plan (CAP)-Part A SI; piezometer was removed during the CAP-Part B SI and permanent monitoring well MW-D1 installed in April 1999.
[2]Volume of product removal is an estimated value.
[3]The passive removal system (i.e., absorbent sock) impeded the measurement of accurate groundwater elevation and free product thickness; therefore, the measurements were not obtained.
[4]The absorbent sock was removed from piezometer D-1 to allow for water table equilibration.
[5]Free product thickness determination attempted with water-product interface meter; product was not detected.
MSL - Mean sea level.
UST - Underground storage tank.

TABLE II-7. GEOTECHNICAL RESULTS OF SOIL SAMPLES COLLECTED AT THE UST 108 SITE, FACILITY ID: 9-025104

Location	D-8	BD1	BD2	BD3	BD4
Sample ID	HD8400	BD1400	BD2400	BD3400	BD4400
Sample Interval (ft BGS)	4.0 to 6.0	0.1 to 1.5	0.0 to 2.0	2.0 to 4.0	2.0 to 4.0
Date Collected	04/19/98	04/20/99	04/15/99	04/15/99	04/15/99
Parameter					
USCS Code	SC-SM	N/A	ML	ML	CL
Grain Size-% mud (silt & clay)	35.0	18.09	36.85	25.83	30.28
Grain Size-% sand	45.7	67.51	62.77	74.14	69.70
Grain Size-% gravel	19.3	14.4	0.38	0.03	0.02
Liquid Limit	N/A	NP	21	26.2	27
Plastic Limit	N/A	NP	20.7	25.9	14.8
Plasticity Index	N/A	NP	0.33	0.33	12.2
Moisture Content %	24.1	7.7	17.5	24.9	23.7
Permeability (cm/sec)	2.0E-7	N/A	N/A	N/A	6.52E-8
Porosity	0.56	N/A	N/A	N/A	0.36
Specific Gravity	2.57	N/A	N/A	N/A	2.63
Bulk Density (lb/ft^3)	N/A	N/A	N/A	N/A	104.47
Total Organic Carbon (%)	0.547	N/A	N/A	N/A	0.0003

NOTE: BGS - Below ground surface.
CL - Clay.
ML - Silt.
N/A - Not applicable; sample was not analyzed for particular parameter.
NP - Not plastic; sample was not analyzed for Atterburg Limits.
SC-SM - Clayey, silty sand.
USCS - Unified Soil Classification System.
UST - Underground storage tank.

TABLE II-8. PIEZOMETER, VERTICAL PROFILE, AND MONITORING WELL CONSTRUCTION DETAILS AT THE UST 108 SITE, FACILITY ID: 9-025104

Piezometer, Vertical Profile, or Well ID	Date Installed	Boring Depth (ft BGS)	Screened Interval (ft BGS)	Base of Seal (ft BGS)	Type of Completion	Ground Surf. Elevation (ft NAD 29)	TOC Elevation (ft NAD 29)
Piezometer							
D-1	04/01/98	8.0	3.0 to 8.0	N/A[1]	None[2]	21.84	22.79
D-2	04/01/98	8.0	3.0 to 8.0	N/A	None[2]	21.73	22.79
D-3	04/17/98	6.0	1.0 to 6.0	N/A	None[2]	21.76	23.85
D-4	04/17/98	13.0	8.0 to 13.0	N/A	None[2]	20.21	21.13
D-5	04/17/98	12.0	7.0 to 12.0	N/A	None[2]	20.41	23.43
D-6	04/20/98	12.0	7.0 to 12.0	N/A	None[2]	21.37	21.98
Vertical Profile							
D-7	04/19/98	38.0	14.0 to 18.0[3]	N/A	None[4]	20.49	N/A
Monitoring Well							
MW-D1	04/20/99	14.8	3.72 to 13.72	2.0	Flush mount	21.8	21.52
MW-D2	04/21/99	14.2	2.95 to 12.95	2.0	Flush mount	19.1	19.0
MW-D3	04/20/99	15.3	3.73 to 13.73	2.1	Flush mount	20.6	20.59

NOTE: [1]Not applicable.
[2]Temporary piezometers installed with Geoprobe® and abandoned following free product and water level measurements.
[3]Water samples were collected using a stainless steel screen at intervals of 14.0 to 18.0 feet BGS, 24.0 to 28.0 BGS, and 34.0 to 38.0 BGS.
[4]Polyvinyl chloride (PVC) casing and screen not installed in vertical profile boring. Borehole abandoned after groundwater samples collected.
Piezometers and vertical profile borings installed during Corrective Action Plan (CAP)-Part A Site Investigation (SI).
Monitoring wells installed during CAP-Part B SI.
BGS - Below ground surface.
NAD - North American Datum.
TOC - Top of casing.
UST - Underground storage tank.

TABLE II-9. WATER LEVEL MEASUREMENTS AT THE UST 108 SITE, FACILITY ID: 9-025104

Piezometer/Well ID	Date	TOC Elevation (ft NAD 29)	Depth to Water (ft BTOC)	Groundwater Elevation (ft NAD 29)
CAP-Part A Investigation				
D-1	04/21/98	21.84	4.05	18.74
D-2	04/21/98	21.73	2.66	20.13
D-3	04/21/98	21.76	4.70	19.15
D-4	04/21/98	20.21	4.00	17.13
D-5	04/21/98	20.41	6.10	17.33
D-6	04/21/98	21.37	4.45	17.53
CAP-Part B Investigation				
MW-D1	05/10/99	21.52	4.97	16.55
MW-D2	05/10/99	19.00	3.64	15.36
MW-D3	05/10/99	20.59	3.65	16.94

NOTE: BGS - Below ground surface.
BTOC - Below top of casing.
CAP - Corrective Action Plan.
NAD - North American Datum.
TOC - Top of casing.
UST - Underground storage tank.

Table III-1. Risk-based Screening of CAP-Part A Soil Data at the UST 108 Site, Facility ID: 9-025104

Station:	Screening Levels			D-1	D-2	D-3	D-4	D-4	D-5	D-5	D-6	D-6	D-6	D-8
Sample ID:	Georgia UST	Risk-based		HD1101	HD2101	HD3101	HD4101	HD4104	HD5101	HD5104	HD6101	HD6104	HD6111	HD8400
Sample Interval (ft BGS):	Corrective Action	Screening	Leaching to	0 to 2	0 to 2	0 to 2	0 to 2	6 to 8	0 to 2	6 to 8	0 to 2	6 to 8	0 to 2	4 to 6
Collection Date:	Levels for Soil[a]	Level[b]	Groundwater[c]	04/01/98	04/01/98	04/17/98	04/17/98	04/17/98	04/17/98	04/17/98	04/20/98	04/20/98	04/20/98	04/19/98
Units:	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Volatile Organic Compounds (VOCs)														
Benzene	8	197,400	30	2.2 U	2.6 U	2.3 U	2.4 U	2.5 U	2.4 U	2.5 U	2.2 U	2.5 U	2.3 U	
Toluene	6,000	408,800,000	12,000	2.2 U	2.6 U	2.3 U	22.5 =	15.2 =	2.4 U	2.5 U	2.2 U	2.5 U	2.3 U	
Ethylbenzene	10,000	204,400,000	13,000	2.2 U	2.6 U	2.3 U	2.4 U	2.5 U	2.4 U	2.5 U	2.2 U	2.5 U	2.3 U	
Xylenes, Total	700,000	4,088,000,000	190,000	6.5 U	7.7 U	6.9 U	7.3 U	7.5 U	7.1 U	7.4 U	6.7 U	7.1 J	2.4 J	
Polynuclear Aromatic Hydrocarbons (PAHs)														
2-Chloronaphthalene[d]	N/A[e]	40,880,000	84,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Acenaphthene	N/A[e]	122,640,000	570,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Acenaphthylene[f]	N/A[e]	61,320,000	4,200,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Anthracene	N/A[e]	613,200,200	12,000,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Benzo(a)anthracene	N/A[e]	7,840	2,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Benzo(a)pyrene	N/A[e]	784	8,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Benzo(b)fluoranthene	N/A[e]	7,840	5,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Benzo(g,h,i)perylene	N/A[e]	--		346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Benzo(k)fluoranthene	N/A[e]	78,400	49,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Chrysene	N/A[e]	784,000	160,000	346 UJ	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Dibenzo(a,h)anthracene	N/A[e]	784	2,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Fluoranthene	N/A[e]	81,760,000	4,300,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Fluorene	N/A[e]	81,760,000	560,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Indeno(1,2,3-cd)pyrene	N/A[e]	7,840	14,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Naphthalene	N/A[e]	40,880,000	84,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Phenanthrene[f]	N/A[e]	61,320,000	4,200,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Pyrene	N/A[e]	61,320,000	4,200,000	346 U	395 U	379 U	401 U	411 U	394 U	409 U	371 U	409 U	375 U	
Other Analytes														
Total Organic Carbon	--	--	--											5,470,000 =
TPH–Diesel-Range Organics	--	--	--	2,000 U	3,500 =	3,360 =	590 U	670 U	670 U	830 U	1,220 U	1,270 U	2,590 U	
TPH–Gasoline-Range Organics	--	--	--	526 UJ	602 UJ	575 UJ	610 U	625 UJ	595 U	617 UJ	562 U	617 UJ	568 U	

[a]Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 miles).
[b]Protective of soil exposure during Industrial Land Use.
[c]Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d]Values based on naphthalene as a surrogate chemical.
[e]Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f]Values based on pyrene as a surrogate chemical.

10 Bold values indicate results exceeding Georgia UST action levels.
10 Italicized values indicate results exceeding risk-based screening levels.
<u>10</u> Underlined values indicate results exceeding leaching to groundwater screening levels.
U - Indicates that the compound was not detected above the reported sample quantitation limit.
J- Indicates that the value for the compound was an estimated value.
UJ - Indicates that the sample was not detected above an approximate sample quantitation limit.
R - Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
= - Indicates that the compound was detected at the concentration reported.

BGS = below ground surface.
CAP = Corrective Action Plan.
TPH = total petroleum hydrocarbons.
UST = underground storage tanks.

Table III-2. Risk-based Screening of CAP-Part B Soil Data at the UST 108 Site, Facility ID: 9-025104

Station:	Screening Levels			BD1	BD2	BD2	BD2	BD3	BD3	BD4
Sample ID:	Georgia UST	Risk-based		BD1101	BD2101	BD2103	BD2113	BD3101	BD3103	BD4400
Sample Interval (ft BGS):	Corrective Action	Screening	Leaching to	0 to 2	0 to 2	4 to 6	0 to 0	0 to 2	4 to 6	0 to 0
Collection Date:	Levels for Soil[a]	Level[b]	Groundwater[c]	04/14/99	04/15/99	04/15/99	04/15/99	04/15/99	04/15/99	04/15/99
Units:	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
Volatile Organic Compounds (VOCs)										
Benzene	8	197,400	30	2.1 U	2.1 U	2.2 U	2.3 U	2 U	2.2 U	
Toluene	6,000	408,800,000	12,000	2.1 U	2.1 U	2.2 U	2.3 U	2 U	2.2 U	
Ethylbenzene	10,000	204,400,000	13,000	2.1 U	2.1 U	2.2 U	2.3 U	2 U	2.2 U	
Xylenes, Total	700,000	4,088,000,000	190,000	3.1 U	3.1 U	3.2 U	3.5 U	3 U	3.3 U	
Polynuclear Aromatic Hydrocarbons (PAHs)										
2-Chloronaphthalene[d]	N/A[e]	40,880,000	84,000	362 U	397 U	412 U	422 U	379 U	412 U	
Acenaphthene	N/A[e]	122,640,000	570,000	362 U	397 U	412 U	422 U	379 U	412 U	
Acenaphthylene[f]	N/A[e]	61,320,000	4,200,000	362 U	397 U	412 U	422 U	379 U	412 U	
Anthracene	N/A[e]	613,200,200	12,000,000	362 U	397 U	412 U	422 U	379 U	412 U	
Benzo(a)anthracene	N/A[e]	7,840	2,000	41.5 J	397 U	412 U	422 U	379 U	412 U	
Benzo(a)pyrene	N/A[e]	784	8,000	41.2 J	397 U	412 U	422 U	379 U	412 U	
Benzo(b)fluoranthene	N/A[e]	7,840	5,000	91 J	397 U	412 U	422 U	379 U	412 U	
Benzo(g,h,i)perylene	N/A[e]	--		362 U	397 U	412 U	422 U	379 U	412 U	
Benzo(k)fluoranthene	N/A[e]	78,400	49,000	39 J	397 U	412 U	422 U	379 U	412 U	
Chrysene	N/A[e]	784,000	160,000	80.4 J	397 U	412 U	422 U	379 U	412 U	
Dibenzo(a,h)anthracene	N/A[e]	784	2,000	362 U	397 U	412 U	422 U	379 U	412 U	
Fluoranthene	N/A[e]	81,760,000	4,300,000	167 J	397 U	412 U	422 U	379 U	412 U	
Fluorene	N/A[e]	81,760,000	560,000	362 U	397 U	412 U	422 U	379 U	412 U	
Indeno(1,2,3-cd)pyrene	N/A[e]	7,840	14,000	27.4 J	397 U	412 U	422 U	379 U	412 U	
Naphthalene	N/A[e]	40,880,000	84,000	362 U	397 U	412 U	422 U	379 U	412 U	
Phenanthrene[f]	N/A[e]	61,320,000	4,200,000	75 J	397 U	412 U	422 U	379 U	412 U	
Pyrene	N/A[e]	61,320,000	4,200,000	160 J	397 U	412 U	422 U	379 U	412 U	
Other Analytes										
Total Organic Carbon	--	--	--							341,000 =
TPH–Diesel-Range Organics	--	--	--	6,600 =	830 U	100 U	560 U	900 U	2,100 U	
TPH–Gasoline-Range Organics	--	--	--	40.2 J	73.7 J	55.2 J	69 J	59.2 J	72.2 J	
Total Petroleum Hydrocarbons			--	194,000 =	16,000 U	7,650 U	5,220 U	39,400 U	21,600 U	

[a]Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 miles).
[b]Protective of soil exposure during Industrial Land Use.
[c]Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d]Values based on naphthalene as a surrogate chemical.
[e]Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f]Values based on pyrene as a surrogate chemical.

10 Bold values indicate results exceeding Georgia UST action levels.
10 Italicized values indicate results exceeding risk-based screening levels.
10 Underlined values indicate results exceeding leaching to groundwater screening levels.
U - Indicates that the compound was not detected above the reported sample quantitation limit.
J - Indicates that the value for the compound was an estimated value.
UJ - Indicates that the sample was not detected above an approximate sample quantitation limit.
R - Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
= - Indicates that the compound was detected at the concentration reported.

BGS = below ground surface.
CAP = Corrective Action Plan.
TPH = total petroleum hydrocarbons.
UST = underground storage tank.

Table III-3. Risk-based Screening of CAP-Part A Groundwater Data at the UST 108 Site, Facility ID: 9-025104

Station:	Screening Levels			D-1		D-2[d]		D-3		D-4		D-5		D-6		D-6		D-7		D-7		D-7	
Sample ID:				HD1200		HD2200		HD3200		HD4200		HD5200		HD6200		HD6210		HD7301		HD7302		HD7303	
Screened Interval (ft BGS):				4 to 8		4 to 8		2 to 6		9 to 13		8 to 12		8 to 12		8 to 12		14 to 18		24 to 28		34 to 38	
Collection Date:				04/01/98		04/01/98		04/17/98		04/17/98		04/17/98		04/20/98		04/20/98		04/19/98		04/19/98		04/19/98	
Units:	Federal SDWA MCLs (µg/L)	State IWQS (µg/L)	Risk-based[a] (µg/L)	(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)		(µg/L)	
Volatile Organic Compounds (VOCs)																							
Benzene	5	71.28	0.36	2	U	4	UJ	2	U	2	U	2	U	2	U	2	U	2	UJ	2	UJ	2	U
Toluene	1,000	200,000	1,300	2	U	7.5	J	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2.4	U
Ethylbenzene	700	28,718	750	2	U	258	J	2	U	2	U	2	U	2	U	2	U	2	UJ	2	UJ	2	=
Xylenes, Total	10,000	--	12,000	4.4	J	143	J	6	U	6	U	6	U	6	U	6	U	6	U	6	U	6	U
Polynuclear Aromatic Hydrocarbons (PAHs)																							
2-Chloronaphthalene[b]	--	--	6.5	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Acenaphthene	--	--	365	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Acenaphthylene	--	--	182.5	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Anthracene	--	110,000	1,825	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Benzo(a)anthracene	--	0.0311	0.092	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Benzo(a)pyrene	0.2	0.0311	0.0092	**14.3**	U	**25,800**	U	**10.2**	U	**10.4**	U	**10.5**	U	**10.5**	U	**10.3**	U	**10.5**	U	**10.1**	U	**10.1**	U
Benzo(b)fluoranthene	--	--	0.092	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Benzo(g,h,i)perylene	--	--	--	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Benzo(k)fluoranthene	--	0.0311	0.92	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Chrysene	--	0.0311	9.2	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Dibenzo(a,h)anthracene	--	0.0311	0.0092	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Fluoranthene	--	370	1,460	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Fluorene	--	14,000	243	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Indeno(1,2,3-cd)pyrene	--	--	0.092	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Naphthalene	--	--	6.5	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Phenanthrene[c]	--	--	182.5	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U
Pyrene	--	11,000	182.5	14.3	U	25,800	U	10.2	U	10.4	U	10.5	U	10.5	U	10.3	U	10.5	U	10.1	U	10.1	U

[a]Protective of tap water ingestion by a resident.
[b]Values based on naphthalene as a surrogate chemical.
[c]Values based on pyrene as a surrogate chemical.
[d]Elevated levels of ethylbenzene and xylenes were extracted with the polynuclear aromatic hydrocarbon (PAH) compounds during analysis. Therefore, the extract required dilution to obtain acceptable analysis for PAHs. This elevated the PAH detection limit.
10 Bold values indicate results exceeding Federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs).
10 Underlined values indicate results exceeding risk-based screening levels.
U - Indicates that the compound was not detected above the reported sample quantitation limit or that reporting limits were higher than risk-based screening levels.
J - Indicates that the value for the compound was an estimated value.
UJ - Indicates that the sample was not detected above an approximate sample quantitation limit.
R - Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
= - Indicates that the compound was detected at the concentration reported.

BGS = below ground surface.
CAP = Corrective Action Plan.
IWQS = In-stream Water Quality Standard.
TPH = total petroleum hydrocarbons.
UST = underground storage tank.

Table III-4. Risk-based Screening of CAP-Part B Groundwater Data at the UST 108 Site, Facility ID: 9-025104

Station: / Sample ID: / Screened Interval (ft BGS): / Collection Date: / Units:	Screening Levels			MW-D1 BD1200 0 to 0 05/11/99 (µg/L)		MW-D2 BD2200 0 to 0 05/11/99 (µg/L)		MW-D3 BD3200 0 to 0 05/10/99 (µg/L)	
	Federal SDWA MCLs (µg/L)	State IWQS (µg/L)	Risk-based[a] (µg/L)						
Volatile Organic Compounds (VOCs)									
Benzene	5	71.28	0.36	2	U	2	U	2	U
Toluene	1,000	200,000	1,300	0.9	J	2	U	2	U
Ethylbenzene	700	28,718	750	1.8	J	2	U	2	U
Xylenes, Total	10,000	--	12,000	5.5	U	5	U	5	U
Polynuclear Aromatic Hydrocarbons (PAHs)									
2-Chloronaphthalene[b]	--	--	6.5	10.2	U	10	U	10	U
Acenaphthene	--	--	365	10.2	U	10	U	10	U
Acenaphthylene	--	--	182.5	10.2	U	10	U	10	U
Anthracene	--	110,000	1,825	10.2	U	10	U	10	U
Benzo(a)anthracene	--	0.0311	0.092	10.2	U	10	U	10	U
Benzo(a)pyrene	0.2	0.0311	0.0092	**10.2**	**U**	**10**	**U**	**10**	**U**
Benzo(b)fluoranthene	--	--	0.092	10.2	U	10	U	10	U
Benzo(g,h,i)perylene	--	--	--	10.2	U	10	U	10	U
Benzo(k)fluoranthene	--	0.0311	0.92	10.2	U	10	U	10	U
Chrysene	--	0.0311	9.2	10.2	U	10	U	10	U
Dibenzo(a,h)anthracene	--	0.0311	0.0092	10.2	U	10	U	10	U
Fluoranthene	--	370	1,460	10.2	U	10	U	10	U
Fluorene	--	14,000	243	10.2	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	--	--	0.092	10.2	U	10	U	10	U
Naphthalene	--	--	6.5	10.2	U	10	U	10	U
Phenanthrene[c]	--	--	182.5	10.2	U	10	U	10	U
Pyrene	--	11,000	182.5	10.2	U	10	U	10	U

[a]Protective of tap water ingestion by a resident.
[b]Values based on naphthalene as a surrogate chemical.
[c]Values based on pyrene as a surrogate chemical.
BGS = below ground surface.
CAP = Corrective Action Plan.
IWQS = In-stream Water Quality Standard.
UST = underground storage tank.

10 Bold values indicate results exceeding Federal Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs).

10 Underlined values indicate results exceeding risk-based screening levels or that the reporting limit exceeded risk-based screening levels.

U - Indicates that the compound was not detected above the reported sample quantitation limit.

J - Indicates that the value for the compound was an estimated value.

UJ - Indicates that the sample was not detected above an approximate sample quantitation limit.

R - Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

= - Indicates that the compound was detected at the concentration reported.

FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

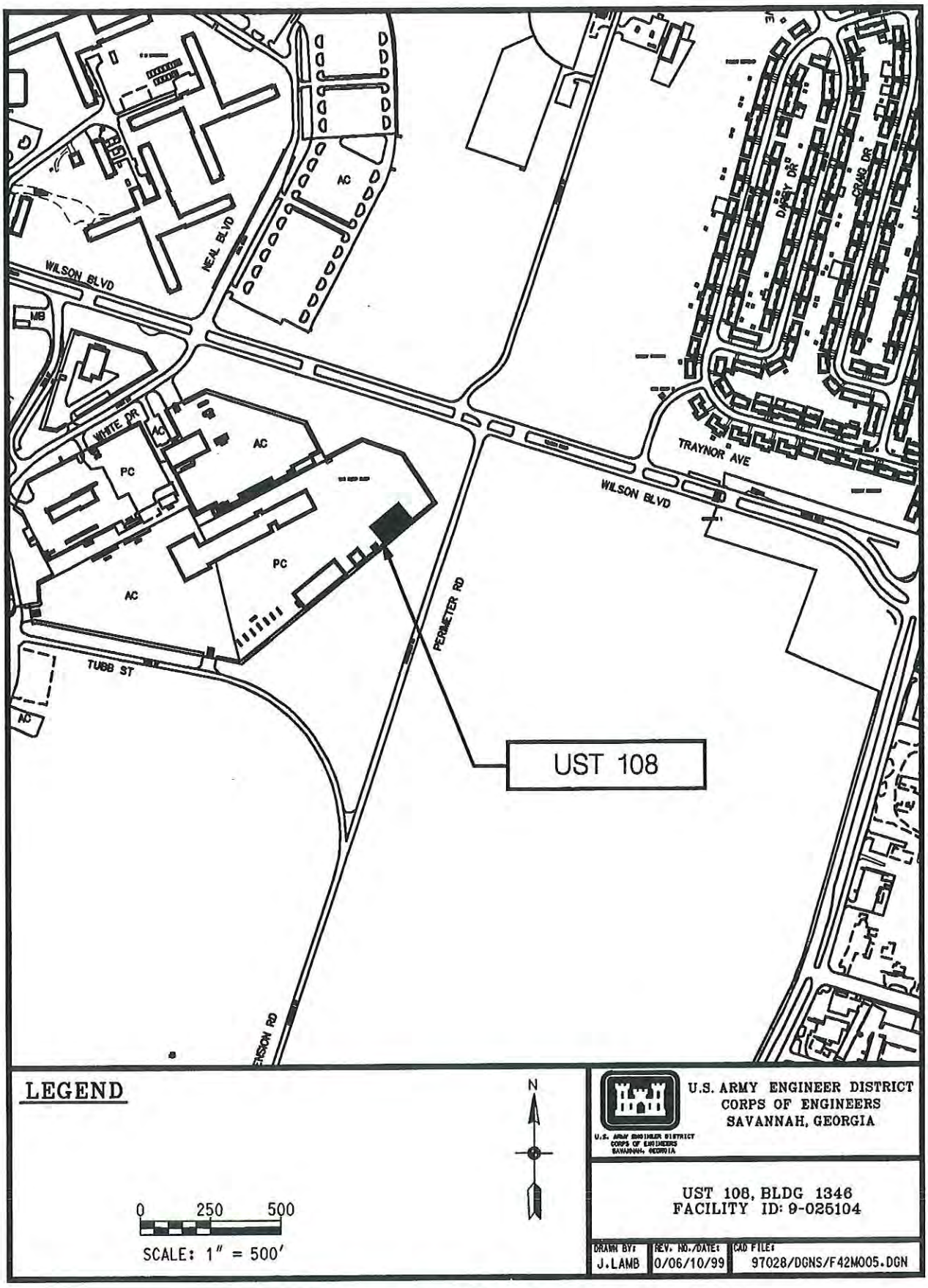


Figure II-1. Location Map for the UST 108 Site, Facility ID: 9-025104.

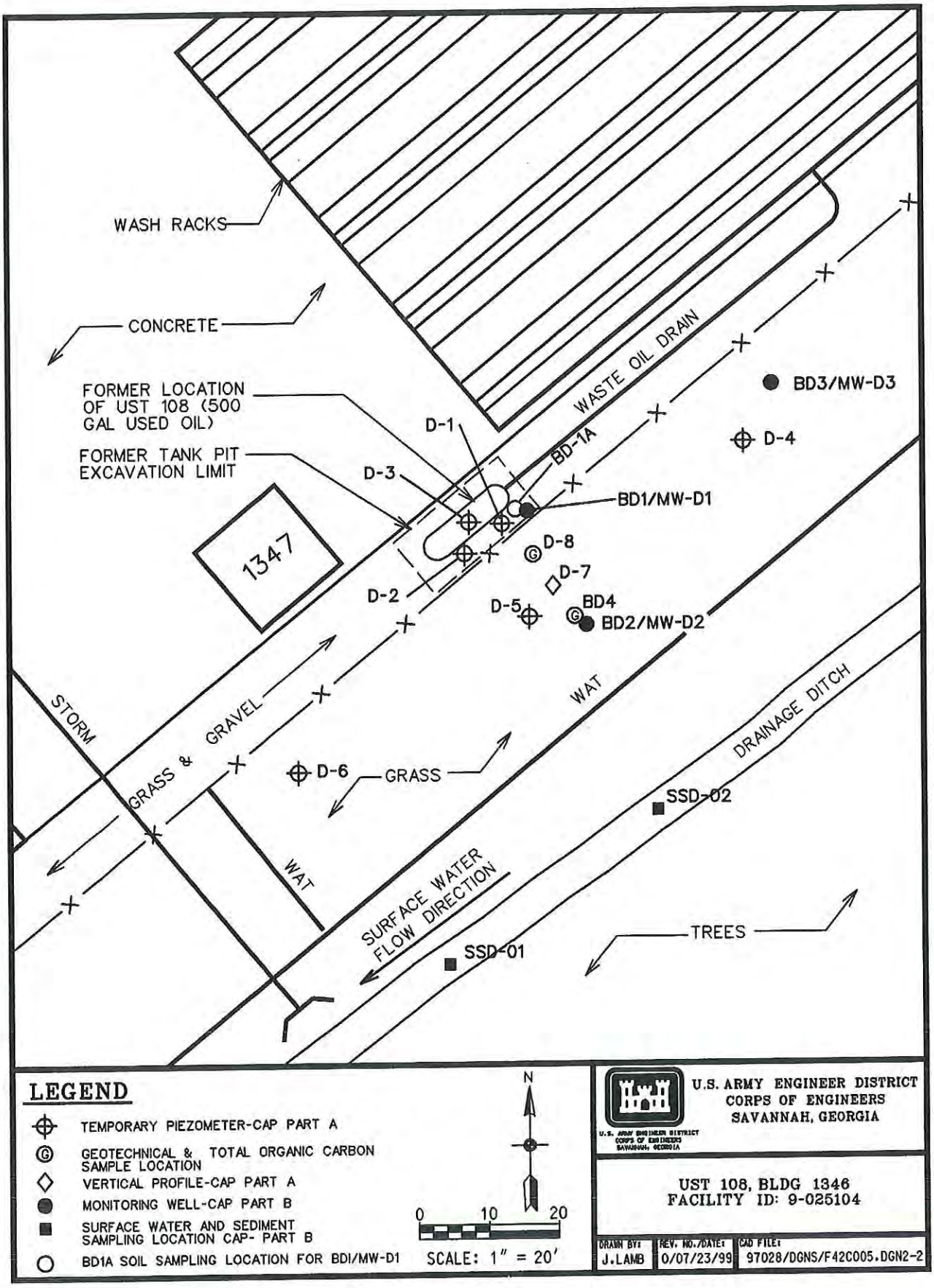
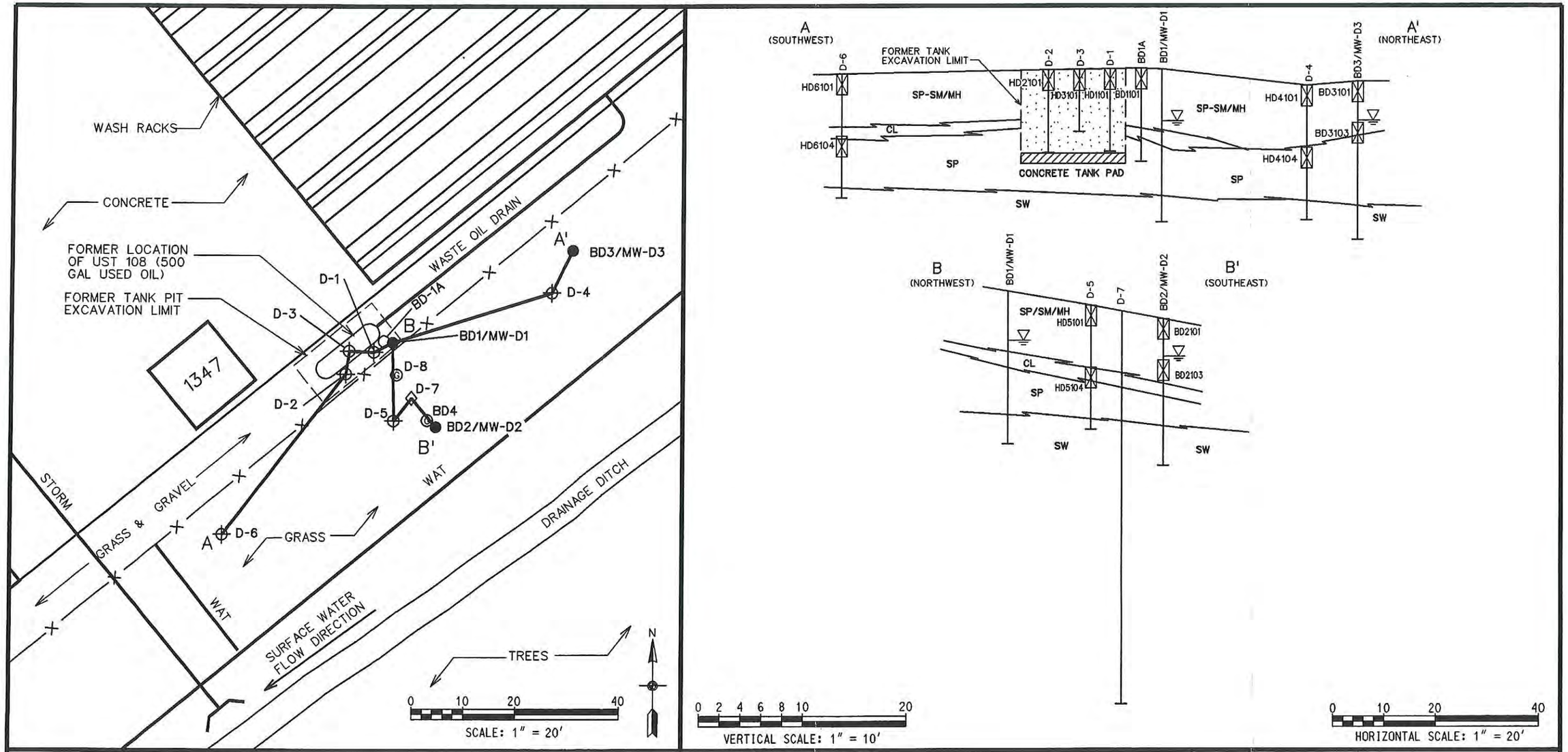


Figure II-2. Site Map of the UST 108 Site, Facility ID: 9-025104.



LEGEND

- TEMPORARY PIEZOMETER - CAP PART A
- GEOTECHNICAL & TOTAL ORGANIC CARBON SAMPLE LOCATION
- VERTICAL PROFILE LOCATION-CAP PART A
- SOIL BORING MONITORING WELL-CAP PART B
- BD1A SOIL SAMPLING LOCATION FOR BD1/MW-D1
- SOIL SAMPLE INTERVAL
- SOIL SAMPLE INTERVAL WITH CONTAMINATION THAT EXCEEDS APPLICABLE GUYS SOIL THRESHOLD LEVEL

B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES, TOTAL
BTL	BELOW THRESHOLD LEVELS
▽	APPROXIMATE WATER LEVEL DURING CAP-PART B INVESTIGATION

THRESHOLD LEVELS

- B = 0.008 mg/kg
- T = 6.0 mg/kg
- E = 10.0 mg/kg
- X = 700 mg/kg

NOTES:

VERTICAL PROFILE D-7: SOIL SAMPLES NOT COLLECTED

SP-SM/MH: POORLY GRADED, SILTY ORGANIC-RICH SAND

CL: SILTY, LEAN CLAY, HIGH ORGANIC CONTENT

SP: POORLY SORTED SAND

SW: WELL SORTED, CLEAN QUARTZ SAND

BD1A WAS SAMPLED FOR SOIL BECAUSE SAMPLE RECOVERY WAS LOW IN BD1/MW-D1 DUE TO PERCHED WATER ZONE

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

UST 108, BUILDING 1346
FACILITY ID: 9-025104

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/07/19/99	97028/DGNS/F42C005B.DGN2-3

Figure II-3. CAP-Part A and Part B Soil Sampling Locations at the UST 108 Site, Facility ID: 9-025104.

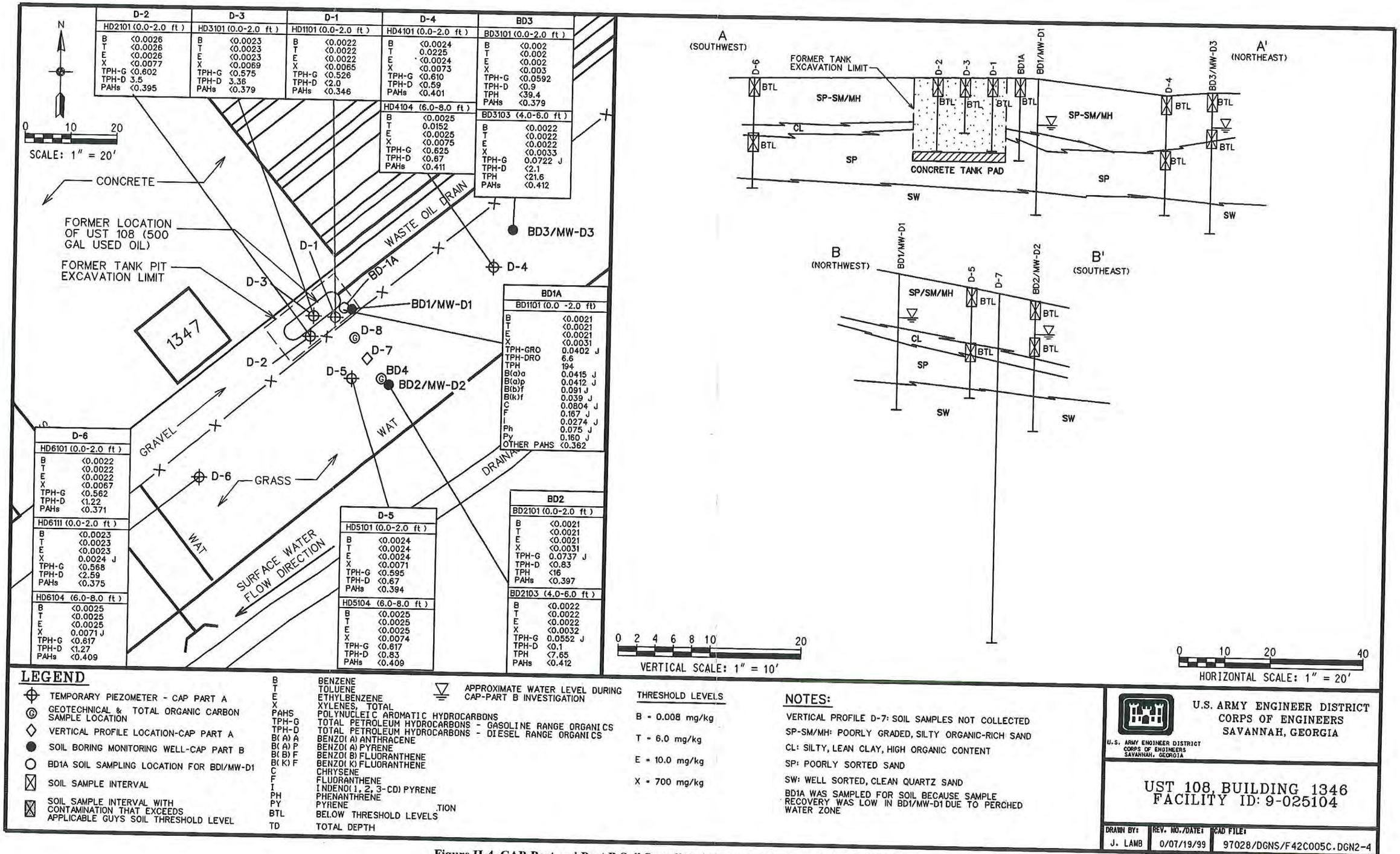
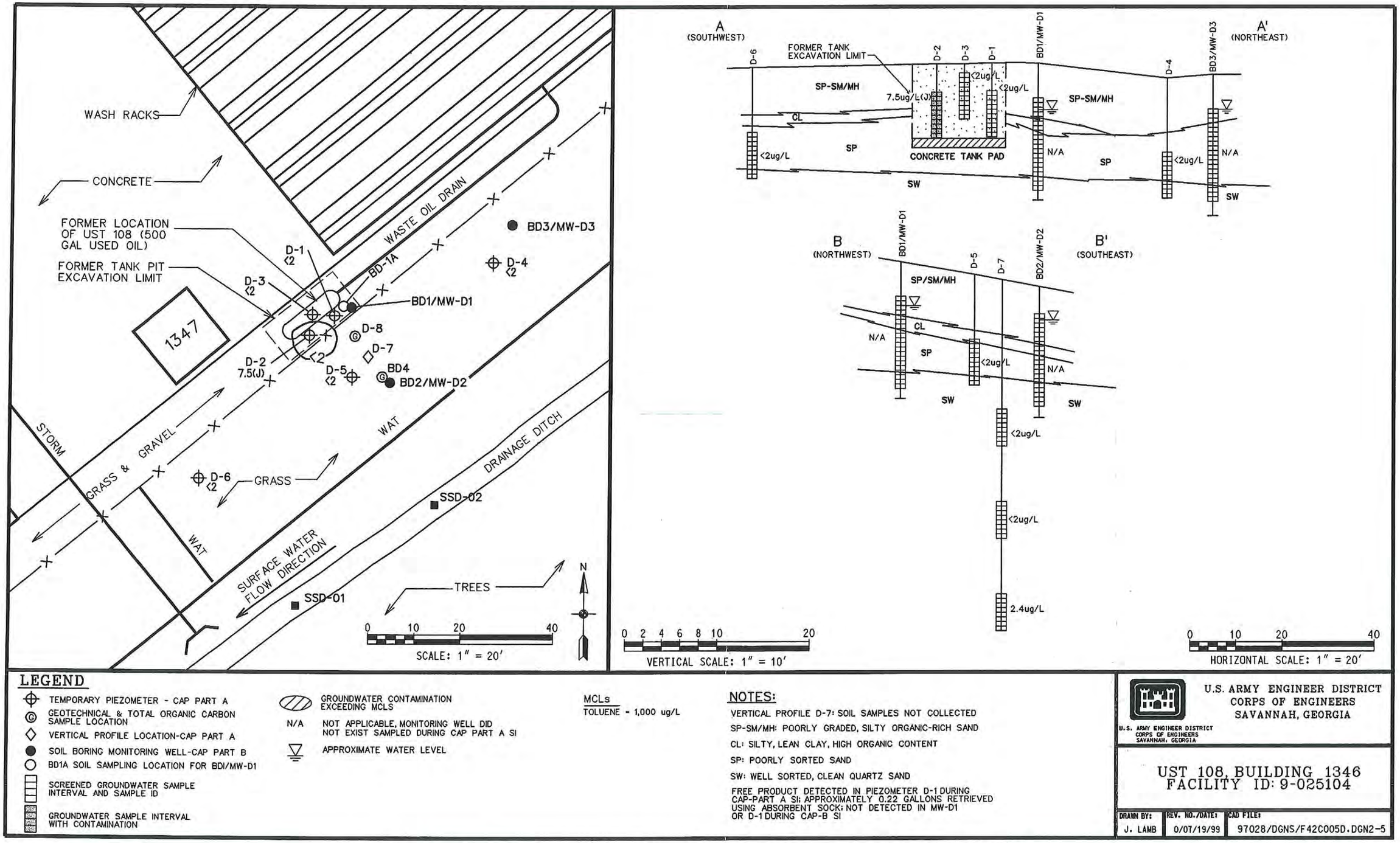


Figure II-4. CAP-Part and Part B Soil Sampling Analytical Results at the UST 108 Site, Facility ID: 9-025104.



LEGEND

- TEMPORARY PIEZOMETER - CAP PART A
- GEOTECHNICAL & TOTAL ORGANIC CARBON SAMPLE LOCATION
- VERTICAL PROFILE LOCATION-CAP PART A
- SOIL BORING MONITORING WELL-CAP PART B
- BD1A SOIL SAMPLING LOCATION FOR BDI/MW-D1
- SCREENED GROUNDWATER SAMPLE INTERVAL AND SAMPLE ID
- GROUNDWATER SAMPLE INTERVAL WITH CONTAMINATION
- GROUNDWATER CONTAMINATION EXCEEDING MCLS
- N/A — NOT APPLICABLE, MONITORING WELL DID NOT EXIST SAMPLED DURING CAP PART A SI
- APPROXIMATE WATER LEVEL

MCLs
TOLUENE - 1,000 ug/L

NOTES:

VERTICAL PROFILE D-7: SOIL SAMPLES NOT COLLECTED

SP-SM/MH: POORLY GRADED, SILTY ORGANIC-RICH SAND

CL: SILTY, LEAN CLAY, HIGH ORGANIC CONTENT

SP: POORLY SORTED SAND

SW: WELL SORTED, CLEAN QUARTZ SAND

FREE PRODUCT DETECTED IN PIEZOMETER D-1 DURING CAP-PART A SI; APPROXIMATELY 0.22 GALLONS RETRIEVED USING ABSORBENT SOCK; NOT DETECTED IN MW-D1 OR D-1 DURING CAP-B SI

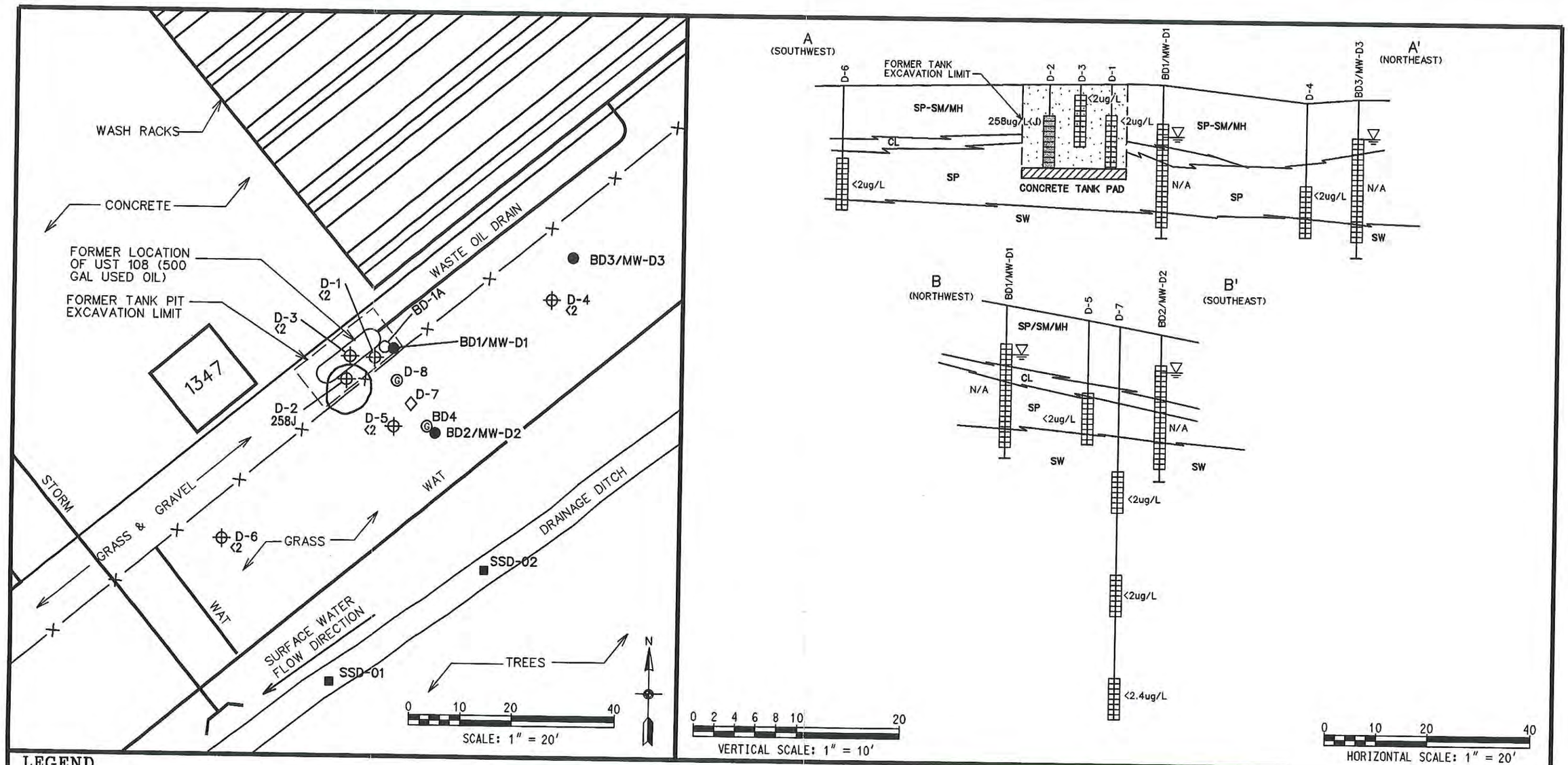
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

UST 108, BUILDING 1346
FACILITY ID: 9-025104

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/07/19/99	97028/DGNS/F42C005D.DGN2-5

Figure II-5. Toluene Contamination in Groundwater Determined During the CAP-Part A Site Investigation at the UST 108 Site, Facility ID: 9-025104.



LEGEND

- TEMPORARY PIEZOMETER - CAP PART A
- GEOTECHNICAL & TOTAL ORGANIC CARBON SAMPLE LOCATION
- VERTICAL PROFILE LOCATION-CAP PART A
- SOIL BORING MONITORING WELL-CAP PART B
- BD1A SOIL SAMPLING LOCATION FOR BD1/MW-D1
- SCREENED GROUNDWATER SAMPLE INTERVAL AND SAMPLE ID
- GROUNDWATER SAMPLE INTERVAL WITH CONTAMINATION
- GROUNDWATER CONTAMINATION EXCEEDING MCLS
- N/A — NOT APPLICABLE, MONITORING WELL DID NOT EXIST SAMPLED DURING CAP PART A SI
- APPROXIMATE WATER LEVEL

MCLs
ETHYLBENZENE - 700 ug/L

NOTES:

VERTICAL PROFILE D-7: SOIL SAMPLES NOT COLLECTED

SP-SM/MH: POORLY GRADED, SILTY ORGANIC-RICH SAND

CL: SILTY, LEAN CLAY, HIGH ORGANIC CONTENT

SP: POORLY SORTED SAND

SW: WELL SORTED, CLEAN QUARTZ SAND

FREE PRODUCT DETECTED IN PIEZOMETER D-1 DURING CAP-PART A SI: APPROXIMATELY 0.22 GALLONS RETRIEVED USING ABSORBENT SOCK; NOT DETECTED IN MW-D1 OR D-1 DURING CAP-B SI

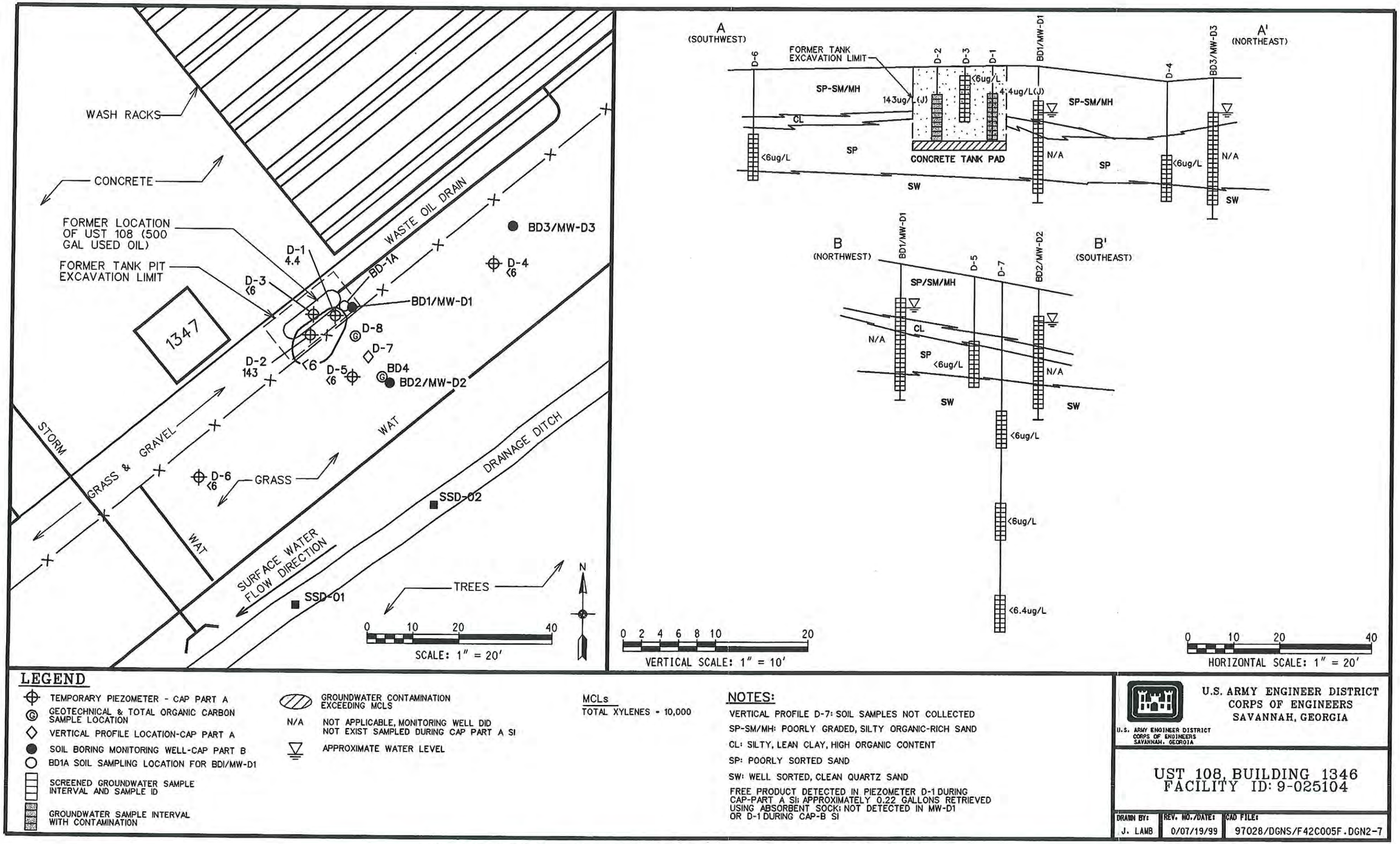
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS SAVANNAH, GEORGIA

UST 108, BUILDING 1346
FACILITY ID: 9-025104

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/07/19/99	97028/DGNS/F42C005E.DGN2-6

Figure II-6. Ethylbenzene Contamination in Groundwater Determined During the CAP-Part A Site Investigation at the UST 108 Site, Facility ID: 9-025104.



LEGEND

- TEMPORARY PIEZOMETER - CAP PART A
- GEOTECHNICAL & TOTAL ORGANIC CARBON SAMPLE LOCATION
- VERTICAL PROFILE LOCATION-CAP PART A
- SOIL BORING MONITORING WELL-CAP PART B
- BD1A SOIL SAMPLING LOCATION FOR BD1/MW-D1
- SCREENED GROUNDWATER SAMPLE INTERVAL AND SAMPLE ID
- GROUNDWATER SAMPLE INTERVAL WITH CONTAMINATION
- GROUNDWATER CONTAMINATION EXCEEDING MCLS
- N/A — NOT APPLICABLE, MONITORING WELL DID NOT EXIST SAMPLED DURING CAP PART A SI
- APPROXIMATE WATER LEVEL

MCLs
TOTAL XYLENES - 10,000

NOTES:

VERTICAL PROFILE D-7: SOIL SAMPLES NOT COLLECTED

SP-SM/MH: POORLY GRADED, SILTY ORGANIC-RICH SAND

CL: SILTY, LEAN CLAY, HIGH ORGANIC CONTENT

SP: POORLY SORTED SAND

SW: WELL SORTED, CLEAN QUARTZ SAND

FREE PRODUCT DETECTED IN PIEZOMETER D-1 DURING CAP-PART A SI: APPROXIMATELY 0.22 GALLONS RETRIEVED USING ABSORBENT SOCK; NOT DETECTED IN MW-D1 OR D-1 DURING CAP-B SI

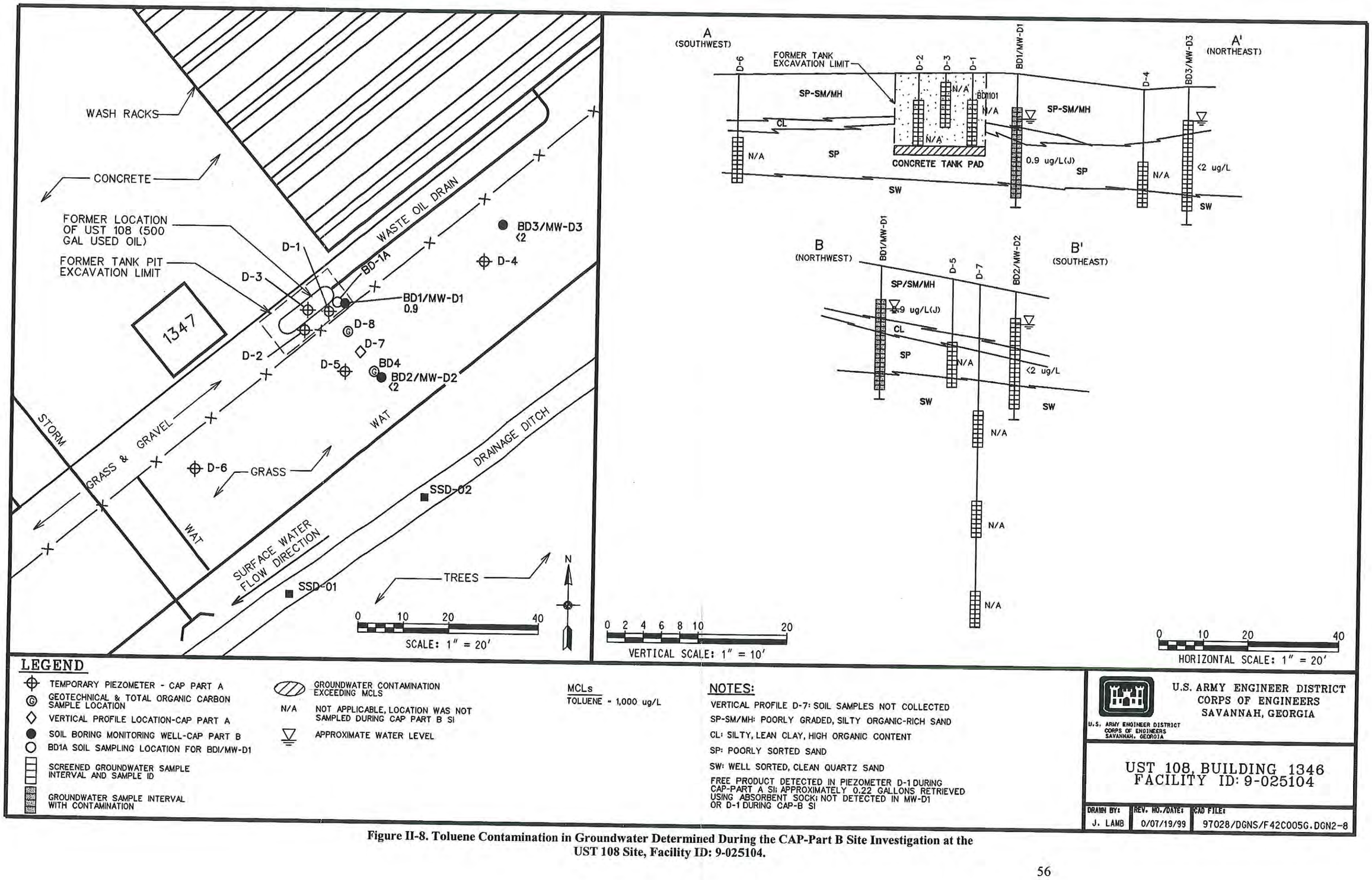
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

UST 108, BUILDING 1346
FACILITY ID: 9-025104

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/07/19/99	97028/DGNS/F42C005F.DGN2-7

Figure II-7. Total Xylenes Contamination in Groundwater Determined During the CAP-Part A Site Investigation at the UST 108 Site, Facility ID: 9-025104.



LEGEND

- TEMPORARY PIEZOMETER - CAP PART A
- GEOTECHNICAL & TOTAL ORGANIC CARBON SAMPLE LOCATION
- VERTICAL PROFILE LOCATION-CAP PART A
- SOIL BORING MONITORING WELL-CAP PART B
- BD1A SOIL SAMPLING LOCATION FOR BD1/MW-D1
- SCREENED GROUNDWATER SAMPLE INTERVAL AND SAMPLE ID
- GROUNDWATER SAMPLE INTERVAL WITH CONTAMINATION
- GROUNDWATER CONTAMINATION EXCEEDING MCLS
- N/A NOT APPLICABLE, LOCATION WAS NOT SAMPLED DURING CAP PART B SI
- APPROXIMATE WATER LEVEL

MCLs
TOLUENE - 1,000 ug/L

NOTES:

VERTICAL PROFILE D-7: SOIL SAMPLES NOT COLLECTED

SP-SM/MH: POORLY GRADED, SILTY ORGANIC-RICH SAND

CL: SILTY, LEAN CLAY, HIGH ORGANIC CONTENT

SP: POORLY SORTED SAND

SW: WELL SORTED, CLEAN QUARTZ SAND

FREE PRODUCT DETECTED IN PIEZOMETER D-1 DURING CAP-PART A SI; APPROXIMATELY 0.22 GALLONS RETRIEVED USING ABSORBENT SOCK; NOT DETECTED IN MW-D1 OR D-1 DURING CAP-B SI

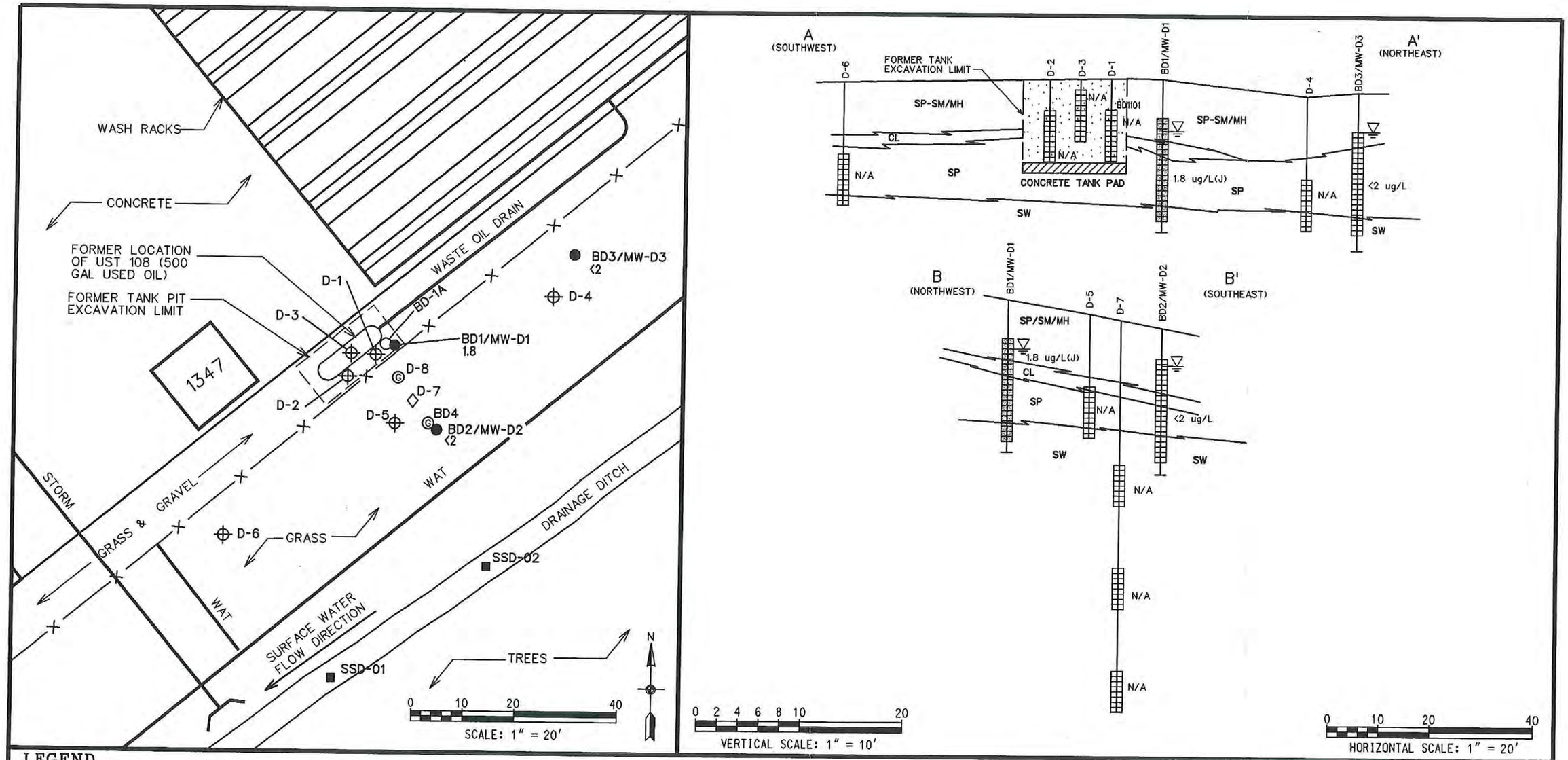
U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

UST 108, BUILDING 1346
FACILITY ID: 9-025104

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/07/19/99	97028/DGNS/F42C005G.DGN2-8

Figure II-8. Toluene Contamination in Groundwater Determined During the CAP-Part B Site Investigation at the UST 108 Site, Facility ID: 9-025104.



LEGEND

- TEMPORARY PIEZOMETER - CAP PART A
- GEOTECHNICAL & TOTAL ORGANIC CARBON SAMPLE LOCATION
- VERTICAL PROFILE LOCATION-CAP PART A
- SOIL BORING MONITORING WELL-CAP PART B
- BD1A SOIL SAMPLING LOCATION FOR BDI/MW-D1
- SCREENED GROUNDWATER SAMPLE INTERVAL AND SAMPLE ID
- GROUNDWATER SAMPLE INTERVAL WITH CONTAMINATION
- GROUNDWATER CONTAMINATION EXCEEDING MCLS
- N/A — NOT APPLICABLE, LOCATION WAS NOT SAMPLED DURING CAP PART B SI
- APPROXIMATE WATER LEVEL

MCLs
ETHYLBENZENE - 700 ug/L

NOTES:

VERTICAL PROFILE D-7: SOIL SAMPLES NOT COLLECTED

SP-SM/MH: POORLY GRADED, SILTY ORGANIC-RICH SAND

CL: SILTY, LEAN CLAY, HIGH ORGANIC CONTENT

SP: POORLY SORTED SAND

SW: WELL SORTED, CLEAN QUARTZ SAND

FREE PRODUCT DETECTED IN PIEZOMETER D-1 DURING CAP-PART A SI; APPROXIMATELY 0.22 GALLONS RETRIEVED USING ABSORBENT SOCK; NOT DETECTED IN MW-D1 OR D-1 DURING CAP-B SI

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

UST 108, BUILDING 1346
FACILITY ID: 9-025104

DRAWN BY:	REV. NO./DATE:	CAD FILE:
J. LAMB	0/07/19/99	97028/DGNS/F42C005H.DGN2-9

Figure II-9. Ethylbenzene Contamination in Groundwater Determined During the CAP-Part B Site Investigation at the UST 108 Site, Facility ID: 9-025104.

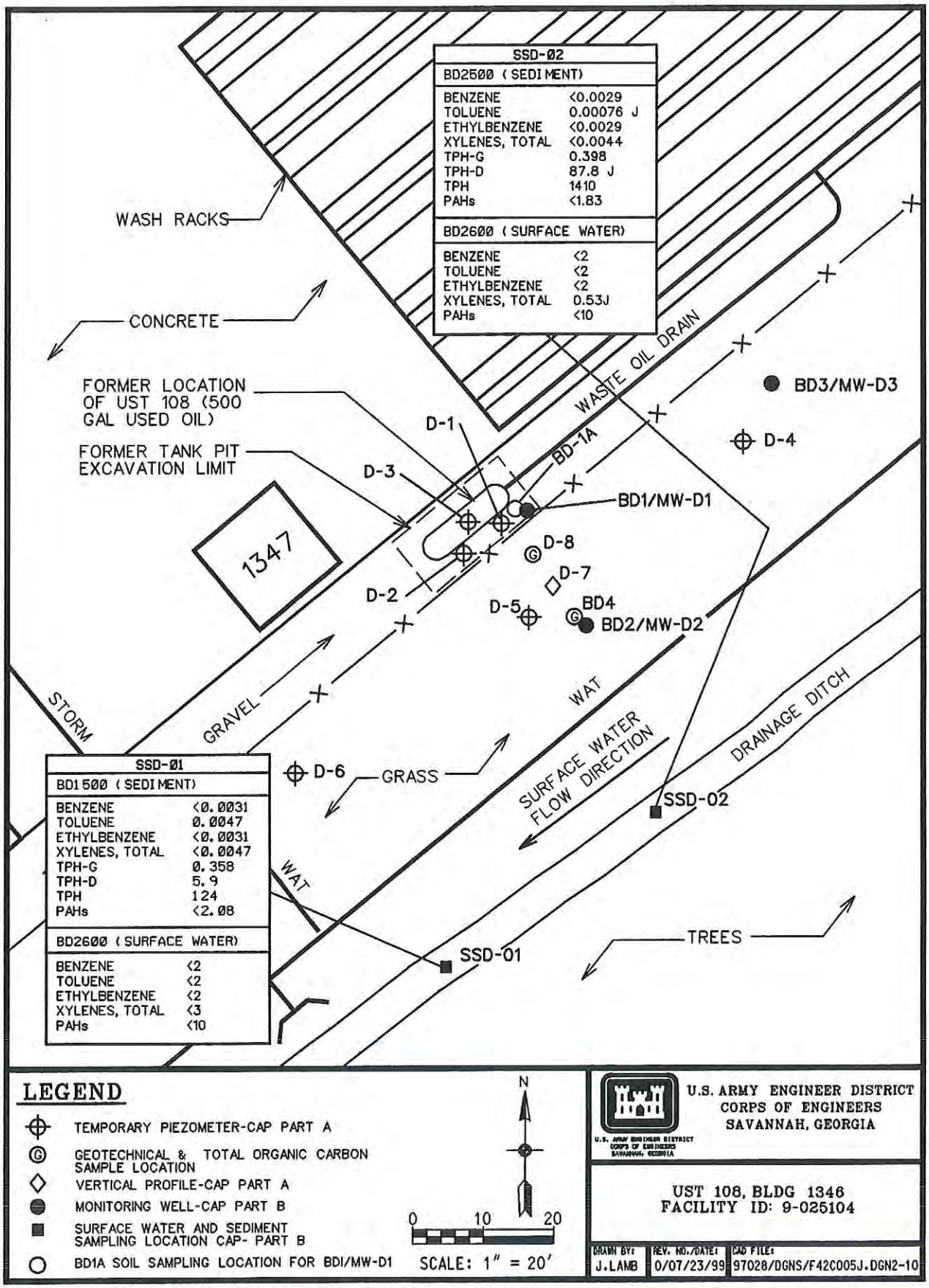
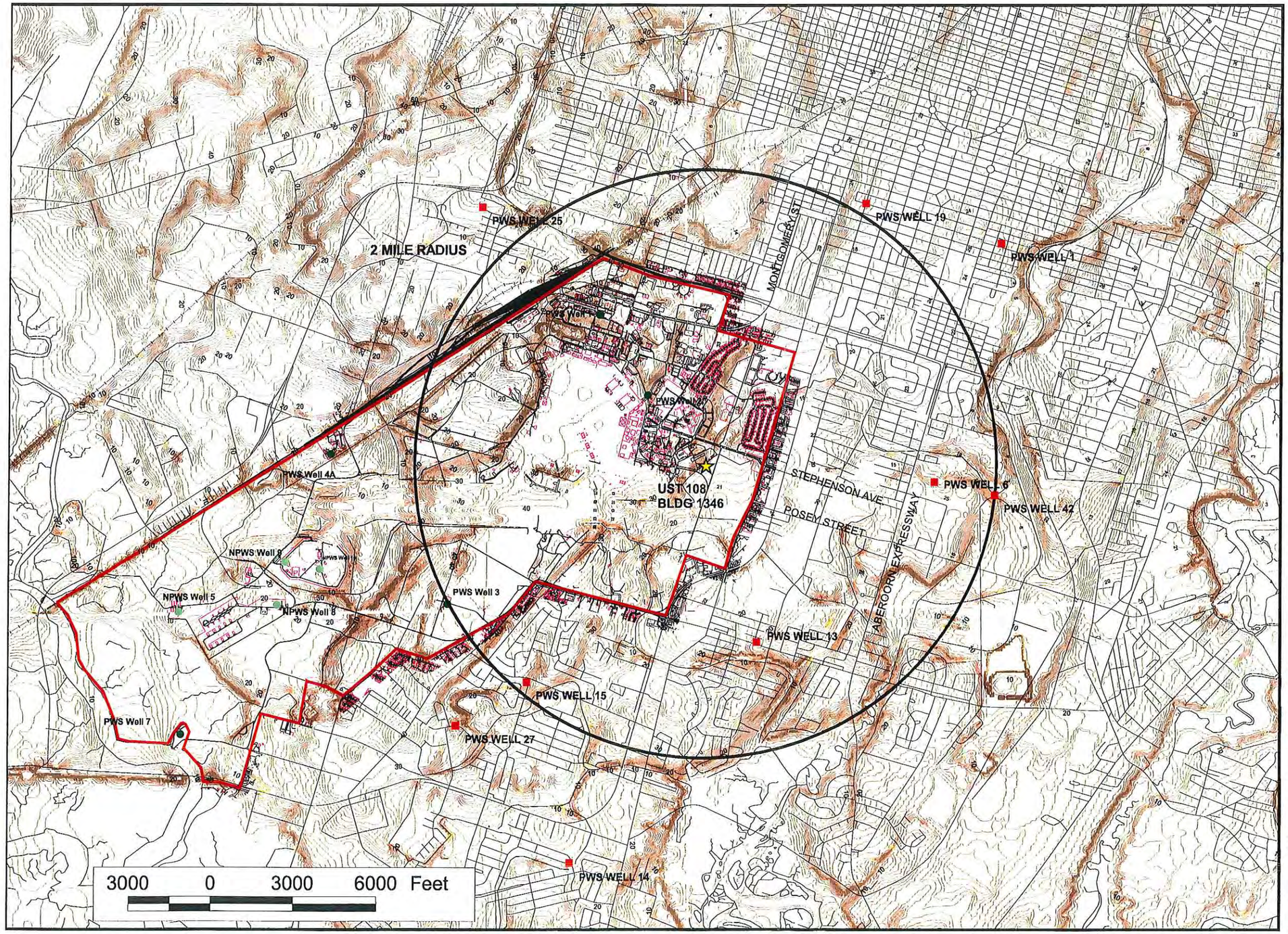


Figure II-10. CAP-Part B Surface Water and Sediment Sampling Analytical Results at the UST 108 Site, Facility ID: 9-025104.



Legend:

- Hunter Army Airfield Boundary
- Surface Water (streams/rivers/drains)
- Railroad
- Roads (primary)
- Buildings and Planimetric Features
- Ground Contour (1 FT Intervals)
- HAAF Non-Public Water Supply Well
- HAAF Public Water Supply Well
- City of Savannah Public Water Supply Well

NOTE:

Contours were created from Digital Elevation Models translated from http://mapping.usgs.gov/, which were obtained from the following U.S.G.S. 7.5 minuteTopographic Quad sheets: Borroughs, Isle of Hope, Savannah, and Garden City. Roads, surface water, and railroad were translated from http://www.gis.state.ga.us/ . Hunter Army Airfield BaseMap received as Microstation files from Fort Stewart.

N

GA State Plane NAD83 (feet)

SAIC
Science Applications International Corporation

UST 108, BLDG 1346
FACILITY ID: 9-025104

REVISION	DRAWN BY:	CHKD BY:	DATE:
0	M.Norris	A. Bailey	10/15/98

FILE REFERENCES

051rds_polyline	burroughsctrf
051hyd_polyline	isleofhopectrf
051rr	savannahctrf
hunterarea	gardencityctrf
	trveh.dgn
	bggen.dgn

SHT 1 of 1 — DRAWING #

97028\HUNTERUST108..APR — ARCVIEW PROJECT NAME

Figure II-11. Locations of Public and Non-Public Supply Wells at Hunter Army Airfield and Surrounding Area.

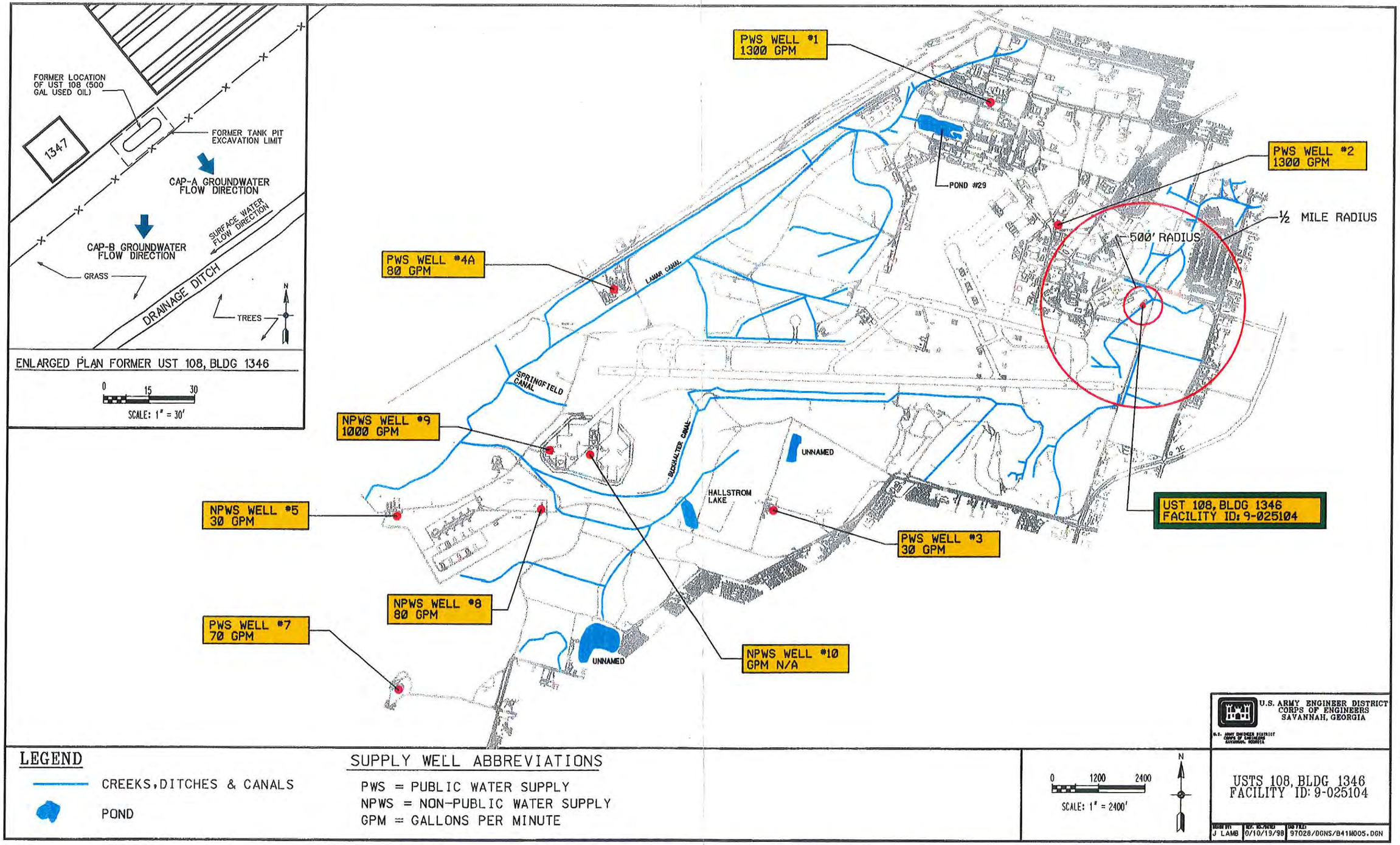


Figure II-12. Locations of Surface Water Bodies and Water Supply Wells at Hunter Army Airfield.

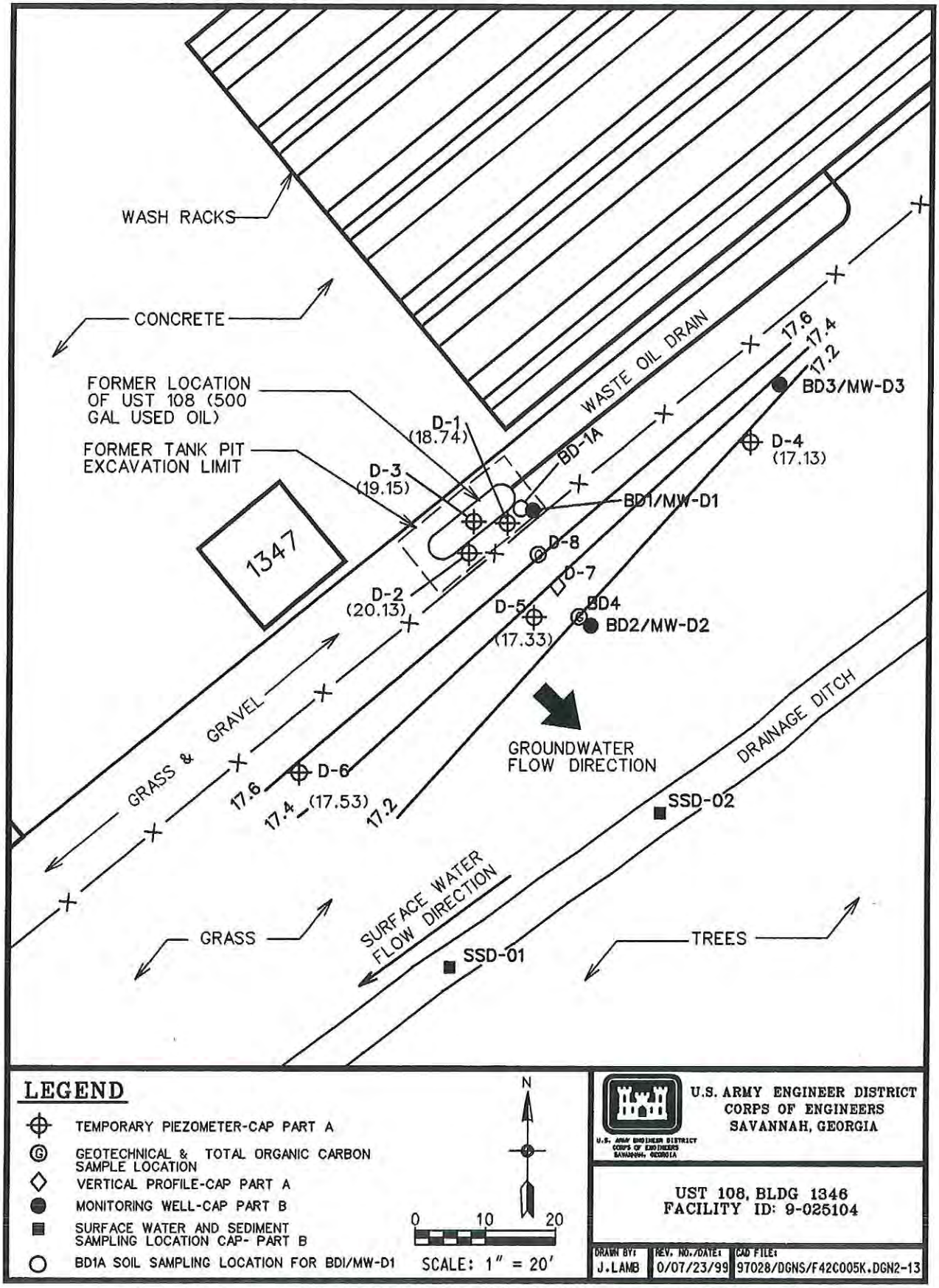


Figure II-13. Equipotential Flow Net (April 1998) Determined from CAP-Part A Temporary Piezometers for the UST 108 Site, Facility ID: 9-025104.

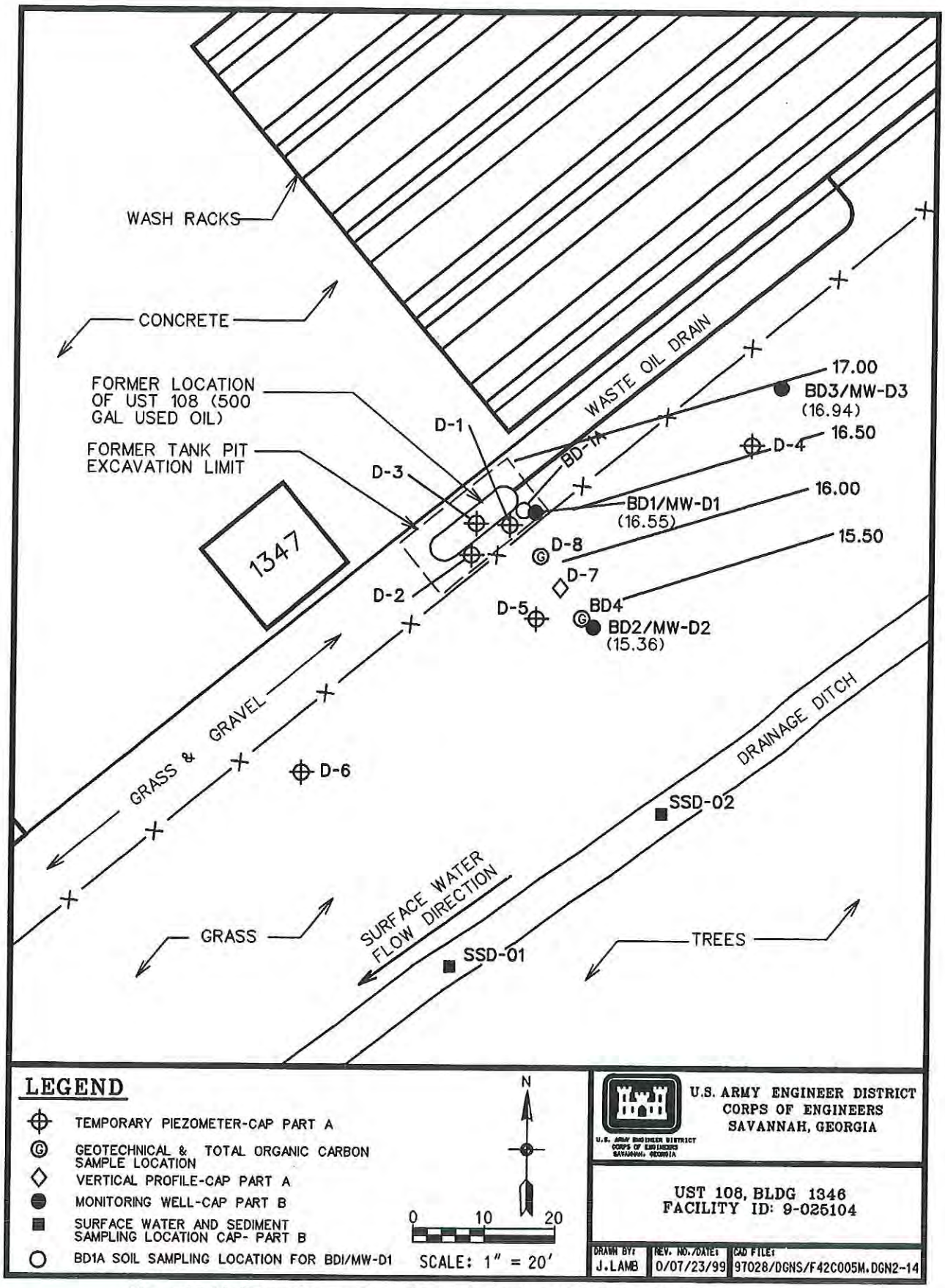


Figure II-14. Groundwater Potentiometric Surface Map (May 1999) Determined from CAP-Part B Monitoring Wells for the UST 108 Site, Facility ID: 9-025104.

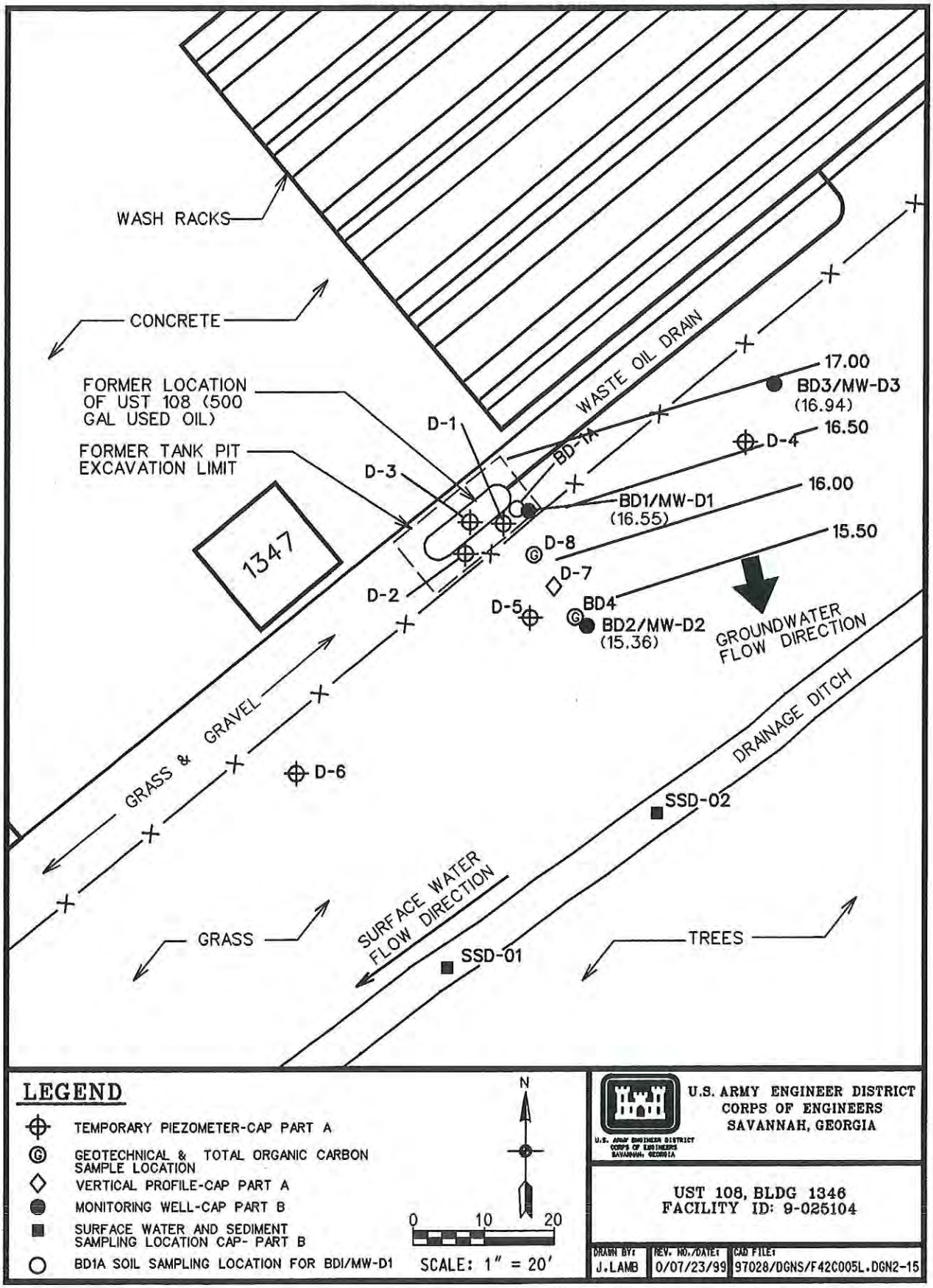


Figure II-15. Equipotential Flow Net (May 1999) for the UST 108 Site, Facility ID: 9-025104.

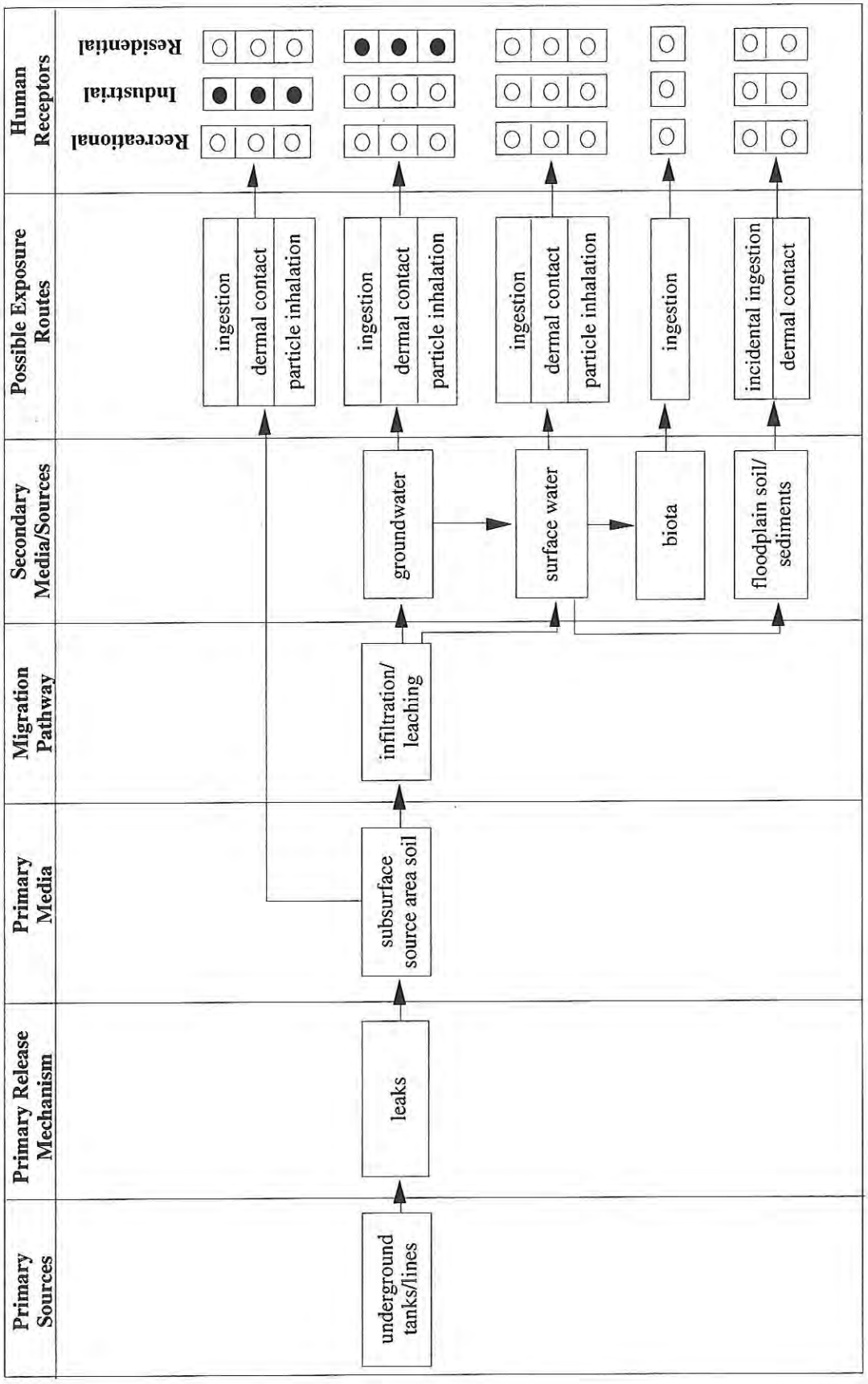


Figure III-1. Conceptual Exposure Model for the UST 108 Site, Facility ID: 9-025104

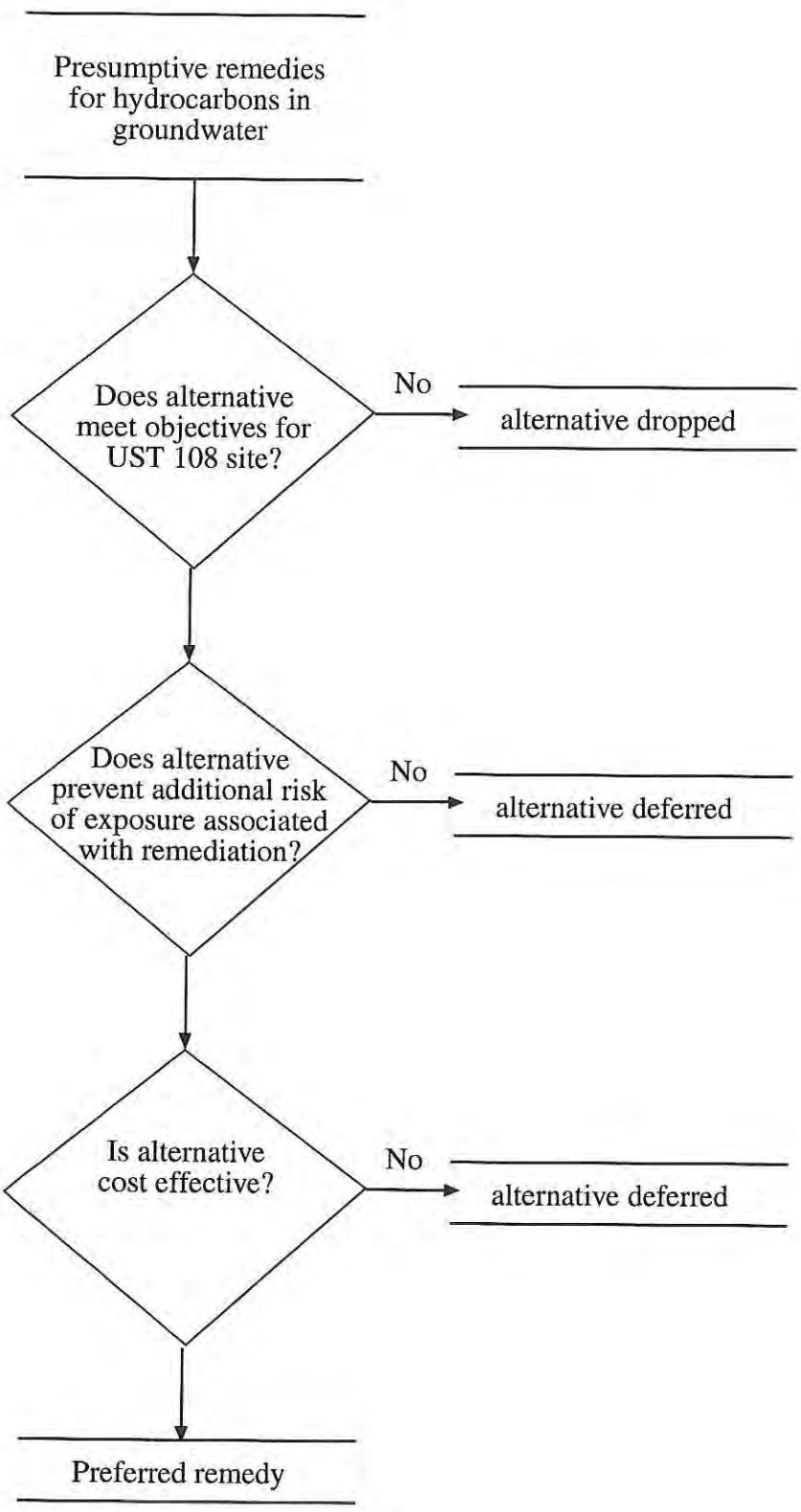


Figure III-2. Remedial Alternatives Selection Process for the UST 108 Site, Facility ID: 9-025104

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

CAP-PART B INVESTIGATION LABORATORY ANALYTICAL RESULTS

THIS PAGE INTENTIONALLY LEFT BLANK

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD1101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-01

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 1F310

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 8 Date Analyzed: 04/21/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.1	U
108-88-3	toluene	2.1	U
100-41-4	ethylbenzene	2.1	U
1330-20-7	xylenes (total)	3.1	U

U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD1101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5Q409

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 8 decanted: (Y/N) N Date Extracted: 04/20/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/22/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	362	U
91-58-7	2-chloronaphthalene	362	U
208-96-8	acenaphthylene	362	U
83-32-9	acenaphthene	362	U
86-73-7	fluorene	362	U
85-01-8	phenanthrene	75.0	J
120-12-7	anthracene	362	U
206-44-0	fluoranthene	167	J
129-00-0	pyrene	160	J
56-55-3	benzo(a)anthracene	41.5	J
218-01-9	chrysene	80.4	J
205-99-2	benzo(b)fluoranthene	91.0	J
207-08-9	benzo(k)fluoranthene	39.0	J
50-32-8	benzo(a)pyrene	41.2	J
193-39-5	indeno(1,2,3-cd)pyrene	27.4	J
53-70-3	dibenz(a,h)anthracene	362	U
191-24-2	benzo(g,h,i)perylene	362	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BD1101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-01

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 060F6001

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 8 decanted: (Y/N) N Date Extracted:04/19/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/30/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	6.6	B	= FD8

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD1101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 1F1016

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 8 Date Analyzed: 04/19/99

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	40.2	J	J

FORM I VOA

Client:	Science Applications International Corp. P.O. Box 2502 800 Oak Ridge Turnpike Oak Ridge, Tennessee 37831
Contact:	Ms. Leslie Barbour
Project Description:	Hunter Army Airfield CAP-Part B UST

cc: SAIC00499 Report Date: May 03, 1999

Sample ID	: BD1101
Lab ID	: 9904479-01
Matrix	: Soil
Date Collected	: 04/14/99
Date Received	: 04/15/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		194 =	21.6	43.6	mg/kg	1.0	AAT	05/02/99	1000	147917	1
Evaporative Loss @ 105 C		8.00 =	1.00	1.00	wt%	1.0	GJ	04/20/99	1515	147094	2

M = Method	Method-Description
M 1	EPA 418.1 Modified
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

THIS PAGE INTENTIONALLY LEFT BLANK

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-02

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 1F311

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 16 Date Analyzed: 04/21/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.1	U
108-88-3	toluene	2.1	U
100-41-4	ethylbenzene	2.1	U
1330-20-7	xylenes (total)	3.1	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5Q410

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 16 decanted: (Y/N) N Date Extracted: 04/20/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/22/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	397	U
91-58-7	2-chloronaphthalene	397	U
208-96-8	acenaphthylene	397	U
83-32-9	acenaphthene	397	U
86-73-7	fluorene	397	U
85-01-8	phenanthrene	397	U
120-12-7	anthracene	397	U
206-44-0	fluoranthene	397	U
129-00-0	pyrene	397	U
56-55-3	benzo(a)anthracene	397	U
218-01-9	chrysene	397	U
205-99-2	benzo(b)fluoranthene	397	U
207-08-9	benzo(k)fluoranthene	397	U
50-32-8	benzo(a)pyrene	397	U
193-39-5	indeno(1,2,3-cd)pyrene	397	U
53-70-3	dibenz(a,h)anthracene	397	U
191-24-2	benzo(g,h,i)perylene	397	U

U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BD2101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-02

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 061F6101

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 16 decanted: (Y/N) N Date Extracted:04/19/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/30/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.83	B	U F01,F07

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2101

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 1F1017

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 16 Date Analyzed: 04/19/99

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	73.7	J	J G02

FORM I VOA

Client:	Science Applications International Corp. P.O. Box 2502 800 Oak Ridge Turnpike Oak Ridge, Tennessee 37831
Contact:	Ms. Leslie Barbour
Project Description:	Hunter Army Airfield CAP-Part B UST

cc: SAIC00499 Report Date: May 03, 1999 Page 1 of 1

Sample ID	: BD2101
Lab ID	: 9904479-02
Matrix	: Soil
Date Collected	: 04/15/99
Date Received	: 04/15/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	U	16.0	U	23.6	47.6	mg/kg	1.0	AAT	05/02/99	1000	147917	1
Evaporative Loss @ 105 C		16.0	=	1.00	1.00	wt%	1.0	GJ	04/20/99	1515	147094	2

M = Method	Method-Description
M 1	EPA 418.1 Modified
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

269

THIS PAGE INTENTIONALLY LEFT BLANK

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-03

Sample wt/vol: 5.7 (g/mL) G Lab File ID: 1F312

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 19 Date Analyzed: 04/21/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.2	U
108-88-3	toluene	2.2	U
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	3.2	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5Q411

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 19 decanted: (Y/N) N Date Extracted: 04/20/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/22/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	412	U
91-58-7	2-chloronaphthalene	412	U
208-96-8	acenaphthylene	412	U
83-32-9	acenaphthene	412	U
86-73-7	fluorene	412	U
85-01-8	phenanthrene	412	U
120-12-7	anthracene	412	U
206-44-0	fluoranthene	412	U
129-00-0	pyrene	412	U
56-55-3	benzo(a)anthracene	412	U
218-01-9	chrysene	412	U
205-99-2	benzo(b)fluoranthene	412	U
207-08-9	benzo(k)fluoranthene	412	U
50-32-8	benzo(a)pyrene	412	U
193-39-5	indeno(1,2,3-cd)pyrene	412	U
53-70-3	dibenz(a,h)anthracene	412	U
191-24-2	benzo(g,h,i)perylene	412	U

U

FORM 1 Science Applications15-APR-1999 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BD2103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-03

Sample wt/vol: 30.5 (g/mL) G Lab File ID: 062F6201

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 19 decanted: (Y/N) N Date Extracted:04/19/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/30/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.098	JB	U F01, F06

FORM I SV

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2103

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-03

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 1F1018

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 19 Date Analyzed: 04/19/99

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	Gasoline Range Organics	55.2	J

J

FORM I VOA

Client:	Science Applications International Corp.
	P.O. Box 2502
	800 Oak Ridge Turnpike
	Oak Ridge, Tennessee 37831
Contact:	Ms. Leslie Barbour
Project Description:	Hunter Army Airfield CAP-Part B UST

cc: SAIC00499 Report Date: May 03, 1999

Sample ID	: BD2103
Lab ID	: 9904479-03
Matrix	: Soil
Date Collected	: 04/15/99
Date Received	: 04/15/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	U	7.65	U	24.4	49.2	mg/kg	1.0	AAT	05/02/99	1000	147917	1
Evaporative Loss @ 105 C		19.0		1.00	1.00	wt%	1.0	GJ	04/20/99	1515	147094	2

M = Method	Method-Description
M 1	EPA 418.1 Modified
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

Data reported in mass/mass units is reported as 'dry weight'.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

THIS PAGE INTENTIONALLY LEFT BLANK

DUPLICATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2113

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-04

Sample wt/vol: 5.5 (g/mL) G Lab File ID: 1F313

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: not dec. 21 Date Analyzed: 04/21/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(ml) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	2.3	U	U
108-88-3	toluene	2.3	U	
100-41-4	ethylbenzene	2.3	U	
1330-20-7	xylenes (total)	3.5	U	

DUPLICATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BD2113

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: HBUST02S

Matrix: (soil/water) SOIL Lab Sample ID: 9904479-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5Q412

Level: (low/med) LOW Date Received: 04/15/99

% Moisture: 21 decanted: (Y/N) N Date Extracted: 04/20/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 04/22/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	422	U
91-58-7	2-chloronaphthalene	422	U
208-96-8	acenaphthylene	422	U
83-32-9	acenaphthene	422	U
86-73-7	fluorene	422	U
85-01-8	phenanthrene	422	U
120-12-7	anthracene	422	U
206-44-0	fluoranthene	422	U
129-00-0	pyrene	422	U
56-55-3	benzo(a)anthracene	422	U
218-01-9	chrysene	422	U
205-99-2	benzo(b)fluoranthene	422	U
207-08-9	benzo(k)fluoranthene	422	U
50-32-8	benzo(a)pyrene	422	U
193-39-5	indeno(1,2,3-cd)pyrene	422	U
53-70-3	dibenz(a,h)anthracene	422	U
191-24-2	benzo(g,h,i)perylene	422	U

U